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Editor

Just Do It

Kerry K. Carney, DDS, CDE

I was forwarded an article the other day about communication between a patient’s obstetrician and her dentist. The author was an obstetrician who was tired of pro forma consultation requests from dentists. It was entitled, “An Open Letter to the Dentists of the World.” The tone was casual and remonstrative, that is to say, it was a little snarky.

In a nutshell, the author posited that all dentists should know the five following facts:
1. *There is nothing you can do under local anesthesia that will hurt a fetus.*
2. *Penicillin antibiotics are safe in pregnancy.*
3. *Local anesthetics are safe in pregnancy.*
4. *Narcotics are safe in pregnancy.*
5. *Oral X-rays are safe in pregnancy.*

He was tired of having his patients’ dentists contact him to receive permission to perform procedures that fall within those guidelines. He was especially unimpressed with dentists who refer back to him patients who are suffering from oral pain for a consultation and written confirmation that it is safe to intervene and alleviate the patient’s discomfort.

Overlooking the tone and attitude of the author, the letter illustrates an interesting confluence of ideas.

1. A lack of confidence in one’s understanding of the pregnant patient’s risk can forestall the provision of appropriate dental care.
2. Physicians enjoy a professional dominance over dentists, in perception if not in fact.
3. Enduring cultural taboos concerning pregnant women and the dangerous imbalance they represent can imbue routine dental procedures with uncertainty.
4. The common logical fallacy: *Post hoc ergo propter hoc* (after this, therefore because of this) can inspire inappropriate caution.
5. A litigious environment can engender extraneous risk averse behaviors.
6. Those who are trained to render care should be prepared to render care.
7. In a patient-centric treatment model, all providers should communicate with other professionals concurrently treating the patient.

The first and second points contribute to the feeling that some people have that the physician has the last say on patient care even in fields where he or she is not trained. Dentists have in-depth training in oral health. Our undergraduate and continuing education should keep us up to date on systemic disease effects on oral health and the impacts of our interventions on overall health.

Dental education is moving toward an integrated model of patient-centered care. The electronic health record should help to draw the dentist into the personalized health care of the future. Getting “permission to treat” a pregnant patient from a physician underscores a professional isolation and hierarchy that should not exist.

The third point is a nod to the fact that many attitudes that we take for granted are not scientific but cultural in nature. I attended a social event recently where that was brought home to me. When the topic of conversation turned to divining the sex of a fetus, it was amazing to hear the folklore that was quoted as unassailable fact.

It should not be surprising that ancient and universal folklore about pregnancy and birth can influence our understanding of risks and benefits of care for the pregnant patient.

The fourth and fifth points work together to increase a hesitancy to treat the pregnant patient. A simple and common logical fallacy makes us attribute causation based on temporal precedence. It can also be expressed: since event Y followed event X, then event X must have caused event Y. This happens every day.

I remember receiving a call from a perimenopausal patient whom I had treated. She told me she had been driving home after her appointment and experienced her first vasomotor symptom. She was sure that the local anesthetic that I had used had precipitated the “hot flash.” It is true that a cause must precede its effect, but the mere act of preceding an event is not sufficient to prove a causal relationship.

This event was going to happen eventually and the fact that it happened after a dental appointment was coincidence. Unexpected events or bad
outcomes during gestation or delivery are not caused by previously provided, safe and appropriate dental care.

The fifth idea is the notion of spreading the legal risk. The author of the letter to the dentists of the world took particular issue with being asked for written permission to treat simply to provide legal cover for the dentist. He felt that we dentists should have faith in our training and the courage to put that training to use. In a litigious environment, it may seem prudent to get documentation that the obstetrician has been consulted before any procedure is performed on a pregnant patient. However, this could hinder a patient receiving needed care in a timely manner.

That leads us to the sixth idea: Those who are trained to render care should be prepared to render care. If we defer to other professionals and request permission from them to do what we know is correct, that can leave us in a real bind. What happens when we know the advice we are given is misguided or incorrect? If a consulting obstetrician advises no radiographs for our pregnant patient, what are we to do? If a radiograph is needed to render safe and appropriate care, we take the radiograph (with the appropriate shielding.) We cannot let non-evidence-based precautions jeopardize the provision of safe and appropriate care.

The final idea deals with a patient-centered treatment model. The letter’s author takes issue with the dentists’ communication because he sees it as a burden for him and a shirking of duty by dentists. However, in a model centered on the patient and her welfare, constructive communication by partners in that patient’s care should be welcomed. It is indisputably better for the patient to have all members of the treatment team aware of what the other team members are doing.

A note or a phone call to alert a medical colleague to the oral health status of a mutual patient is not the same as requesting permission to treat. In addition, the author of the letter should be referring his patients to dentists routinely because the pregnant patient is usually very highly motivated to improve her oral health as part of her concern for her baby’s normal, healthy development. The prenatal time is usually a great time for education. Anticipatory guidance can map the way and encourage the mother’s involvement for a lifetime of oral health for the baby.

My postscript to this “letter to all the dentists of the world” would be: Keep the other members of the patient-centered model of care informed and if you are trained to render the care then just do it.

REFERENCE
Impressions

The nub:
1. In ethics, don’t expect to get anything you are not willing to pay for.
2. Would you want to live in a world where “nobody” stood up for what is right?
3. Be on guard for private justice when public justice is ignored.

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

Looking the Other Way

David W. Chambers, EdM, MBA, PhD

The teenager killed her parents and then threw herself on the mercy of the courts because she was an orphan. Yes, in fact, ax murder Lizzy Borden was acquitted. Naturally, we want to think the best of ourselves and of others. It is generally agreed that winking at ethical violations will damage the profession. But the line of folks waiting to carry through with the “or else” part of the social contract is very short.

Holding others accountable can be both overdone and underdone. The dividing line is somewhere in the vicinity of whether we are doing it because it “makes us feel good” or because it protects innocent third parties who would be damaged by letting the bad practice continue. If we know that the rules and penalties are only pretend, we will all pretend to follow them. Reneging on enforcement for ethical violations can be both laudable clemency and questionable dodging of responsibility.

We cannot choose to play only the happy role. “People should just do what is right” is the wimpiest of false ethics imaginable. Righteous indignation is not much of a strategy either.

We get as much morality as we can afford. The problem is that the benefit of ethical behavior is to society generally, while the cost is to specific individuals or groups. We often seek to pass the cost of punishment on to others. The hangman of old wore a mask and was excluded from society.

Individuals can actually flirt personal prestige by short-circuiting punishment. In every culture, granting clemency is a sign of high social status. Only the governor can commute the death sentence. When we say, “I am letting it go this time,” we elevate our own status. In surveys of cheating in colleges, the most common response to detected cheating is for faculty members to “deal with the problem on a personal and individual basis.”

In addition to wanting to be judge and jury by personally dispensing mercy, we like to be legislators as well. When we selectively wink at bad acting, we are changing the rules. It is perfectly appropriate in a democracy to work to change the rules, say the laws requiring reporting of suspected child abuse. It is not appropriate to ignore the rules and expect to be exempt from the consequences.

Finally, society is lousy at matching corrective action to unwanted behavior. Extreme forms of punishment have no more effect on behavior than do barely effective ones. One of my favorite cartoons shows the hangman placing a noose on the criminal’s head and saying, “I hope this teaches you a lesson.” On the other side, penalties that society is not willing to enforce are useless personal image building.
Microbes Evolved to Colonize Different Parts of Human Body

As the human species evolved over the last 6 million years, their resident microbes did the same, adapting to vastly different conditions on the skin and in mouths, noses, genitalia and guts. Using mathematical tools originally developed for geologists, a team of Duke University scientists tracked how this microbial evolution unfolded, identifying microbes that diverged into new species as they colonized multiple parts of the body.

The research, published in the journal *eLife*, could prompt new theories and treatments for managing these bacterial communities, collectively known as the human microbiome, to improve personal health.

Scientists typically glean information on the microbiome by sampling a few million bacteria and sequencing them to count which bacteria belong to each species. Then they compare those counts, generating values that tell them the relative abundance of each type of microbe. But relative abundance data require statistical methods that take into account how shifts in one species might affect another.

Justin Silverman, an MD-PhD student in the David laboratory, searched the literature for possible workarounds and found one in the field of geology. To make sense of the relative amounts of different elements like calcium and aluminum found in rocks, geologists devised a mathematical tool called the PhILR transform. Silverman adapted this tool to study the relative amounts of bacteria found in the microbiome.

The new technique combined the sequencing counts for each species with information on their position on the bacterial family tree. The resulting statistical framework looks like a mobile on a baby’s crib, with a common ancestor at the top and subsequent generations suspended underneath and connected by a series of crossbars. By looking at how these crossbars dipped and swayed with the weight of the species dangling from their tips, researchers could assess how microbial communities grew and evolved in different body sites.

Silverman used this framework to look at data from the Human Microbiome Project and found that different microbes have evolved to adapt to environments like the skin and mouth. To learn more about the research, read the study at *eLife* (2017);6:e21887. dx.doi.org/10.7554/eLife.21887.

Poor Oral Health Contributes to Malnutrition in Older Adults

Research published in the *Journal of the American Geriatrics Society* suggests that food scarcity and poor oral health are major risk factors for malnutrition that leads an older adult, who is already at high risk of functional decline, decreased quality of life and increased mortality, to land in the emergency department.

The study, conducted by University of North Carolina School of Medicine researchers, included 252 patients age 65 and older seeking treatment in emergency departments in North Carolina, Michigan and New Jersey. Participants were screened for malnutrition and then asked about the presence of risk factors. The overall prevalence of malnutrition in the study sample was 12 percent, which is consistent with previous estimates from U.S. emergency departments and about double the prevalence in community-dwelling adults (those who are not hospitalized and do not live in an assisted-living facility).

Poor oral health was found to have the largest impact on malnutrition. More than half of the study patients had some dental problems, and those patients were three times as likely to suffer from malnutrition as those without dental problems.

Collin Burks, a UNC medical student and the study’s lead author, said improving oral health in older adults is challenging but important. “Fixing dental problems not only makes it easier for these individuals to eat but also can improve their self-esteem, quality of life and overall health,” he said.

Learn more about this study in the *Journal of the American Geriatrics Society* (2017); doi.10.1111/jgs.14862.
Some people take an ambulance to the hospital for tooth pain, emergency department (ED) visits seem to be increasing, and ED problems are not limited to the U.S., according to research presented at the 2017 International Association for Dental Research (IADR) annual meeting in San Francisco in March and reported in an article in Dr. Biscupid. During poster presentations, researchers from the U.S. and the U.K. discussed trends in emergency department use for dental conditions. They investigated everything from ambulance use to periapical abscesses. Their findings showed that the number of Americans diagnosed with periapical abscesses in EDs has increased over time, according to research presented by Stacey Howes, a third-year dental student at the University of Iowa. After analyzing data from U.S. emergency departments, Howes and a colleague found that 526,000 people were diagnosed with periapical abscesses in 2013, up from 460,000 in 2008.

The vast majority of the people who were diagnosed with periapical abscesses in the ED were from low-income areas and about 40 percent of these patients lacked insurance, according to Howes, who noted that the condition only accounts for 0.4 percent of all ED visits in the U.S.

Researchers also found that using the emergency department for dental conditions is not strictly a U.S. problem. Research presented by Charlotte Currie, BDS, a clinical fellow in oral surgery at Newcastle University in the U.K., found that about 1 percent of all people admitted to one U.K. hospital after visiting the emergency department had a dental condition, with 10 percent of those visits from repeat patients.

People with dental problems don’t just visit the emergency department, sometimes they take an ambulance there, too, according to research presented by John Warren, DDS, a professor at the University of Iowa College of Dentistry and Dental Clinics. Using data from the U.S. National Hospital Ambulatory Medical Care survey, Dr. Warren and colleagues found that about 1 percent of people visiting the ED with tooth pain traveled there in an ambulance. Using public insurance and being 45 to 64 years old were the strongest predictors of using an ambulance for tooth pain.

Research Shows Trends for Dental Care in ED

New Nanocoating Can Eradicate Infection, Reduce Dental Impact Failure

A research team has developed and evaluated the effectiveness of a new nanocoating for dental implants to reduce the risk of peri-implantitis. The results of the team’s work are published in the journal Nanotoxicology.

In the study, the research team, comprised of scientists from the School of Biological Sciences, Peninsula Schools of Medicine and Dentistry and the School of Engineering at the University of Plymouth in the United Kingdom, created a new approach using a combination of silver, titanium oxide and hydroxyapatite nanocoatings.

The application of the combination to the surface of titanium alloy implants successfully inhibited bacterial growth and reduced the formation of bacterial biofilm on the surface of the implants by 97.5 percent.

The combination resulted in the effective eradication of infection and created a surface with antibiofilm properties that supported successful integration into surrounding bone and accelerated bone healing.

“In this cross-faculty study, we have identified the means to protect dental implants against the most common cause of their failure,” said Christopher Tredwin, BDS, PhD, head of Plymouth University Peninsula School of Dentistry. “The potential of our work for increased patient comfort and satisfaction, and reduced costs, is great and we look forward to translating our findings into clinical practice.”

The University of Plymouth was the first university in the U.K. to secure Research Council Funding in Nanoscience, and this project is the latest in a long line of projects investigating nanotechnology and human health.

Read more of this study in Nanotoxicology (2017); 11(3):327-338. dx.doi.org/10.1080/17435390.2017.1299890.
Diets in villages had the worst teeth. These patterns show that diet and gender interact to lead to oral health outcomes, something that has been often overlooked among transitioning populations. “The presumptions we have long held about oral health and the transition from a foraging to an agricultural diet are not as clear cut as we once thought,” Crittenden said.

Read more of this study in *PLoS One* (2017); doi.org/10.1371/journal.pone.0172197.

Oral Health Key to Understanding Humanity’s Past

Anthropologists have long held that Neolithic humans transitioning thousands of years ago from hunting and gathering to farm-based diets often suffered from tooth decay and gum disease, suggesting that humans are better off with a wild-food based diet.

However, a groundbreaking study published in April in the journal *PLoS One* challenges this belief about human health and the evolution of nutrition in the Stone Age. In the study, Alyssa Crittenden, Lincy assistant professor of anthropology at University of Nevada, Las Vegas, Peter Ungar, distinguished professor of anthropology at the University of Arkansas, and John Sorrentino, DMD, of New York, looked at the oral health of the current day Hadza tribe in Tanzania, Africa, which is changing from foraging for wild foods to an agricultural-based diet. The Hadza are some of the last known hunter-gatherers on earth.

The transition from hunting and gathering to agriculture is routinely associated with declines in oral health because of increased consumption of carbohydrates and growth of bacterial colonies in dental plaque linked to the development of tooth decay. However, the research team showed the oral health of the Hadza was greatly influenced by gender, residence and behavior. For instance, men living in the bush suffered greatly from tooth decay and other oral health issues, most likely because they smoke more tobacco and use their teeth as tools to make hunting instruments. However, Hadza men living in the village who have transitioned to an agricultural diet show a marked difference in oral health and have healthier teeth and gums. Conversely, women living on wild-food diets in the bush had the best oral health and women living on agricultural diets in villages had the worst teeth. These patterns show that diet and gender interact to lead to oral health outcomes, something that has been often overlooked among transitioning populations. “The presumptions we have long held about oral health and the transition from a foraging to an agricultural diet are not as clear cut as we once thought,” Crittenden said.

Read more of this study in *PLoS One* (2017); doi.org/10.1371/journal.pone.0172197.

New Strategy Could Fight Oral Thrush

An antimicrobial protein caused a dramatic reduction in the lesions associated with oral thrush in a preclinical study, according to research published in the *Proceedings of the National Academy of Sciences*. The study was conducted by microbiologists with McGovern Medical School at the University of Texas Health Science Center at Houston, including Danielle Garsin, PhD, an associate professor of microbiology and molecular genetics at McGovern Medical School.

“The long-term vision is to develop a new antifungal drug that takes a different approach to treating oral thrush,” Garsin said.

Garsin and her collaborators tested the effectiveness of the antimicrobial protein (EntV) in a mouse model of oral thrush. The animals who were treated with the protein had far fewer symptoms than the control animals. Because this particular type of fungus — *Candida albicans* — can develop resistance to medications over time, new antifungals will always be needed, according to the study. Traditional antifungals stop *Candida albicans* from growing but do not kill it, which leads to the rise of drug resistance. In contrast, the EntV protein appears to block the ability of *Candida albicans* to cause disease but does not affect its growth.

Carrie Graham, MS, the study’s lead author, said EntV blocks the biofilm development that allows the fungus to grow in a complex community on the tongue and walls of the mouth and increases resistance to traditional antifungal drugs.

Learn more about this study in the *Proceedings of the National Academy of Sciences* (2017); doi:10.1073/pnas.1620432114.
Link Confirmed Between Drug Use and Poor Dental Health

Dental patients with substance use disorders have more tooth decay and periodontal disease than the general population but are less likely to receive dental care, according to a review published online in the journal Addiction.

Drug use affects oral health through direct physiological routes such as dry mouth, an increased urge for snacking, clenching and grinding of teeth and chemical erosion from applying cocaine to teeth and gums. The lifestyle that often accompanies problematic drug use also affects oral health through high sugar diets, malnutrition, poor oral hygiene and lack of regular professional dental care. A tolerance to painkillers and anesthetics can further compromise dental care.

Oral health has significant consequences on quality of life and general health. In addition to functional and self-esteem issues that accompany bad teeth, the chronic inflammation and bacteraemia (bacteria in the blood) characteristic of poor oral health increases the incidence of coronary heart disease, stroke, diabetes and respiratory disease.

Dentists and doctors can take simple steps to improve this population’s oral health. Dentists should screen their patients for substance use, notice any advanced dental or periodontal disease inconsistent with patient age and consider referral to medical doctors for management. In patients with suspected substance use disorders, dentists should be aware of issues concerning treatment and consent when the patient is intoxicated and be alert to the possibility of resistance to painkillers.

Doctors and clinicians who care for people with substance use disorders should screen patients for oral diseases and arrange for dental care as needed, consider using sugar-free preparations when prescribing methadone and warn patients of the oral health risks associated with dry mouth and cravings for sweet foods.

These findings mirror the incidence of increased dental decay and periodontal disease in people with severe mental illness, eating disorders and people with alcohol use disorders, compared with the general population. The review combined the results of 28 studies from around the world, which collectively provided data on 4,086 dental patients with substance use disorder and 28,031 controls.

Learn more about this study in the journal Addiction (2017); 112 (5):765–779.

Impact of ACA Medicaid Expansion on Dental Visits

With 31 states and the District of Columbia expanding Medicaid eligibility under the Affordable Care Act (ACA), how many more low-income Americans sought dental care?

To answer this question, Astha Singhal, DMD, PhD, of the Boston University, Henry M. Goldman School of Dental Medicine, and co-authors compared 2010 and 2014 data collected by the Centers for Disease Control and Prevention.

The study, published in the journal Health Affairs, found that 1.5 million more low-income adults reported having a dental visit in 2014 than in 2010. Among states expanding Medicaid that offer dental benefits, the probability of dental visits increased among poor adults without dependent children, a group most likely to have gained coverage under expansion. However, this occurred in conjunction with a decline in dental visits among poor adults with dependent children, who had enjoyed similar benefits even before the ACA’s implementation. These results suggest that the addition of new low-income adults with pent-up dental needs may be straining the limited capacity of dental providers willing to treat low-income patients.

The study concludes that low-income adults face significant barriers to accessing dental care and state Medicaid policies can have an immense impact. Adult dental benefits under Medicaid are optional, but low-income adults in states that choose to provide these benefits have better access to dental care. Moreover, Medicaid expansion improved access to dental care among the target population, but more investments are needed to expand the dental care safety net.

Read more of this study in Health Affairs (2017); 36(4) 4723-732. doi: 10.1377/hlthaff.2016.0877.

Dental patients with substance use disorders have more tooth decay and periodontal disease than the general population but are less likely to receive dental care, according to a review published online in the journal Addiction.
stem cells to leave their normal state of dormancy, hop on the conveyor belt of the growing tooth and begin the process of transforming into mature tooth tissue.

In their study, Hu and colleagues discovered that integrins, proteins that sit in cell membranes and link the internal skeleton of cells to the larger protein scaffolding of the surrounding tissue, trigger a newly described signaling cascade within the stem cells that causes them to begin rapidly multiplying – a process called “proliferation.”

The authors say it’s not clear yet exactly what external signals are responsible for triggering the stem cells to proliferate, but they propose that the cells could be detecting that they have moved into a region where the back of the tooth needs to actively produce more cells based on changes in local tissue stiffness or the physical forces pulling and pushing on the cells.

Learn more about this study at Cell Stem Cell (2017); doi.org/10.1016/j.stem.2017.03.023.

Study Finds Dental Phobia Leads to More Decay, Tooth Loss

People who have a severe fear of the dentist are more likely to have tooth decay or missing teeth, according to a new study from King’s College London. The study, published in the British Dental Journal, compared the oral health of people with and without dental phobia.

Study results showed that people with dental phobia are more likely to have one or more decayed teeth, as well as missing teeth, and report that their quality of life is poor.

According to researchers, many people with dental phobia avoid seeing a dentist to address preventable oral conditions on a regular basis. And once a visit has been made, the phobic patient might also prefer a short-term solution, such as extraction, instead of a long-term care plan.

Anxiety about visiting the dentist is common and becomes a phobia when it has a marked impact on someone’s well-being, according to the study. Researchers analyzed data from the 2009 Adult Dental Health Survey, which found that 1,367 (344 men and 1,023 women) out of 10,900 participants were identified as phobic.

Lead author Ellie Heidari, BDS, of the King’s College London Dental Institute, said dental phobia can have a major impact on a person’s quality of life, including on their physiological, psychological, social and emotional well-being.

“Other research has shown that people with dental phobia express negative feelings such as sadness, tiredness, general anxiety and less vitality,” she said.

Read more about this study in the British Dental Journal 222, 595-604 (2017).
A peptide found in saliva may be the key to helping implants integrate faster with surrounding cells. Researchers found that oral cavity cells exposed to this specific peptide spread and adhered to titanium significantly better than those without the peptide. The researchers believe the peptide histatin 1 (Hst1) may one day have clinical applications that help with implant integration. Lead researcher Irene van Dijk, PhD, from the Academic Medical Center in Amsterdam, presented their findings at the recent 2017 International Association for Dental Research (IADR) meeting in San Francisco.

“Salivary peptide histatin 1 stimulates cells to attach and spread, which can be used to improve the integration of dental implants,” stated Dr. van Dijk in a DrBicuspid.com interview.

Since histatin 1 also promotes cell-to-cell adhesion, it enhances the barrier function of the tissues, thereby protecting the body from negative influences from outside.

In a previous study, Dr. van Dijk found that human oral cavity cells exposed to Hst1 quickly attached to a glass surface. Realizing that the peptide may be able to help with implant integration, the researchers tested how well the peptide helped the cells attach to titanium, which is commonly used for implants. After staining human, mouse and canine gingival epithelial cells and fibroblasts, researchers placed the cells on disks coated with titanium, added Hst1 to half of the disks and waited three hours. The researchers repeated the experiments at least three times with each of the cells. After just three hours, the cells exposed to Hst1 adhered to the disks two times more often than the cells without Hst1.

Although promising, research is still in early stages and researchers still have a limited understanding of how the process works. They also have yet to perform any in vivo studies. However, because the peptide appears to work well on canine cells, Dr. van Dijk has submitted a proposal to study Hst1 and implants in animals. She is also thinking about human applications, such as having an Hst1 implant coating or injection.

To learn more about this study, see the story “Saliva peptide may help implant integration” on drbicuspid.com.

Results presented from a prospective study of patients with irreversible cirrhosis demonstrates that severe periodontitis strongly predicts higher mortality in this population, after adjustments for various risk factors. The study was presented at The International Liver Congress 2017 in Amsterdam, The Netherlands.

Lead author Lea Ladegaard Grønkjaer, PhD, RN, of the Aarhus University Hospital, Denmark, said periodontitis may act as a persistent source of oral bacterial translocation, causing inflammation and increasing cirrhosis complications. “As it can be treated successfully, however, we hope that our findings motivate more trials on this subject,” Dr. Grønkjaer said.

The study assessed the oral health of 184 patients with cirrhosis. Severe periodontitis was defined by standard periodontology criteria and patients were clinically followed up with for one year on average. At study enrolment, 44 percent of patients had severe periodontitis. Nearly half of the included patients died during follow-up. The association of periodontitis with mortality was adjusted for age, gender, cirrhosis etiology, Child-Pugh score, Model of End-Stage Liver Disease score, smoker status, present alcohol use, comorbidity and nutritional risk score. The analyses demonstrated that severe periodontitis was associated with higher all-cause mortality. Mortality was mostly attributable to complications of cirrhosis.

Further studies are now required to determine if improving gum care can improve outcomes in patients with liver cirrhosis, said Professor Philip Newsome of the Centre for Liver Research at the University of Birmingham, United Kingdom.

To learn more about the research, see “Severe gum disease strongly predicts higher mortality in cirrhosis” on eurekalert.org.
When I pondered an issue of the Journal devoted to sports dentistry, I conjured soporific cookbook instructions on custom mouthguards and the treatment of trauma. However, undeterred I began to assemble an issue that not only presents what a team dentist should be, but highlights the unlimited opportunity to expand the paradigm of sports dentistry. Additionally, I wanted to address one of the most important and current issues in sports health care: concussions. At every level of participation, youth, high school, college and professional, implementation of concussion protocols is a high priority. As a side bar to this Stanford team physician and physical medicine specialist, Gerald Keane, MD, offers a personal commentary. He has spent more than 20 years on the sideline for Stanford football and was instrumental in engaging the academic community for the paper. Sports dentistry is not just the fabrication of mouthguards and treatment of trauma. The practitioner who volunteers with a local youth or school team is making a significant contribution to the community and advancing oral health by helping prevent dental trauma. However, some of our colleagues are inspired to expand the paradigm beyond direct care and attempt to make an impact in a broader way. I have selected personal stories of dentists who were motivated to expand the paradigm and create new ways to use their expertise to make a difference locally, nationally and even internationally. Their stories are inspiring and demonstrate their commitment to prevention and the health of their patients.
Finally, three submissions provide guidance, perspective and information on being a sports dentist. Anthony Breitbach, PhD, ATC, of Saint Louis University and Paul Nativi, DMD, a fellow of the Academy for Sports Dentistry, present a blueprint for sports dentists integrating with athletic trainers and the medical team. Dana McNew, DDS, faculty member at Texas A&M College of Dentistry and director of the sports dentistry program, discusses the changing demographics of the dental profession and how it is impacting sports dentistry now and into the future. “Treatment of Traumatic Dental Injuries,” a critical resource that every dentist should have in their office, is reprinted here with the permission of the American Association of Endodontics. It is a thorough set of guidelines to assist in the assessment, stabilization and treatment of most dental injuries.

I hope that you find the information on concussions interesting and topical; it is certainly an issue that will continue to shape how we view and participate in sports in the future. And possibly, you will make sports dentistry a part of your practice. You do not even have to work with a team; just making athletic mouthguards for the serious and casual athletes in your practice would make a difference.

For information on making high-quality laminate mouthguards I recommend Glidewell Dental’s online periodical Chairside Magazine, vol. 1, issue 1, “Preventing Orofacial Trauma With Modern Mouthguards,” by Ray Padilla, DDS, team dentist at the University of California, Los Angeles.

In conclusion, I would like to thank Wayne Nakamura, DDS, president of the Academy for Sports Dentistry, for his assistance in identifying the authors of many of the essays in this issue.
Current Concepts in Concussion: A Review

Jeremiah W. Ray, MD; Calvin Hwang, MD; Jennifer Baine, MD; Michael Fredericson, MD; and Gerald P. Keane, MD

In the United States, concussion in sports affects approximately 1.6 million to 3.8 million athletes a year.\textsuperscript{1-3} A concussion is also called a mild traumatic brain injury. It is important to note that although not all traumatic brain injuries are concussions, all concussions are mild traumatic brain injuries.\textsuperscript{4} The diagnosis and management of concussion in sports is an evolving field of medicine and not without controversy. Several governing bodies have provided position statements and high-quality reviews on the topic.\textsuperscript{4-11} The American Medical Society for Sports Medicine (AMSSM) defines a concussion as “a traumatically induced transient disturbance of brain function.”\textsuperscript{4} Various definitions for concussion exist and to date there is no standardized objective manner for diagnosis.

Mechanism of Concussion

A concussive event results from acceleration, deceleration or rotational forces transmitted to the brain, which do not necessitate direct trauma to the head.\textsuperscript{5} This mechanism induces diffuse axonal stretching, which mechanically disrupts cell membranes and causes an unregulated efflux of ions.\textsuperscript{12} It is this rapid depolarization that results in the release of myriad neurotransmitters,
predominately excitatory amino acids such as glutamate. The Na+/K+ ATP dependent pump activates in order to reestablish proper ion homeostasis, but quickly depletes intracellular glucose. The glucose depletion leads to mitochondrial dysfunction and inadequate oxidative metabolism, resulting in subsequent anaerobic metabolism and lactate accumulation. Subsequent cerebral hypoperfusion followed by hyperperfusion and edema can occur in severe cases of traumatic brain injury. There have been attempts to measure the force in newtons applied to the cranium to better identify high-risk events, however, accelerometers (in helmets and mouthpieces) for the assessment of concussion that report peak linear and rotational acceleration are not ready for clinical use and are an area of active research.

Signs and Symptoms of Concussion

A significant challenge in making the diagnosis of concussion is the widely variable time of symptom onset post-impact. Some athletes have symptoms immediately whereas other athletes may have gradual onset of symptoms over the course of 24 to 48 hours. It is possible that immediately post injury, the athlete may experience some degree of headache, head pressure, confusion, fogginess and/or difficulty concentrating. Memory difficulties, a vacant stare and repetitive questioning are common. Athletes may experience blurred vision, double vision, photophobia and balance and coordination difficulty. A loss of consciousness occurs in less than 10 percent of concussions, leaving the majority of concussions to occur without a loss of consciousness. In the setting of trauma, ensure the athlete is assessed in an appropriate fashion by promptly evaluating for medical emergencies. Advanced cardiac life support and advanced trauma life support algorithms should be followed. If there is any concern for an intracranial hemorrhage or cervical spine injury, the athlete should be immobilized and immediately transported to an emergency department for further evaluation. On the field, the most commonly utilized concussion symptom assessment tools are the Maddocks questions, the Standardized Assessment of Concussion (SAC) and the Balance Error Scoring System (BESS). The Sport Concussion Assessment Tool 3 (SCAT3) and the NFL Sideline Concussion Assessment Tool combine several of the previous scoring components into a single test. In the King-Devick Test, the athlete rapidly reads aloud irregularly spaced digits on three separate cards, testing both attention and fine ocular motor control. The emergence of eye tracking tools to assess fine motor control is an active area of research and utilized at some institutions in conjunction with other measurement tools such as the SCAT3. Vestibular/ocular motor screening (VOMS) measures vestibular function that can be impacted by a concussion. It is important to remember that the diagnosis of concussion is a clinical one. While many governing bodies differ on the exact definition of concussion, they all possess the same core characteristics that a concussion is the result of a transient alteration in brain function as the result of trauma. Clinical history and physical examination, in conjunction with the above-mentioned scoring systems, can lead the provider to the diagnosis of concussion.

Management

The longstanding cornerstone of concussion management has been rest, encompassing both physical and cognitive rest. More recently, the data supporting this stance has been called into question as this practice is supported by animal studies, two small observational studies in humans and biochemical/physiologic theory. The concept of mild physical noncontact physical activity to augment the recovery of a concussion was introduced in 2008 by Majerske et al., who advocate for prompt light cardiovascular activity, such as on a stationary bike. In 2016, a prospective multicenter trial out of Ontario, Canada, demonstrated that early return to noncontact activity within seven days of concussion halved the rate of postconcussive symptoms.
when re-examined on day 28.31 Although there is broad variation in return-to-play guidelines, the general rule is that a concussed athlete is to be held from activity until asymptomatic at which point he or she gradually reintroduces activity.33

In the majority of concussed athletes, balance disturbances normalize by about three days post injury.32,33 Approximately 90 percent of athletes experience symptom resolution by post injury days seven to 10.34 Acetaminophen is recommended for headache control if needed, as there is a theoretical risk of bleeding with aspirin and other nonsteroidal anti-inflammatories.4

The old adage of waking a concussed athlete on the first night of the concussion no longer stands. Observe a concussed athlete for four hours after injury and if he or she remains with a stable neurologic examination and without increasingly severe symptoms, then that athlete may be permitted to sleep without midsleep evaluations.35 Worsening symptoms or any focal neurologic deficits require immediate neurological imaging.33 There are well-validated clinical decision tools to help the provider make evidence-informed decisions on whether imaging is clinically indicated. In children, we recommend using the pediatric emergency care applied research network (PECARN)35 clinical decision rule. For adults, both the Canadian CT Head Rule and the New Orleans Criteria rules are well validated.16 It is important to mention that CT scans and magnetic resonance images of the brain do not diagnose concussion and are only clinically indicated when there is concern for intracranial hemorrhage (subdural hematoma, subarachnoid hemorrhage) or skull fracture. Magnetic resonance imaging (MRI), specifically, MRI diffusion tensor imaging (DTI), is a useful tool in concussion research but at this time has no clinical indication in the concussion setting.37,38

Unique Populations
Younger athletes have been shown to have longer recovery times when compared to older athletes.39,40 It is suggested that people with mood disorders,4 learning disabilities, ADD/ADHD41 or migraine headaches42 might be more susceptible to concussion as well as experience prolonged symptoms from a concussion. The concept of “second impact syndrome” is one of wide debate, with some arguing that this clinical entity does not exist.43 Second impact syndrome has also been termed “diffuse cerebral edema,” and is the result of sustaining a second concussive event prior to symptom resolution of the first event. The proposed mechanism is loss of autoregulation of cerebral blood supply, which results in vascular engorgement and subsequent catastrophic cerebral edema.44 Epidemiologically, it appears that some of the clinical presentations of second impact syndrome were intracranial hemorrhages that massively expanded and caused death.45 It is worth highlighting that the available body of literature clearly supports the fact that sustaining a second concussion shortly after an initial concussion prolongs the recovery and worsens symptom severity.46,47

Mouthguards
In 1890, mouthguards, or “gum shields,” were created by London dentist Woolf Krause in order to protect boxers from lip lacerations.48 The use of mouthguards has not been shown to prevent concussion in sports.49-53 In a study of New Zealand rugby players, mouthguards were associated with a nonstatistically significant increase in concussions.54 In a study of NHL players, mouthguards had a trend at reducing concussion, but this never met statistical significance.55 The “mythology”49 that mouthguards reduce concussions stems from two studies from the 1960s.56,57 The first article is not a scientific piece, but rather a list of five player anecdotes in which mouthguard use in the University of Notre Dame football team was attributed to improving the following cases: Meniere’s disease, cervical nerve root compression, “burners,” dizzy spells/low back pain, and, in one player, “repeated concussion.”956 The use of customized mandibular orthotics has not been shown to reduce concussions.58-61 Mouthguards do reduce the incidence of lip lacerations and dental injuries.54,62,63

Chronic Traumatic Encephalopathy and Retirement From Sports
There is a growing body of evidence that links repetitive head trauma with chronic traumatic encephalopathy (CTE).64,65 The neurobehavioral changes noted in contact sports was documented as early as the 1920s when boxers were deemed “punch drunk” and found to have increased rates of Parkinsonism, dysthria and psychiatric disturbances.66 There is growing evidence to suggest that the “sloshing phenomenon,”67 in which multiple subconcussive episodes
REFERENCES


The Life of a Team Physician

Gerald P. Keane, MD

As I look back on my recent 25th year as a physician with Stanford University sports, what keeps me involved remains the same as from the very beginning — the people. Sports in general has always been a great passion for me and that has never waned. But the opportunity to work with students who share that same passion and help them reach their goals is the greatest reward for those of us who take on this responsibility.

The science of sports medicine — like science in general — continues to evolve. Team physicians are required to “keep up” or be left behind. The applications of better mouth protection, nutrition, weight training and many other areas — including concussion science — have all evolved. Much of this science, including sports dentistry, has begun to impact the entire spectrum of athletics as new knowledge in one field spreads to other sports as well. For example, we have gone from the ability to develop better mouth protection for the athletes to using mouthguard sensors in measuring forces associated with the risk of concussion.

One of the best pieces of advice I was ever given in my role as team physician was the need to always be that — the team physician, not the team’s biggest fan. That’s not always so easy but it’s essential. We are there first to be the voice of proper care and safety, and I’ve learned that is what the athletes ultimately want from us. They have other fans, but they need to know we have their health as our greatest priority. Once accomplished, we can cheer for the team as well. For those looking to become involved in team care at any level, that’s my preeminent recommendation.

For whatever reason, the sideline during a game remains as exciting and enjoyable for me as it was when I first began. I believe strongly that much of that evolves from the opportunity to be involved in something bigger and to be in some small way a part of the spirit unique to a sports team. For those of you considering such a role, I recommend it without reservation and hope you find the joy that it’s brought to my career in yours as well.

The Author, Gerald P. Keane, MD, can be reached at keanegerald@yahoo.com.
Special Smiles: Sports Dentistry and the Special Needs Athlete

H. Barry Waldman, DDS, MPH, PhD; Steven P. Perlman, DDS, MScD, DHL (Hon); Luc Marks DDS, MSc, PhD; Thaddeus J. Arnold, MPH; and Allen Wong, DDS

ABSTRACT There is a need to expand dental services to underserved populations, such as athletes with intellectual and developmental disabilities. This review introduces dentists to this need by sharing the direction taken by the Special Smiles program of Special Olympics and addressing the need to educate special needs athletes on prevention and care of sports-related mouth injuries.

Mouthguards for boxers, basketball, football, hockey players and all athletes competing in contact sports, flippers for hockey players and wired jaws for injured “combatants” in any number of physical sports are some of the usual areas of concern when we use the phrase “sports dentistry.” The need is to introduce the idea that sports can expand programs to provide an awareness of the need for dental services. That’s the approach Special Olympics Special Smiles introduced 20 years ago in the effort to increase oral health services for individuals with intellectual and developmental disabilities.

Special Olympics Special Olympics is the world’s largest sports organization for children and adults with intellectual disabilities, providing year-round training and...
competitions to more than 4.2 million athletes in 170 countries. Local, national and regional Special Olympics competitions are held every day, all around the world, adding up to more than 70,000 events a year. These competitions include the Special Olympics World Games, which are held every two years and alternate between summer and winter games.1

In 1962, Eunice Kennedy Shriver started a day camp for children with intellectual disabilities at her home in Potomac, Maryland. Camp Shriver became an annual event, and the Kennedy Foundation gave grants to universities, recreation departments and community centers to hold similar camps. The first International Special Olympics Summer Games were held in 1968 at Soldier Field in Chicago. Nearly 1,500 athletes from the U.S. and Canada took part in the one-day event.1

Healthy Athletes

Special Olympics Healthy Athletes is a program that offers health services and information to athletes. To date, the program has provided more than 1.7 million free health examinations, leading the Special Olympics to become the largest global public health organization dedicated to serving people with intellectual disabilities.1 Healthy Athletes currently offers health screenings in seven areas: Fit Feet (podiatry), FUNfitness (physical therapy), Health Promotion (better health and well-being), Healthy Hearing (audiology), MedFest (sports physical exam), Opening Eyes (vision) and Special Smiles (dentistry). Screenings educate athletes on health and healthy choices and identify problems that may need additional follow-up. In addition to providing free health exams for Special Olympics athletes, Healthy Athletes educates health care professionals and students about the health needs of people with intellectual disabilities. In 2014, 16,489 health care professionals and student volunteers received training at Healthy Athletes screenings. Additionally, 125 health care professionals were trained to be clinical directors. After receiving classroom and hands-on training, clinical directors were responsible for conducting Healthy Athletes events in their local Special Olympics program.1

Dental professionals have long encouraged mouthguard use and dental consultation in organized sports.

Special Smiles

The Healthy Athletes program, initiated in 1994, started with concerns for the oral health of athletes. Special Smiles provides comprehensive oral health care information, including offering dental screenings and instructions on oral hygiene techniques to participating Special Olympics athletes. This also includes dispensing preventive supplies, such as toothpaste, toothbrushes and floss. Athletes who require follow-up dental services are referred to local oral health professionals. The mission was established and the following goals were defined:

- Increase public and professional awareness of the oral health problems faced by people with disabilities.
- Develop and implement dental education programs for dental professionals, dental schools, community residences, institutional facilities and Special Olympics athletes.
- Serve as advocates on standards for care and equality of care issues.
- In conjunction with the medical advisory committee to Special Olympics, strive to ensure that people with disabilities and their care providers have access to the most current information on medical issues.
- Through contact with patients, community residences, institutional facilities and families, market Special Olympics as a recreation program and reach populations that are difficult to access (particularly persons with profound intellectual disabilities or severe physical disabilities).
- Establish a sports injury prevention program.
- Establish nutritional guidelines and programs for Special Olympics athletes.
- Help develop adaptive devices and orofacial sports programs for quadriplegics.
- Develop a program to help dental professionals recognize and report suspected physical and sexual abuse in patients with special needs.
- Collect data on the oral health needs of people with disabilities that can be used for health care reform.

In the second year of the program, an important collaborative arrangement was developed with the Centers for Disease Control and Prevention. The CDC has significant interest in the effects of secondary conditions, i.e., how an individual’s disabilities affect the quality of life. Special Olympics’ database of several million athletes has the potential to provide this vital information to the CDC and other governmental agencies. A mechanism was needed that would
In 2007–2012 in Europe and Asia, dental injuries ranged from 6.6 percent of athletes 6–19 years of age to 19.5 percent of athletes 40–49 years of age and then decreased to 6.6 percent of athletes 60 years of age and older; 7.7 percent of female and 8.2 percent of male athletes were reported to have dental injuries (TABLES 3).

For both studies, participants belong to a supported and higher functioning stratum of the population with intellectual disabilities (i.e., participating in Special Olympics games). This means that the results of the study can only be related to this group and are not necessarily representative of the total population of individuals with intellectual or other disabilities. The reported presence of dental injury following the strict CDC protocol considered only the maxillary and mandibular central and lateral incisors in the permanent dentition that were either absent, fractured or discolored indication.

Dental professionals have long encouraged mouthguard use and dental consultation in organized sports. The Healthy People 2000 national goals for health promotion called for extending requirements for mouthguard protection for all sporting and recreation events that enable Special Olympics to collect uniform screening data. In the course of a year and a half, a screening program and manual were developed so that all examiners could be trained and tested on visual assessment, criteria and calibration measurements to obtain consistent results.

**Oral Injuries and Sports Prevention Program**

Nearly 50 percent of children will have some type of injury to a tooth during childhood, many of which are preventable. Mouth injuries are also common. Tooth and mouth injuries often occur after a fall, sports injury or fight.\(^1\) While dental trauma is most common in younger people, accounting for 17 percent of injuries to the body in those aged 0–6 years, it represents an average of 5 percent across all ages.\(^1\) Screening for oral trauma among Special Olympic athletes (prior to their participation in Special Olympics sports activities) revealed that:

- In 2007–2012 in Europe and Asia, 13 percent were reported to have dental injuries. The average age of the athletes was 28.5 years.\(^4\)
- In 2007–2014, dental injuries were reported for 8.2 percent of athletes from all areas, ranging from 4.4 percent of athletes from Africa to 19.5 percent of athletes from the Middle East and North Africa. The percentage of screened athletes with dental injuries ranged from 6.6 percent of younger athletes 6–19 years to 10.9 percent of athletes 40–49 years of age and then decreased to 6.6 percent of athletes 60 years and older; 7.7 percent of female and 8.2 percent of male athletes were reported to have dental injuries (TABLES 3).

**TABLE 1**

Percent and Sample Size of Dental Injury Present in Special Olympics Athletes by Region

<table>
<thead>
<tr>
<th>Region</th>
<th>Global</th>
<th>Africa</th>
<th>Asia Pacific</th>
<th>East Asia</th>
<th>Europe Eurasia</th>
<th>Latin America</th>
<th>Middle East North Africa</th>
<th>North America</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dental injury</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>No</td>
<td>91.8</td>
<td>115,606</td>
<td>95.6</td>
<td>9,140</td>
<td>92.9</td>
<td>7,714</td>
<td>86.6</td>
<td>7,163</td>
</tr>
<tr>
<td>Yes</td>
<td>8.2</td>
<td>10,286</td>
<td>4.4</td>
<td>417</td>
<td>7.2</td>
<td>134</td>
<td>13.4</td>
<td>7.1</td>
</tr>
</tbody>
</table>

**TABLE 2**

Percent and Sample Size of Dental Injury Present in Special Olympics Athletes by Age

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Absent</th>
<th>%</th>
<th>Fractured</th>
<th>%</th>
<th>Discolored</th>
<th>%</th>
<th>n</th>
<th>Fractured</th>
<th>%</th>
<th>Discolored</th>
<th>%</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ages 8–19</td>
<td>93.4</td>
<td>46,291</td>
<td>91.1</td>
<td>30,961</td>
<td>90.7</td>
<td>20,385</td>
<td>89.1</td>
<td>10,959</td>
<td>92.5</td>
<td>5,543</td>
<td>93.4</td>
<td>1,467</td>
</tr>
<tr>
<td>Ages 20–29</td>
<td>6.61</td>
<td>3,276</td>
<td>8.9</td>
<td>3,023</td>
<td>9.3</td>
<td>2,091</td>
<td>10.9</td>
<td>1,346</td>
<td>7.46</td>
<td>447</td>
<td>6.56</td>
<td>103</td>
</tr>
<tr>
<td>Ages 30–39</td>
<td>92.9</td>
<td>1,346</td>
<td>7.1</td>
<td>1,959</td>
<td>7.1</td>
<td>447</td>
<td>6.5</td>
<td>103</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TABLE 3**

Percent and Sample Size of Dental Injury Present in Special Olympics Athletes by Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Male</th>
<th>Female</th>
<th>Absent</th>
<th>%</th>
<th>Fractured</th>
<th>%</th>
<th>Discolored</th>
<th>%</th>
<th>n</th>
<th>Fractured</th>
<th>%</th>
<th>Discolored</th>
<th>%</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>92.3</td>
<td>44,150</td>
<td>91.6</td>
<td>70,817</td>
<td>92.3</td>
<td>44,150</td>
<td>91.6</td>
<td>70,817</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>7.7</td>
<td>3,276</td>
<td>8.5</td>
<td>6,534</td>
<td>7.7</td>
<td>3,276</td>
<td>8.5</td>
<td>6,534</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Age distribution differences between regions make it important to control for age when determining regional differences in the prevalence of dental injury. Therefore, the data were analyzed using a factorial logistic regression model with dental injury as the dependent variable and age group, region and gender as the independent variables. The overall model was significant (Wald chi-square = 1,346, p < .0001). Each independent variable was significant in the model, and the individual likelihood estimates show that the 30–39 and 40–49 age groups were significantly more likely than the 8–19 age group to have a dental injury (Wald chi-square = 25.4, p < .0001). Males were significantly more likely than females to have dental injury after controlling for age (Wald chi-square = 10.4, p = .002, respectively) when controlling for region. Males were significantly more likely than females to have dental injury after controlling for age and region (Wald chi-square = 21.7, p < .0001). Additionally, in ranking the odds ratios of having a dental injury after controlling for age were as follows: Middle East North Africa versus Africa (AF) = 5.2, Europe Eurasia versus AF = 3.0, Asia Pacific versus AF = 1.6, North America versus AF = 1.6, Latin America versus AF = 1.5 and East Asia versus AF = 1.0. This differs slightly from the overall rate rankings of each region, with Asia Pacific having slightly higher odds of dental injury than North America even though the rate of dental injury is lower in Asia Pacific.
carry the risk of participants experiencing orofacial injury. A review of the medical and dental literature unequivocally shows that use of athletic mouthguards during organized sports can significantly prevent orofacial injuries. Repeated studies substantiate that the number and severity of injuries are significantly reduced by the use of mouth protectors. Most studies of sports-related injuries have focused on male athletes, noting that females appeared to be less willing than males to consider wearing mouthguards.

Although extensive documentation exists, many dental professionals and coaches have not embraced mouthguard use during contact sports. Young athletes at the elementary, high school and college level now are mandated to wear mouthguards for competitive sports. This same criterion must be included in sports programs for people with disabilities. It was this philosophy that led to the implementation of a mouthguard program for athletes competing in Special Olympics. However, there must be equal standards and equality in the care. Given that Special Olympics Special Smiles was well established and respected by the administration and the coaches of Special Olympics International, it was easy to implement the program into an event.

Several factors had to be addressed to be able to provide the best available mouthguard to a large athletic population that ranged in age from 8 to 80 — a mouthguard that could be fabricated by a dental professional volunteer who ranged in skill and experience, from a first-year dental or hygiene student to experienced professionals, and a mouthguard that could be tolerated by athletes with mild to moderate intellectual disability. All of these factors had to be addressed along with one more important consideration — providing a mouthguard that could be fashioned in field conditions.

The boil-and-bite mouthguard is made of a thermoplastic material that becomes soft when immersed in boiling water. When it is slightly cooled, it is then placed in the mouth and immediately molded to the dentition. If the athlete participates in contact sports or a sport in which a mouthguard would be beneficial in reducing a sports-related injury, he or she then has the opportunity of being fitted with a mouthguard by the dental team. Boil-and-bite mouthguards can be purchased in any sporting goods store, toy store or large retail operation. They are typically less than $20. Parents and children purchase them by the millions because the mouthguards are mandatory in certain youth programs, including Pop Warner football and youth hockey.

Stock mouthguards are the least expensive, least retentive and hardest to fit. They also offer the least protection of any mouthguard. Custom-fabricated mouthguards are the most expensive, most comfortable, most retentive and offer the most protection of any mouthguard. They are, however, impossible to produce for a program with the size and logistics of Special Olympics Special Smiles. After years of using various types of “boil-and-bite” mouthguards, Shock Doctor makes the ones currently in use in Special Smiles. Gel Max is constructed with a multilayer composition that includes a special nonlatex shock frame and gel lining. Once the lining is softened in hot water, the athlete is able to make a very accurate impression simply by biting. The gel liner provides maximum comfort and fit and feels good on the lips and gums. The nonlatex shock frame provides the best possible protection against oral lacerations, tooth avulsion and jaw dislocations for athletes in all sports.

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expand this effort. “The number of dental emergency room visits in the U.S. increased from 1.1 million in 2000 to 2.1 million in 2010, according to the National Hospital Ambulatory Medical Care Survey. Based on various estimates on the average cost of a dental ER visit, it cost the health care system anywhere from $867 million to $2.1 billion to treat dental conditions in hospital emergency rooms in 2010.”

Special Olympics Special Smiles Screening Is a First Step

The screenings, dental education and, when necessary, referrals of Special Olympians by thousands of volunteer dental professionals are often the initial steps for the athletes and their families in developing an awareness of the oral health needs of participants. The referrals to private dentists for care offer the opportunities for practitioners to expand their patient rosters with individuals with disabilities who are members of families already under their care and new families with individuals with disabilities who have been screened and referred by the Special Smiles programs.

However, there are difficulties. It was not until 2004 that the U.S. Commission on Dental Accreditation adopted a new standard (with implementation in 2006) stating, “Graduates (from U.S. dental schools) must be competent in assessing the treatment needs of patients with special needs.” The reality is that while many dentists currently are providing services to individuals with disabilities, there are barriers for current practitioners to provide care to individuals with special needs. For instance, since 1969, an increasing number of U.S. state dental boards require dentists to complete a defined number of continuing education hours as a precondition for relicensure. A review of continuing education courses in large dental conventions showed the provision of few if any courses for care of individuals with special needs. For example, attaining mastership in the Academy of General Dentistry, a professional designation with the academy that reflects a general dentist’s ongoing commitment to quality care through continuing education, requires a minimum number of hours in a range of subjects, including special patient care. Unfortunately, a limited number of course presentations are available to meet these requirements.19

Potential Expansion

The ongoing Special Smiles screening and referral program heightens the awareness of the extent of the oral health needs of individuals with intellectual disabilities and offers an opportunity to expand the population seeking dental care. Yes, there are difficulties involved, including limited dental school experiences and continuing education programs, economic factors and the possible patient management challenges. Nevertheless, many private practitioners do provide care for individuals with special needs. The need is to identify those individuals who lack needed services (many of whom are members of families already under the care of dentists) and incorporate them in the general roster of patients in community dental practices. Special Olympics Special Smiles does provide the initial steps in terms of exciting dentists and dental hygienists to volunteer at events and then expand their practices to provide the needed care.

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THE CORRESPONDING AUTHOR, H. Barry Waldman, DDS, MPH, PhD, can be reached at H.Waldman@stonybrookmedicine.edu.
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Save Our Smiles

Ronald E. Cox, DDS

How does a dentist plan for his retirement from a profession that he loves? How does he give back to the community that has supported him and his family for 44 years? How does he stay involved in sports that have been part of his entire life? Very simple! Start the Save Our Smiles Sports Guard Foundation to provide mouthguards for any school-age athlete in Sonoma, Lake and Mendocino counties.

I have been involved with sports my whole life, first as a multisport athlete, then as a father/coach/volunteer and now as a retired dentist. I grew up in the 1940s through '60s where body contact seemed mild compared to our sports today. There was always the risk of injury, but it almost seemed an afterthought. Play hard, get a little nicked up, suit up the next day and start again with whatever sport was in season. No problem. Safety equipment was proportional to the risks — minimal by today’s standards. That was my reference, and the level of my concern. This all changed in 1990. Up until that time, I had been making mouth protection for my patients who played football. These were guys; they play rough. Mouth protection was required; it was a no-brainer. But girls' soccer — who needs mouth protection for that sport? My daughter Melissa was a sophomore on her high school soccer team. I can remember that day as vividly as 26 years ago. Her face collided with the back of her opponent’s head. As bad as it could have been, I consider root canals on her two upper centrals a gift. My burden is the fact that it was not an accident, because it was preventable. The collision was the assumed risk, not the major trauma to permanent teeth that she would have to live with for the rest of her life. And even though she wore mouth protection from that point on, it did not sink in that all sports were becoming far more physical and the awareness of the need for mouth protection was not keeping up. All sports were becoming contact sports, not just football, ice hockey and lacrosse where mouth protection is required. Today’s athletes are bigger, stronger, faster and better trained. The risks involved in all sports are growing and the need to emphasize areas of prevention and good science is needed.

Fast-forward to spring 2014, and again it was on a soccer pitch. My son Michael and I coach a U19 women’s competitive soccer team. At a tournament in San Francisco, our star forward had been outplaying her defender to the point that the defender let frustration get the best of her and threw a punch striking our forward in the mouth. In that instance, I relived Melissa’s 1990 trauma. Fortunately, just a split lip, but I finally had had enough. No more just watching and talking about my concerns for safety and prevention. No more knowing better...
with no follow-up. Action was needed! That night I sent an email to all the athletes and parents, volunteering to make free mouth protection for everyone. Six responded — not the 100 percent that I had expected, but it was at least a start. However, it was from that point forward that I would commit 100 percent of my efforts to making a difference. I knew that my retirement from dentistry was planned for the end of 2014. What does any professional with 50 years of experience do with their knowledge? I decided to “donate” that expertise to my community. I could combine my love of dentistry with my love of sports and do something meaningful and unique for the public good.

I envisioned a program to provide custom-made, properly fitted dual laminate sports guards (SGs) for any school-age athlete in Sonoma, Lake and Mendocino counties, regardless of their ability to pay. These counties encompass my local Redwood Empire Dental Society (REDS). It sounded like a daunting undertaking, but that was what I would do.

I needed to develop an action plan and commit a ton of energy. My vision and mission statement were done. Daydreaming endless possibilities was fun, but developing an action plan is a whole other story. That takes work and lots of it. My research led me to the Academy for Sports Dentistry (ASD), which I joined in October 2014. This was the door I had to pass through if I was going to find and learn from what other professionals were doing. I went to the ASD 2016 annual meeting in Baltimore, took the team dentist course and was introduced to a ton of like-minded professionals. In 2015, I was now an ASD member and I was retired (but kept my dental license, insurance, etc.). I was loaded with enthusiasm and “rookie knowledge.” But what do I do and where do I go? The obvious answer was to approach the high school coach of the women’s soccer team where Michael is the assistant coach. This particular program had been ranked the No. 1 women’s soccer team in the nation the previous three years and I felt it was the perfect first step to add credibility for the launch of my SG program. The coach gave me the green light, with the provision that I would need to include all junior varsity and varsity athletes. Overwhelmed, but undaunted, I made my first presentation to the parents to explain the process and value of mouth protection. Here I was committing myself to 42 SGs with no supplies, no equipment and no idea how I was going to doing it. As they say — ignorance is bliss!

I had stepped into the deep water with Michael’s team using the dual laminate SG fabrication system. I struggled with fabrication and fit issues and experienced some success by using the trial-and-error method. I wish I could say acceptance was 100 percent. I did make 42 SGs, and most athletes did wear them, but enthusiasm dropped off as the season progressed. Eventually I was down to 10 percent. I felt like a boat with no wind to fill my sails. It did not feel good that the SGs were not being used. What I needed now was help. Enter Ray Padilla, DDS. From my research, I knew he was the team dentist at the University of California, Los Angeles, and a major contributor to the science of sports medicine. In January 2016, I gave his office a call to say I would be in Southern California and could we meet. As I had expected, Ray was kind enough to invite me to his office and show me what he had been doing and answer my thousand questions. He condensed his 35 plus years of experience, and approximately 500 plus SGs per year, into a few easy to understand concepts. First and foremost, the key to SG acceptance is making them comfortable to wear. Ray’s design ideas have formed the basis for the SGs that I now fabricate. After 50 years in dentistry, I had found myself in uncharted waters. Thanks Ray for being my compass and filling my sails with new enthusiasm. You pointed my boat in the right direction.

Two soccer teams was a great start, but there is a big world out there and I needed to spread the word. I also knew that the mission statement had such a broad scope that it would have to be flexible and organic to be able to adjust as it experienced growing pains. I retired in 2015, but I was feeling like a brand-new dental graduate opening up his first private practice. I set my first-year goal to fabricate 200 sports guards. My obvious first step was to approach REDS and let them know of my plan. There were two important factors to consider. First, the emphasis needed to be that Save Our Smiles (SOS) was our local dental profession’s public service program, not just one individual. Second, in order to be able to solicit donations and qualify for discounts on dental materials and equipment,

What does any professional with 50 years of experience do with their knowledge? I decided to “donate” that expertise to my community.
You need nonprofit status. With the support of the REDS board, I was made chair of the sports guard committee under the umbrella of the REDS Care Fund administered by a nonprofit.

With the credibility as a nonprofit, I explored more avenues to spread the word. I wrote an article for the REDS newsletter, spoke to our local hygiene association, Rotary, Soroptimists, religious men’s dinner clubs and to the local Certified Athletic Trainers Association. I presented table clinics at a REDS C.E. program and at back-to-ice-hockey and back-to-lacrosse night. I generally found a way to inject the program into most casual conversations that I had with friends and strangers. I was amazed when speaking to people how many good new ideas and connections came from those conversations. The other bonus of spending all that time talking was I was able to make sports guards for a variety of athletes I would not have ordinarily met — CYO basketball, lacrosse, flag and Pop Warner football, ice hockey, martial arts, boxing, high school football and basketball, Little League baseball and high school softball. I just needed to show people the product and let them experience the benefit of a comfortable, properly fitted piece of sports safety equipment!

Looking back on SOS’s first year, I felt exposing the community to affordable, properly fitted, custom-made dual laminate SGs met nearly all the goals I had set both as a mission statement and the number of SGs fabricated. I decided to form my own nonprofit 501(c)(3). It took a fair amount of time, but with the help of a simple cookbook given to me by a CPA friend who specializes in nonprofits, I was able to navigate through the state and federal paperwork. The official name of the corporation is Save Our Smiles Sports Guard Foundation (SOS). The benefit is not having to go through a third party to deposit and withdraw funds and no large administration fees are charged to hold our money. I am waiting to see how many of the 175 SGs (missed my goal by just a little) that I have made this first year will be wanting new ones in 2017. It appears at this point that there is more interest from the sports where mouth protection is a required piece of safety equipment — ice hockey, lacrosse and football. My challenge will be to develop a strategy to open the door to basketball, soccer, baseball/softball, wrestling, water polo, etc. I feel good for the future; my goal will be to increase from 200 to 500 SGs per year. For any of you who remember television in the 1950s and ’60s, Ron Cox is now “Have gun (impression material), will travel.”

When I reach that level, I visualize that SOS will need a standalone nonprofit dental lab, one certified team dentist, a network of licensed dentists a team of young lab apprentices and a facility where all athletes could come for their SGs. It definitely would be a lot of work, but the effect on the awareness for sports guards and oral health safety would be outstanding.

**The Author**, Ronald E. Cox, DDS, can be reached at reclcox@comcast.net.

I just needed to show people the product and let them experience the benefit of a comfortable, properly fitted piece of sports safety equipment!
My Interest in Sports Dentistry
Jeffrey Lloyd, DDS

My interest in sports dentistry began many years ago when a colleague of mine suggested that I get involved. I started out covering a local high school varsity football team that my daughter's boyfriend was playing on. My daughter was one of the cheerleaders, so getting the support from the coach, trainer and the booster club wasn't too hard to do. In order to protect the players from injury, more than what their “boil-and-bite” mouthguards were offering them, I offered to make them custom pressure-laminated mouthguards that would actually stay in their mouths and fit like a glove. We used the colors of the school and had the school's logo laminated in between the layers. They worked great!

I took impressions of everyone on the team in the snack bar next to the football field one day when the temperature must have been well over 100 degrees. That was a challenge! The players sat on folding chairs and, one by one, I took their impressions, wrapped them in wet paper towels and placed them in sandwich bags to be poured later at my office. That's how I started out. Incidentally, after high school, my daughter's boyfriend went on to play for Sacramento State on a full four-year scholarship and eventually married my daughter. They have two little boys, who'll probably follow in daddy's footsteps. I'll be making mouthguards for them one of these days.

My colleague friend soon decided that I was ready to help him cover games at the “professional” level where he was involved. He would take me with him to games, introduce me to the trainer, get me acclimated on where to park, where the trainers and medical rooms were, where he kept the field kit that had all of his dental supplies, and all of the people I needed to know. Once that was done, I was ready to cover some games on my own. I must have passed the test, because pretty soon I was covering lots of games. I didn't mind, especially because I would take my wife with me and we considered it a “date night.” That went on for well over 10 years. It was kind of nice being at a professional game. I didn't know much about ice hockey in the beginning but soon learned all that I needed to. If you want to really be “involved” as a team dentist, pick an ice hockey team and be alert during the game. Injuries happen all the time! You're going to get lots of practice treating dental trauma.

At the same time I was covering games for my friend, a new soccer team made its entrance into the MLS and needed a team dentist. I got the offer to be that dentist. The team was the Chivas, USA. They were in existence for 10 years before the new owners disbanded the team and took a few years off. The process of rebranding the team is well on its way as the Los Angeles Football Club, and the owners are building a new stadium right where the old L.A. Sports Arena used to be, next to the L.A. Coliseum. I don’t know if I will be asked to be the team dentist again, so we'll just have to wait and see what happens.
During the time this was going on, my friend convinced me to join a dental organization called the Academy for Sports Dentistry. It holds an annual symposium, and once I went to my first one, I was hooked. I have been back every year since. Everyone was so friendly and willing to share their knowledge and advice that I wanted to be a part of their membership. Would it surprise you to hear that I was soon put on a committee and began working? Or would it surprise you to hear that I was nominated to serve as a director on the board, then went on to the executive committee and ultimately was the president in 2013? Well, all those things did happen. And I’m glad they did, because it paved the way for me to do even greater things that I never dreamed would happen.

The night before I was installed as president, my wife and I noticed a new face at the president’s banquet, sitting alone. So we decided to go over and introduce ourselves. He was new to our meeting and was there for his first time. Nobody had noticed he was even there. He said he was the team dentist for a soccer team in his country of Brazil, a team that had its own soccer stadium. The three of us sat and talked the rest of the night. The week after I got home from that meeting, I received the nicest gift from him with all kinds of goodies from his soccer club. We’re the best of friends, and he was instrumental in having me come to Brazil to speak at their First International Sports Dentistry Meeting in 2015. Wow, what an experience that was! I loved it. I was there for five days and lectured on four different sports dentistry topics. I made tons of new friends and would love to go back and speak again one of these days. The coolest part was getting to fly first class to and from Brazil, all expenses paid, thanks to the academy my friend belonged to, and all because my wife and I took the time to talk with this guy that one night.

A similar story happened to me the year before, when I was invited to go to Japan and speak at their annual symposium. Another experience I’ll never forget. This was even more special for me because 44 years ago I served a two-year church mission in Japan and know how to speak Japanese. I don’t know too many dental words, so one of my dental student’s wife who is Japanese translated my presentation, which I was able to deliver to an audience of more than 500 in Osaka, Japan, all in Japanese. Guess what? They flew me there first class too! I’m thinking this international lecturing thing is right up my alley!

Being involved in this worldwide effort has been a tremendous source of gratification for me, working with colleagues whom I now call my friends.

While in Japan, I made some important contacts that ultimately led me organizing the First International Workshop on Sports Dentistry, which was held July 26–27, 2016, in Honolulu. I invited 16 sports dentists from Japan, Korea, Australia and the U.S. to come and share their findings of current scientific, unbiased, evidence-based research about the following four focus topics:

- Mouthguards (design/materials/fabrication methods) and which sports players are recommended to wear them.
- Mouthguards and impact force.
- Mouthguards and performance enhancement.
- The effect sports drinks/nutrition have on athletes.

The 16 of us were divided into four groups to do a systematic review of our assigned topic. We spent several months before the workshop looking online to see what we could find about our topics. Duplicate articles had to be deleted. Anything that didn’t fit in to our inclusion criteria had to be deleted. In short, lots of work. Once we all got to Hawaii, we sat down with our individual groups and further refined our work to focus only on the top three to four questions we felt were the most important and what the literature had to say about those questions. At the conclusion of the workshop, we shared our findings with each other. We hope to publish our work in the near future. Look for it in one of the sports dentistry journals.

Being involved in this worldwide effort has been a tremendous source of gratification for me, working with colleagues whom I now call my friends. Who would have thought that the dentist who started out making mouthguards and being the team dentist for a local high school football team would be rubbing shoulders with colleagues from around the world? Hawaii was just the beginning of what will probably be an ongoing effort. We have lots of work still to do before being able to write consensus statements about any of our topics. I hope that further scientific, unbiased, evidence-based research will allow us to formulate consensus statements and present them to you from a unified international collective effort.

My hope is to inspire you to find a passion like I did, that you can take interest in and follow steps similar to the ones I’ve shared with you to make a difference in our profession and the communities we serve. Maybe those steps might be volunteering for a hometown team, taking C.E., or maybe like me, reaching out for greater impact, not only in your community, but in the world at large.

THE AUTHOR, Jeffrey Lloyd, DDS, can be reached at lloyddc52@gmail.com.
Beyond the Mouthguard: Sports Dentistry’s Role in Nutrition, Prevention and Social Advocacy

Greg Chang, DMD

Growing up with a football-loving surgeon as a father and a mother who taught cooking classes prepared me well for a life involved with food, health and sports — aspects I wanted to share with my patients.

Unfortunately, my family dental practice began to see many overweight children with associated dental caries. It was obvious that these parents and children lacked good nutrition knowledge and were confused about what to eat to maintain good oral health and overall wellness. Childhood obesity shares many of the same risk factors as dental caries. We see our patients on a regular preventive basis that makes us well positioned to deliver the message of healthy eating. This is especially true for student athletes whose food choices fuel their performance.¹

Using my dental health training, the culinary knowledge I learned from around the world and my involvement in professional football, I cooked up a health program called SuperChefs. Made up of dentists, doctors, chefs, educators, sports professionals and entertainment experts, SuperChefs has partnerships with Fortune 500 companies, government organizations, universities and leading advocacy groups to stir up fun in the kitchen for kids and to help build a healthier America.

I got my start in sports dentistry when the BC Lions, a Canadian Football League club, happened to relocate its training center near my practice. In the more than 23 years I have been with the team, several Grey Cup championships have been won, memorable pictures of great athletes and coaches adorn my operatory walls, and I even have bling to decorate my ring finger.

Taking some pages from the locker room playbook, I began to assemble a team of dedicated players to help fight the obesity epidemic, which affects one in five children in North America. To augment my culinary and dental knowledge, experts in the fields of nutrition, education, entertainment and culinary arts were invited to join the SuperChefs advisory board and we began tackling this problem, knowing that prevention through healthy eating was key.

Seed money from dental and medical friends enabled SuperChefs to evolve from a television show with animated culinary characters to a video game. However, the game was eventually scrapped when we realized video games were one of the reasons for the childhood obesity epidemic. Failed attempts at television, Broadway and character entertainment licensing added to our frustrations to get traction for the SuperChefs mission.

The ah-ha moment took place during the first SuperChefs Cookery camp in Mission, British Columbia, in July 2009. Passionate volunteer chefs, teachers,
entertainers, coaches and health care professionals put on a four-day camp to teach inner city kids how to eat healthy, be active and learn cooking skills.

The BC Lions provided a football launcher that got the kids running after soaring footballs. Other camp activities included chefs teaching basic knife and cooking skills and soccer skills. A boy named Allen confessed he ate too much fast food, was overweight and did not know how to eat properly. After his SuperChefs experience, he lost 40 pounds in one year. When asked how he did it, he grinned and said, “I just did what you guys told me — eat well, be active and everything turned around for me!” Allen validated that our approach would promote a healthier generation.

Our camps and events have since run at local, national and international venues. We held community events featuring professional athletes and coaches participating in cooking demonstrations to show what they ate before games to maximize performance. Our founding executive chef, Jean Luc Barone, introduced SuperChefs to Starwood Hotels and Resorts, and a partnership with the global hotel chain ensued. A healthy SuperChefs-inspired kids menu, which focuses on wellness programs for their guests, is now in play at Westin hotels. The Kids Eat Well menu designed and approved by SuperChefs is now a global brand standard at its more than 200 hotels. The Westin continues to scale the SuperChefs program worldwide, inviting children into Westin kitchens at no charge to teach them cooking and healthy eating tips. To pay homage to me, one of the SuperChefs characters on the Westin Kids Eat Well menu holds a toothbrush with the message: “Don’t rush your brush.”

I have also had an impact on my children’s teams. My two sons played basketball in high school and I provided mouthguard fabrication and trauma treatment. SuperChefs Nutrition Advisor, Yale Sports Dietician Lisa Kimmel, helped us steer the players to a better pregame diet, which improved their on-court performance considerably.

Another way sports dentistry has integrated into my professional life is by assuming the role of chef for the BC Lions medical team dinner before training camp every year. We enjoy the camaraderie of the coaching, training and medical staff. I have also been fortunate to bring some needed professional sports rehabilitation techniques and up-to-date sports medicine knowledge to the school teams I serve as a sports dentist.

The SuperChefs interprofessional program at the University of British Columbia brings together dental hygiene and dietetic students to collaborate and create articles for ChopChop magazine. The students’ involvement also extends to summer culinary and sports camps in the largest school district in British Columbia, where UBC students provide culinary, nutrition, oral health and sports instruction to kids aged 8 to 12 at no cost to parents thanks to federal funding and local community partners. The validity of this program is underscored by a published study in the journal Obesity that states childhood obesity rates increase only in summer months and policymakers should put emphasis on how to help children adopt healthy behaviors during long summer vacations. It also states we cannot reverse the obesity epidemic if the only focus is on what children are doing and eating while at school. Programs like SuperChefs can help fill that role, but regular visits to the dentist can also reinforce these healthy behaviors outside of school. ChopChop is available for community outreach programs at UBC and to all Academy of Sports Dentistry members to help promote good health and diet to their sports teams and to the patients they serve.

Dentists, and especially sports dentists with their connection to the youth, are in an ideal position to make a difference in the health of future generations. With a few well-designed resources and a basic knowledge of nutrition, dentists can make an impact on the obesity epidemic. A new partnership between Partnership for a Healthier America (PFA), an organization to bring corporate and other community partners together to fight the childhood obesity epidemic, has been formed with the Academy of Sports Dentistry.

PHAs campaign called Drink Up, which encourages everyone to drink water as their primary hydration source, has attracted many celebrities and sports stars, including Stephen Curry, Cam Newton and Jessica Alba, who endorse healthy food choices and water in nationally televised ads.

SuperChefs welcomes sports dentists as advocates in the fight against childhood obesity. We want to help kids put on their best “faces” through:

- Food literacy.
- Awareness of their food systems.
- Competence in their cooking skills.
- Engaging in physical activity.
- Savoring balanced food choices.

In the words of Thomas Edison, “The doctor of the future will no longer treat the human frame with drugs, but rather will cure and prevent disease with nutrition.” We, as doctors of the mouth, should realize the future for our youth is now and make every effort to be advocates for a healthier America.

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THE AUTHOR, Greg Chang, DMD, can be reached at drgchang@gmail.com.
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The Dentist and the Athletic Trainer: A Winning Team for Oral Health Care

Anthony Breitbach, PhD, ATC, and Paul Nativi, DMD

ABSTRACT  Oral health is a key concern for student athletes. The dentist is the primary oral health care provider. Athletic trainers (ATs) are health professionals who have a primary care role for the student athlete. They are often the first to respond when dental trauma occurs in athletics. This paper informs dentists and ATs about each other and includes best practice in the care of athletes, which can be improved through interprofessional collaboration between dentists and ATs.

Oral health is a key concern for school-aged children. The child’s dentist is the primary oral health care provider. Dentists also treat disease conditions and manage traumatic injury. Trauma is a key cause of dental injury in school-aged children. Much of this trauma happens during athletic participation. Treatment of injuries caused by sports-related trauma should be a focus for all health providers. A recent study of secondary school athletics in the U.S. found that 70 percent of high school athletes have access to an athletic trainer (AT). ATs are health professionals who have a primary care role for the student athlete. They are often the first to respond when dental trauma occurs in athletic participation. This requires an assessment, followed by a triage decision regarding referral to an appropriate provider to manage the condition. In a school-aged athlete, the appropriate provider is often his or her family dentist or a provider with a team dentist designation. ATs can also work with dentists to be key players in oral health by promoting dental hygiene, ensuring the proper mouthguard fabrication and compliance. Interprofessional team-based health care is also recommended by key health care organizations in order to provide the best patient outcomes. A purpose of this paper is to inform dentists about athletic trainers, their education, their duties and their dedication to the well-being of the athletes in their charge. It also informs athletic trainers about team dentists and best practice in the oral health care of athletes. The authors also feel that the oral health of athletes can be improved by interprofessional collaboration between dentists and athletic trainers.
Background

Sports participation plays a key role in the lives of school-aged children, their families and their communities. This participation brings with it an inherent risk of injury.10 These student-athletes accept this risk and choose to play sports, but it is important that they receive the best possible care.11 Significant numbers of these athletic injuries are due to orofacial trauma, with dental injuries being the most common.4 In a study of 6,000 patients in 1999, Gassner et al. reported that 50.1 percent of traumatic facial injuries from sports accidents resulted in dental injury.2 Sports accidents accounted for 34.6 percent (996/2,674) of all dental injuries in the study.2 Tuli and colleagues reported in 2002 that sports-related trauma produced a significant portion of all dentofacial injury.12

In school-aged children family dentists and/or pediatric dentists are the medical providers most often called upon to initially manage these pathologies.13 They manage these injuries during or after regular office hours. If necessary, they may choose to refer the patient to a specialist such as an oral maxillofacial surgeon, endodontist, periodontist or orthodontist.14,15 Prevention of dental trauma and other oral pathology is also important in school-aged children. A properly fitted mouthguard has been widely recommended to prevent dental injuries due to orofacial trauma in sports.14,15–17 Mouthguards that are custom fabricated and fitted appropriately are critical because they remain in place at the moment of injury. This improved retention allows the athlete to speak and breathe normally, which also contributes to increased compliance. Oral disease or pathology can result from poor hygiene, the presence of intraoral hardware/jewelry, tobacco use and disordered eating/bulimia, all of which can occur in school-aged children with some reports of increased incidence in athletes.15,16 Oral injuries and tooth loss from other causes produce financial, psychological and sociological effects that extend well into adulthood.

The Academy for Sports Dentistry (ASD) has developed a team dentist program to help provide care to athletes. The team dentist designation signifies a high level of study, expertise and experience in the prevention and treatment of sports-related oral facial trauma. A team dentist is proficient in the fabrication and delivery of properly fitted custom mouthguards. They are well versed in the diagnosis and treatment of dental and facial trauma.

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Some examples are contusions, lacerations, dental luxations, avulsions, tooth fractures, maxillary and mandibular fractures and temporomandibular joint injuries.19

To obtain and maintain the team dentist designation, a dentist must complete a team dentist course and meet continuing education standards. Team dentists are expected to organize and deliver dental care to the athletes. Their responsibilities include treating dental conditions and injuries with return-to-play recommendations, identifying and referring for psychological and drug problems, developing mouthguard programs and providing dental coverage for games and sports competition.

They are expected to develop a referral network of dental specialists to provide complete dental care.19 Currently, there is a shortage of qualified team dentists. Dentists can learn more about becoming a team dentist by contacting the ASD.

In the school setting, many people can be called upon to provide the initial response to an oral facial injury. This could be a teacher, coach or the school nurse, many of whom have little or no training in the management of these types of injuries. Ideally, ATs should be present during organized athletic participation in secondary schools because they have more experience and training in the prevention, assessment and management of trauma.20 In addition, with the dentist, they can be a resource to the entire school community on the promotion and maintenance of good oral health.

A recent study reported that 70 percent of secondary schools have access to the services of an AT, 37 percent of whom were full time.3 ATs “are health care professionals who collaborate with physicians,” and “services provided by ATs comprise prevention, emergency care, clinical diagnosis, therapeutic intervention and rehabilitation of injuries and medical conditions.”21 They are certified nationally by the Board of Certification Inc. (BOC), and that certification is considered to be necessary qualification for AT licensure in most states.22 In order to be eligible for the BOC AT certification examination, ATs are required to graduate from a professional program accredited by the Commission on Accreditation of Athletic Training Education (CAATE). The content of the BOC examination encompasses the following practice domains of athletic training:

- Injury/illness prevention and wellness protection.
- Clinical evaluation and diagnosis.
- Immediate and emergency care.
- Treatment and rehabilitation.
- Organizational and professional health and well-being.21,23

Athletic Training Education Competencies...

Clear roles. Interprofessional education (IPE) and the care of the student athlete. The AT serves a primary care role at the heart of a sports medicine team for individuals participating in athletics. In this role, he or she manages and assesses injuries and other conditions, making triage decisions regarding disposition and referral to the appropriate health professional. This team approach is widely recommended to help provide the highest level of athletic health care. Dentists can sometime be overlooked as members of sports medicine teams. These teams are often developed by athletic administrators working with physicians and physical therapists focusing on orthopedic sports injuries. Dentists can be an afterthought in this process, until a dental injury occurs. A good relationship between the AT, the school nurse and the dentist/team dentist can be valuable in the promotion of oral health and the treatment of dental trauma in the student athlete.

Team Approach to Care

There are several aspects to interprofessional practice (IPP) or collaborative, team-based care. The Institute of Medicine provides the following framework for IPP:

- Shared goals.
- Clear roles.
- Mutual trust.
- Effective communication.
- Measurable outcomes.

These provide an important basis that allows ATs and dentists to collaborate in the care of the student athlete. Interprofessional education (IPE) and IPP have been endorsed as keys to the future professional preparation and practice for both ATs and dentists.

For health professionals, the primary goal focuses on patient-centered care. Sometimes external factors, such as tradition, culture or competition, can distract health professionals from this goal. However, if all parties agree to serve the best interest of the patient, many of those factors can be minimized. Roles need to be clearly communicated and understood. When treating dental injuries, ATs need to provide the most appropriate primary care, refer to the dentist or team dentist and advocate for the patient and other stakeholders, such as coaches or administrators, when necessary. Dentists need to develop a professional relationship with ATs, understand their role and trust that they can manage these conditions appropriately. This trust is often demonstrated through collegial communication upon referral and follow-up between the parties. With appropriate consent, the AT can provide the dentist with useful information regarding the injury, its management and other factors that may affect care. The dentist can inform the AT of the diagnosis, treatment, follow-up and home care instructions, which can then be accurately communicated with the patient, his or her family and other stakeholders. It is hoped that this collaboration will produce positive patient outcomes, as well as an efficient and effective relationship between all parties involved. Injuries don’t always occur during “regular office hours,” and certain injuries require immediate treatment. Ideally a plan should be in place so that a dentist is available for consultation so the AT can provide immediate care if needed. The dentist collaborates with the AT and other members of the sports medicine team to ensure their common goal — the health and well-being of the student athlete.

Scenarios

The relationship between ATs and dentists can best be illustrated through the following patient care scenarios. These scenarios are not based on a single patient case, but come from more than 25 years of experience with dentists and ATs working together to promote oral health and treat dental conditions.

Dental Trauma

Traumatic dental injuries in athletics occur at unpredictable times and are often caused by orofacial trauma from a projectile, the ground, a static object or another individual. They often result in fracture, avulsion or displacement of a tooth and are often accompanied by bleeding. When an AT manages these injuries he or she must always perform a primary survey and rule out a traumatic brain injury (TBI). In addition, proper universal precautions must be employed to limit exposure to body fluids. If the athlete is unresponsive or significant TBI is suspected, an emergency action plan (EAP) is activated, emergency medical personnel are summoned and the patient stabilized for transportation to a trauma center.
Once the primary survey is completed and, whether or not the EAP was initiated, a secondary survey occurs to determine the extent of the injury. If there was an avulsion, effort is made to locate the tooth. If the tooth is found, per ASD guidelines the AT will attempt to re-implant and stabilize the avulsed tooth.\textsuperscript{13,15} If that is not possible, the avulsed tooth will be placed in an appropriate transport medium. That transport medium may also be used for a tooth fragment in the case of a fracture. The AT or the parent will contact the dentist and describe the incident and obtain instructions for immediate care.

The dentist will then manage the injury, give the athlete home care and follow-up instructions and may refer to a specialist. Circling back with the AT helps ensure student athlete compliance with care and minimizes the mixed messages that can occur as the disposition of the patient is communicated to coaches and other stakeholders. The AT can also serve as the eyes and the ears of the dentist, keeping him or her informed as the patient recovers and returns to activity.

### Mouthguards

Mouthguards are widely recognized as the most reasonable means of preventing dental injury caused by orofacial trauma.\textsuperscript{1,2,4,13,15–17} However, noncompliance in the use of these appliances or poorly fitting mouthguards are barriers to their regular use in sports.\textsuperscript{14,16,17} The AT can be an effective partner with the dentist regarding mouthguard selection and compliance for student athletes.\textsuperscript{16} Some contact sports have rules requiring mouthguard use and many athletes in these sports use “boil-and-bite” mouthguards because of cost and ease of use.\textsuperscript{16} However, these are not recommended by the ASD because they fit poorly and do not provide the same level of protection as vacuum-fitted or pressure-laminated mouthguards.\textsuperscript{15,17} The AT can educate athletes on the importance of working with their dentists to obtain a high-quality, properly fitted mouthguard.\textsuperscript{16,17,25} ATs can also promote mouthguard compliance in sports where the rules do not mandate their use, such as basketball or soccer. They can educate student athletes who play these sports and their coaches about the importance of using mouthguards to prevent time lost from play because of injury and to minimize the long-term cost and functional, psychological and cosmetic issues that result from a significant dental injury.\textsuperscript{2,17}

### Oral Health

ATs can serve as advocates for oral health among student athletes with whom they interact. They can reinforce the importance of good dental hygiene by emphasizing the value of regular dental visits and a daily routine of brushing and flossing. Another source of oral pathology in student athletes is tobacco use, primarily smokeless tobacco use.\textsuperscript{18} Despite its link to oral and pharyngeal cancer, sports such as baseball continue to have a high incidence of smokeless tobacco use.\textsuperscript{16} The National Collegiate Athletic Association and other sport organizations have banned its use at contests, but the use still persists.\textsuperscript{18,25} However, progress is possible. A 2005 study found an intervention program was effective in preventing smokeless tobacco use in baseball players.\textsuperscript{18} ATs were involved in the program to educate athletes on the risks of smokeless tobacco use to prevent non-users from starting or promote cessation in users. This intervention was significantly effective in preventing players to start, but was not as effective with cessation. The authors recommended that dentists and ATs partner to intervene among younger school-age groups to prevent initiation of smokeless tobacco use.\textsuperscript{18}

### Conclusion

The importance of team-based collaboration has been recommended to promote positive outcomes in patient-centered care. This applies to the promotion of oral health and the treatment of dental trauma. The AT and dentist can work together in this effort to protect and treat the student athlete. They each have the knowledge, skills and abilities to provide the appropriate standard of care for their patients. The shared goal and ultimate desired outcome of optimized oral health can be achieved interprofessionally through communication, mutual trust and understanding each other’s respective roles. Together they can form a winning team for the student athlete.

### REFERENCES

The University of California, San Francisco, School of Dentistry, Department of Preventive and Restorative Dental Sciences, is seeking full and part-time faculty members in the Health Sciences Clinical Professor series (at the ranks of Instructor, Assistant, Associate, or Full Professor) to support its teaching programs in clinical general dentistry. The appointment will be in the Department’s Division of General Dentistry.

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The individuals selected must have U.S. DDS/DMD or an equivalent degree and must have current or be eligible for California dental licensure. At least three years of clinical dental experience is preferred. Previous predoctoral teaching experience is preferred.

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Sports Dentistry: A Different Perspective

Danette McNew, DDS

Bowls, spatulas, alginate impression material, wax, adhesive, multiple size impression trays, baggies, masking tape, black sharpies, gloves, masks, gowns … athletes and students! These are a few of the needs for one specific day each summer in Dallas. A group of third- and fourth-year dental students visits a local university to take dental impressions of men’s football and basketball and, yes, even women’s basketball players. Sports dentistry has really changed in the last 20 years. Each athlete receives two custom mouthguards. It is common to hear our male dental students make similar comments about this experience. One student named Jesse said, “The benefits of participating in the summer sports dentistry selective not only allow us to be better prepared on how to prevent dental injuries and manage treatment when dental injuries do occur, but also allow us to gain memorable experiences while diving into the realm of team dentistry.”

In 1996, as associate clinical professor at Texas A&M/Baylor College of Dentistry, I had the privilege of introducing the first sports dentistry course into our curriculum. This course includes several types of prevention techniques such as mouthguards, preparation for trauma on the field and methods to restore traumatized teeth in athletes. At that time, the student dental participation was mainly, if not entirely, male. Now, more women enroll in this course and in dental school as a whole. There is a gender variant in participation. Education curriculum as well as enrollment has begun to model the changes we see outside the school environment as more women move into professional careers and into the practice of dentistry. Sports dentistry is no different. The gender of student volunteers has gradually changed from male participants in the ’90s to an even mix of male and female participation today. This is a new era of women in roles as “Sports Dentists.”

Title IX has definitely affected college athletes, which ultimately affects the professional and Olympic world of athletes. For example, in the 2016 Olympics, 61 percent of women Olympians won 50.4 percent of the medals. That is quite a shift from years prior. More women are active in sports early in their lives and their involvement in sports will continue into later years. But either way, professionally or recreationally, female athletes are incurring equal to or more dental-related injuries than in the past. This is due to the increase in participation, but it may also be due to an increase in higher-impact sports. The injury rate increases our role in trauma education and prevention.
Many team sports include female athletic trainers and assistants as well as female consultants for their athletes. It follows that female dentists will become more involved, as we offer a slightly different perspective. Gender can be an extreme form of ethnicity, and we are accommodating these differences more and more in our educational world and ultimately in the sports world. The end result will be increased female participation in sports education, training and, of course, the actual sports. A female dental student named Valerie made this comment: “This year’s summer course for mouthguards was really informative. I would love to spread the preventive knowledge of the importance of young children and adults who are active. I can see this training opening up many extra activities and I hope to get involved during my free time in the future. I would love to be involved in my child’s school athletics department and really make an impact on the children’s PPE while they are active.”

Female dental students are excited by the potential in sports dentistry. Yet I know we will need to make intentional strides to increase involvement in what is basically a male field. It is fairly common to have only 1 percent or less of marketing go toward female sports, and there is much documentation showing that salaries are uneven between men and women in the same field. Fortunately, I do see the tide adjusting.

I have seen some great examples of management executive promotions, such as Karen Espelund’s appointment as a full member of the Union of European Football Associations’ executive committee and chair of the women’s football and Paralympic sports at a national level and Barbara Slater as the BBC’s director of sports. It was exciting to see Judy Seto working for the Los Angeles Lakers, Ariko Iso as an assistant athletic trainer for the Pittsburg Steelers and head athletic trainer at Oregon State University, her alma mater, and Sue Falsone as the first female head athletic trainer for the Los Angeles Dodgers when hired in 2012. However, when it comes to the private sector, the number of women in charge is far lower. In fact, apart from Karren Brady, West Ham United’s vice-chair, Margaret Byrne, CEO of Sunderland FC, and Lydia Nsekera, the first female member of the FIFA Executive Committee, men outnumber women in the management of sports.

But as my dental students always say, “We are ready for change.” And change is what I am seeing.

Sports dentistry will definitely benefit from the female perspective. And as a female dentist, an instructor for more than 25 years and the 2017–2018 Academy for Sports Dentistry president, this increase in involvement from women … is sportsstastic! ■

THE AUTHOR, Danette McNew, DDS, can be reached at dmcnew@tamhsc.edu.
Treatment of Traumatic Dental Injuries

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When treating dental trauma, the timeliness of care is key to saving the tooth in many cases. It is, therefore, important for all dentists to have an understanding of how to diagnose and treat the most common dental injuries. This is especially critical in the emergency phase of treatment.

Proper management of dental trauma is most often a team effort with general dentists, pediatric dentists or oral surgeons on the front line of the emergency service, and endodontic specialists joining the effort to preserve the tooth with respect to the pulp, pulpal space and root. An informed and coordinated effort from all team members ensures that the patient receives the most efficient and effective care.

Recently, a panel of expert members of the American Association of Endodontists prepared an updated version of Guidelines for the Treatment of Traumatic Dental Injuries. These guidelines were based, in part, on the current recommendations of the International Association of Dental Traumatology (see iadt-dentaltrauma.org for more information). This issue of ENDODONTICS: Colleagues for Excellence provides an overview of the AAE guidelines; the complete guidelines are available for free download at aae.org/clinical-resources/trauma-resources.aspx.

The benefit of adhering to guidelines for treatment of dental trauma was recently shown in a study by Bucher et al. The study found that, compared to cases treated without compliance to guidelines, cases that adhered to guidelines produced more favorable outcomes, including significantly lower complication rates. The study also found that early follow-up visits were essential to ensure prompt treatment of complications when they arose.

Emergency Care

Prior to any treatment, one must evaluate the injury thoroughly by careful clinical and radiographic investigation. It is recommended to follow a checklist to ensure that all necessary information regarding the patient and the injury is gathered, including:

1. Patient’s name, age, sex, address and contact numbers (and weight for young patients).
2. Central nervous system symptoms exhibited after the injury.
3. Patient’s general health.
4. When, where and how the injury occurred.
5. Treatment the patient received elsewhere.
6. History of previous dental injuries.
7. Disturbances in the bite.
8. Tooth reactions to thermal changes or sensitivity to sweet/sour.
9. If the teeth are sore to touch or during eating.
10. If the patient is experiencing spontaneous pain in the teeth.
Once all of this information is gathered, a diagnosis can be made and appropriate treatment rendered. If the injured individual is not a patient of record, all necessary demographic information should be gathered as soon as the patient arrives and prior to any assessment. In the case of avulsion and the tooth being out of its socket, one should immediately place the tooth in a physiological solution of specialized media (such as Hank's Balanced Salt Solution) or milk or saline if those are not available. Only after the tooth is secured in solution should one obtain the patient's information. Once the patient is seated in the dental chair, it is necessary to do a quick central nervous system (CNS) evaluation before proceeding with further assessments.

Often, the dentist is the first health care provider to see the patient after a head injury (any dental trauma is, by definition, a head injury!) and must assess the risk of concussion or hemorrhage. It has been estimated by a meta-analysis that the prevalence of intracranial hemorrhage after a mild head injury is 8 percent, and the onset of symptoms can be delayed for minutes to hours.4 The most common signs of serious cerebral concussion or hemorrhage are loss of consciousness or posttraumatic amnesia. Nausea/vomiting, fluids from the ear/nose, situational confusion, blurred vision or uneven pupils, and difficulty of speech and/or slurred speech may also indicate serious injury.5

Once the patient has been cleared of any CNS issues, the dental trauma should be assessed. The key is to obtain comprehensive information about the injury and, to do so, one must conduct thorough extraoral and intraoral clinical exams as well as appropriate radiographic evaluations.

The new AAE guidelines recommend taking one occlusal and two periapical radiographs with different lateral angulations for all dental injuries, including crown fractures. If cone beam computed tomography is available, it should be considered for more serious injuries like crown/root, root and alveolar fractures, as well as all luxation injuries.

Additionally, sensibility tests should be conducted on all teeth involved as well as opposing teeth. Cold testing is recommended over electric pulp testing in young individuals.6 Both testing methods should be considered, however, especially when there is no response to one of the two. The pulp might be nonresponsive for several weeks after a traumatic injury, so a pulp test should be done at every follow-up appointment until a normal response is obtained.7

Once the diagnosis is confirmed and more serious complications such as CNS and jaw or other facial bone fractures have been ruled out, the emergency phase of the treatment needs to be initiated. The aim of treating dental trauma should be to either maintain or regain pulpal vitality in traumatized teeth. This is because dental trauma most frequently occurs in preteens or young teens in whom the teeth have not yet fully developed, and root development will cease without a vital pulp.
Clinical Examples
Dental trauma can be roughly divided into two groups: fractures and luxation injuries. The fractures are then further divided by type: crown, crown-root and root fractures. If the pulp is exposed to the oral environment, it is called a complicated fracture; if not exposed, it is called an uncomplicated fracture.

Crown Fractures
The first thing to do in any crown or crown-root fracture is to look for the broken-off tooth fragment. With modern bonding technology, it is possible to rebond the fragment to the tooth, which is esthetically the best solution. Prior to reattaching the tooth fragment, the remaining dental thickness immediately covering the pulp needs to be assessed radiographically and clinically. If there is at least 0.5 mm of the dentin remaining, there is no need to cover it with a protective liner. If it is estimated that the remaining dentin is less than 0.5 mm, it is advisable to cover the deepest part, closest to the pulp, with a cavity liner and then dimple the fragment accordingly. If the tooth fragment was kept dry, it should be rehydrated in

TABLE 1
Follow-Up Procedures for Fractured Permanent Teeth and Alveolar Fractures

<table>
<thead>
<tr>
<th>Time</th>
<th>Crown Fracture</th>
<th>Crown-Root Fracture</th>
<th>Root Fracture</th>
<th>Alveolar Fracture</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Uncomplicated</td>
<td>Complicated</td>
<td>Uncomplicated</td>
<td>Complicated</td>
</tr>
<tr>
<td>4 Weeks</td>
<td>Splint removal,* clinical and radiographic control</td>
<td>Splint removal and clinical and radiographic controls</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-8 Weeks</td>
<td>Clinical and radiographic control</td>
<td>Clinical and radiographic control</td>
<td>Clinical and radiographic control</td>
<td></td>
</tr>
<tr>
<td>4 Months</td>
<td>Splint removal,** clinical and radiographic control</td>
<td>Clinical and radiographic control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Months</td>
<td>Splint removal, clinical and radiographic control</td>
<td>Clinical and radiographic control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Year</td>
<td>Splint removal, clinical and radiographic control</td>
<td>Clinical and radiographic control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yearly for 5 Years</td>
<td>Splint removal, clinical and radiographic control</td>
<td>Clinical and radiographic control</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Splint removal in apical third and mid-root fractures. ** Splint removal with a root fracture near the cervical area.

TABLE 2
Follow-Up Procedures for Luxated Permanent Teeth

<table>
<thead>
<tr>
<th>Time</th>
<th>Concussion/Subluxation</th>
<th>Extrusion</th>
<th>Lateral Luxation</th>
<th>Intrusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Weeks</td>
<td>Splint removal (if applied for subluxation) Clinical and radiographic examination</td>
<td>Splint removal Clinical and radiographic examination</td>
<td>Clinical and radiographic examination</td>
<td></td>
</tr>
<tr>
<td>4 Weeks</td>
<td>Clinical and radiographic examination</td>
<td>Clinical and radiographic examination</td>
<td>Splint removal Clinical and radiographic examination</td>
<td></td>
</tr>
<tr>
<td>6-8 Weeks</td>
<td>Clinical and radiographic examination</td>
<td>Clinical and radiographic examination</td>
<td>Splint removal Clinical and radiographic examination</td>
<td></td>
</tr>
<tr>
<td>6 Months</td>
<td>Clinical and radiographic examination</td>
<td>Clinical and radiographic examination</td>
<td>Clinical and radiographic control</td>
<td></td>
</tr>
<tr>
<td>1 Year</td>
<td>Clinical and radiographic examination</td>
<td>Clinical and radiographic examination</td>
<td>Clinical and radiographic examination</td>
<td></td>
</tr>
<tr>
<td>2-5 Years</td>
<td>Yearly up to 5 years</td>
<td>Yearly up to 5 years</td>
<td>Yearly up to 5 years</td>
<td>Yearly up to 5 years</td>
</tr>
</tbody>
</table>
distilled water or saline for 30 minutes prior to reattachment. This process will increase its bonding strength.10 (Figures 1).

In a complicated fracture, the goal is to create a bacteria-tight seal to protect the pulp, after ensuring that the pulpal wound is clean and all inflamed tissue removed.11,12 The two best capping materials available today are calcium hydroxide and mineral trioxide aggregate (MTA),13,14 but newer bioceramic materials are showing promise for this application. It is advisable to create a 1–2 mm reservoir into the pulp with a high-speed diamond bur and copious water cooling, place the capping material and then either reattach the tooth fragment or restore the crown with a composite resin material (Figures 2).

Crown-Root Fractures
One of the more challenging types of fracture to treat is the crown-root fracture because the fracture margin has to be exposed around the tooth/crown to properly restore the tooth. This can be accomplished by gingivectomy if the fracture line is in the sulcus. In more extreme cases, the tooth will have to be extruded with orthodontic forces or surgically repositioned. In the emergency session, if the pulp is exposed it needs to be protected in the same fashion as complicated crown fractures. If it is not exposed, all accessible exposed dentin areas should be covered for the patient’s comfort.

Pulpal survival for all these fracture types is generally good; however, endodontic treatment may be indicated later.15,16 Therefore, it is of utmost importance that a recall schedule is followed and that the teeth involved in the trauma are tested every time.

Tables 1 and 2 outline the recommended recall rates for most common dental injuries. It is not uncommon for there to be no response to vitality tests for up to three months, and a lack of response to vitality tests does not always indicate that root canal treatment is needed — especially in young and immature teeth. Rather, it is advisable to look for at least one other sign of pulpal necrosis, like vestibule swelling, periapical lesions and/or dramatic color change of the crown. If no signs exist, continue to monitor the patient at regular appointments every three months, for up to one year.

Root Fractures
The pulp is affected in all root fractures. However, if the fragments are approximated soon after the fracture, there is a good chance that no endodontic treatment is necessary, just observation. With good approximation, it is likely that the pulp will revascularize across the fracture regardless of the age of the patient.17,18 (Figures 3). A recent retrospective study included assessment.
of splinting type and time of root fracture. The study determined that, if the cervical portion of the tooth is stable once the two pieces have been approximated, no splint or a flexible splint for two weeks produces the best treatment outcome. Longer splinting time is only recommended when the fracture is close to the cervical area.

Luxation Injuries

All luxation injuries will cause some damage to the periodontal ligament and, in some cases, the pulp as well. The immediate treatment is to limit further damage to the periodontal ligament (PDL) and allow for the best possible healing. As with all dental injuries, follow-up is essential. Late complications, such as internal or external root resorptions, are relatively frequent and require endodontic treatment, especially in more severe injuries. In many of these cases, referral to an endodontist is advisable.

Luxation injuries are divided into subcategories, mainly by degree of severity. The two mildest are termed “concussion” and “subluxation.” In those cases, the tooth is still in its original location, but is tender to percussion and/or, in the case of subluxation, has increased mobility. While no immediate treatment is needed for these injuries, follow-up is critical because the pulp may become necrotic, making endodontic intervention paramount.

When trauma has moved the tooth out of its normal position, it needs to be replaced gently as soon as possible. The only exceptions are cases of intrusion when it might not be possible or advisable to manipulate the tooth immediately. When an immature tooth is intruded up to 7 mm, it is recommended to wait three weeks and watch for signs of re-eruption. If no signs exist, one can initiate orthodontic repositioning. For intrusion of more than 7 mm, surgical or orthodontic repositioning should be performed within three weeks. The risk with all intrusions is that the intruded tooth may ankylose in the infra-position. Once that begins, the tooth may not be movable except possibly surgically. It is well to advise the patient and the parents/guardians that the long-term prognosis of an intruded tooth is unpredictable, as it is likely to eventually be lost due to ankylosis.

Splinting of a luxated tooth is only recommended for teeth that are still mobile after repositioning. In all types of trauma cases, a splint must allow for physiological movement (FIGURES 4 and 5 and TABLE 3, regarding splinting time).

When assessing luxation trauma, it is important to consider the maturity of the apex. If it is still open, there is a chance that the pulp will survive the trauma.

**TABLE 3**

<table>
<thead>
<tr>
<th>Splinting Time for Various Types of Injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Injury</td>
</tr>
<tr>
<td>Subluxation</td>
</tr>
<tr>
<td>Extrusive luxation</td>
</tr>
<tr>
<td>Avulsion</td>
</tr>
<tr>
<td>Lateral luxation</td>
</tr>
<tr>
<td>Intrusion</td>
</tr>
<tr>
<td>Root fracture (middle 1/3)</td>
</tr>
<tr>
<td>Alveolar fracture</td>
</tr>
<tr>
<td>Root fracture (cervical 1/3)</td>
</tr>
</tbody>
</table>

**FIGURE 4A.** (A) In lateral luxation injuries of maxillary teeth, the apex is frequently pushed through the cortical plate facially. To reposition the tooth it has to be released prior to moving the crown forward (B) and (C). (Schematic drawings courtesy of Dr. Asgeir Sigurdsson.)

**FIGURE 5.** Once the tooth has been repositioned, the patient bites into a softened pink wax plate that had been previously rolled one or two times. This will ensure that the luxated (or avulsed) tooth stays in place while being splinted. In this case, a 16-pound fishing line was used as the splint on the luxated tooth.
or revascularize, allowing the growth of the tooth to continue (FIGURES 6).

If the apex is closed, endodontic treatment is likely needed. It is advisable to follow the patient closely (TABLE 1) or refer him or her to an endodontist for further evaluation. Because of the injury to the PDL, rapid inflammatory root resorption can occur (within days or a few weeks) if the necrotic pulpal tissue becomes infected. For mature teeth diagnosed with necrotic pulps, placing calcium hydroxide for two to four weeks prior to obturation is recommended; however, one should allow the PDL to heal for two weeks before placement (see treatment for avulsion below). Apexification or revascularization is recommended for teeth with open apices.24,25

It is important to remember that dental injuries do not always fall into one group or category, but often a combination of several categories. Injuries in multiple categories will impact the outcome. For example, it was recently demonstrated that the existence of a concurrent luxation injury with an uncomplicated crown fracture and complete root development are significant risk factors of pulp necrosis.26

Avulsion

The time outside of the socket for an avulsed tooth is the most critical factor to its survival. If the tooth is replanted within 30 minutes, or alternatively kept in a physiological solution of specialized media or milk for a few hours, it has a fairly good prognosis.27,28 If the tooth has been dry for more than one hour, the periodontal ligament cannot be expected to survive and the tooth will likely become ankylosed (FIGURE 7). Once reimplanted, most teeth need to be stabilized with a physiological splint for two weeks.29

If the avulsed tooth has an open apex and was reimplanted within the hour, there is a possibility that the pulp will revascularize. In this case, delaying endodontic treatment at the emergency stage is recommended. Endodontic treatment should only be performed later if signs of pulpal necrosis, root resorption and/or arrested root development are confirmed.

In the case of a closed apex, revascularization is not expected.
Therefore, endodontic treatment must be initiated two weeks after the tooth is reimplanted, and prior to removal of the splint. Treatment should not be initiated earlier as any further manipulation of the tooth prior to or immediately after reimplantation can cause further damage to the PDL. In addition, it has been shown that placing calcium hydroxide as an intracanal medicament immediately after reimplantation will promote inflammation that can lead to PDL damage.\(^3\) If the tooth had been kept dry longer than 60 minutes, performing root canal treatment prior to replantation is indicated.\(^3\)

After the emergency situation has been managed and the tooth/teeth stabilized, the second phase begins, in which the pulpal condition and likelihood of root resorption have to be carefully evaluated and the patient followed over a period of months, if not years. A follow-up timeline is essential to allow for intervention if signs of complications appear. In such cases, the expertise and training of endodontists becomes important. Diagnosing, preventing and treating any pulpal complications are an integral part of endodontic training as are performing pulp regenerative procedures and treating inflammatory root resorption (FIGURES 8).

Conclusion

Traumatic dental injuries present difficult challenges for both patients and their dentists. Current evidence allows the dental health care provider to manage situations that, in the past, often resulted in crippled dentition and unsightly appearance. Appropriate treatment can turn what at first glance looks like a hopeless situation into a very satisfactory outcome for patients. The endodontic specialist can play an important role in the team approach to treating patients with traumatic dental injuries.\(^\Box\)

ACKNOWLEDGMENT

The AAE thanks Dr. Asger Sigurdsson for authoring this article, as well as the following article reviewers: Drs. Peter J. Babick, Leif K. Bakland, Steven J. Katz, Linda G. Levin and Robert S. Roda.

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<table>
<thead>
<tr>
<th>COUNTY</th>
<th>Details</th>
<th>Property ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEVERLY HILLS</td>
<td>Modern designed Periodontal practice in multi story elite medical professional bldg. Has 3 eq ops / 3 plmbd not eq. In a 1,410 sq ft bldg. Property ID #5157</td>
<td>5119</td>
</tr>
<tr>
<td>LOS ANGELES - Price Adjustment</td>
<td>GP w/ 40 years of goodwill. In a 10 story medical/dental bldg. Has 4 eq ops with views to the mountains. PPO/Cash/Medical/CAP. Grossed $670K in 2016. Net of $166K. Property ID #5107</td>
<td>5158</td>
</tr>
<tr>
<td>LOS FELIZ</td>
<td>Orthodontic practice in a 2 story bldg w/ 27 yrs of goodwill. Net of $91K. Property ID #5158</td>
<td>5161</td>
</tr>
<tr>
<td>MOTE BELLO</td>
<td>Grossed approx. $1.1M in 2016, located in a free standing bldg w/ 5 eq ops. Established in 2002. Property ID #5168</td>
<td>5176</td>
</tr>
<tr>
<td>PASADENA</td>
<td>Located in the heart of Pasadena w/ 60 years of goodwill. Grossed approx. $616K in 2016. Has 3 eq ops in a 1,150 sq ft suite. Property ID #5147</td>
<td>5147</td>
</tr>
<tr>
<td>VAN NUYES</td>
<td>General Practice w/ 30 years of goodwill. Has 6 eq ops. Projecting approx. $452K. Net of $139K. Property ID #5148</td>
<td>5148</td>
</tr>
<tr>
<td>KERN, VENTURA, &amp; SAN LUIS OBISPO COUNTRIES</td>
<td>Newbury Park / Thousand Oaks — General Practice established in 1997. This modern designed office consists of 8 operators in a 2,800 sq ft suite. Buyer’s net of $214K. Great office. Property ID #5087</td>
<td>5177</td>
</tr>
<tr>
<td>VENTURA</td>
<td>Grossed approx. $726K in 2016 w/ $194K Net. 34 yrs of goodwill. Property ID #5166</td>
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</tr>
<tr>
<td>Huntington Beach</td>
<td>Leasehold Improvements &amp; Equipment Only! Modern designed office w/ 3 eq ops and 1 plmbd not eq in a 2 story med bldg. Property ID #5154</td>
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<tr>
<td>LAGUNA HILLS</td>
<td>With over 30 yrs of goodwill this GP is located in a 2 story med bldg. Has 5 eq ops in a 1,600 sq ft suite. Grossed approx. $304K for 2016. Property ID #5127</td>
<td>5127</td>
</tr>
<tr>
<td>LAGUNA HILLS</td>
<td>GP in single shopping center right off the freeway in a growing area of LG. Established in 2003 w/ 4 eq ops. Has 1 flat X-ray with Eagle soft software. Net of $715K. Property ID #5144</td>
<td>5144</td>
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<tr>
<td>MISSION VIEJO (TURN-KEY)</td>
<td>Modern designed GP located in a 2 story med/dent bldg. Has 3 eq / 3 plmbd for expansion. Property ID #5138</td>
<td>5138</td>
</tr>
<tr>
<td>MISSION VIEJO</td>
<td>Group solo practice in a 2 story medical building. Has 3 eq ops with digital x-ray. PPO/CASH/SOME HMO. NET OF $515K. Property ID #5142</td>
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<tr>
<td>MISSION VIEJO</td>
<td>Beautiful 3 ops GP w/ 13 years of goodwill. Digital office. Grossed $374K in 2016. PPO &amp; Cash only. Property ID #5086.</td>
<td>5086</td>
</tr>
<tr>
<td>NEWPORT BEACH</td>
<td>Price Adjustment! General Practice w/ over 50 years located in multi story building with beautiful views to the ocean. Has 3 ops. Long term lease. Buyer’s net $136K. Property ID #5137</td>
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</tr>
<tr>
<td>SAN JUAN CAPISTRANO</td>
<td>Leasehold Improvements &amp; Equipment Only! Located in a single story bldg with 3 eq ops in a 1,420 sq ft suite. Property ID #5164</td>
<td>5164</td>
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<tr>
<td>EL CENTRO (GP)</td>
<td>This practice is located in a single story building. Building is for sale. 5 equipped operators. Grossed $327K for 2015. Buyer’s net of $63K. Property ID #5023</td>
<td>5023</td>
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<tr>
<td>SAN DIEGO COUNTY— Modern designed multi specialty office located in remodeled sy shopping center. Has 8 eq ops. Grossed $1.1M. NET $306K. Property ID #5162</td>
<td>5162</td>
<td></td>
</tr>
<tr>
<td>CHINO— Real Estate Only!</td>
<td>This a rare opportunity to purchase a condo located in a single story strip mall. Has been a dental practice for 40 years. Property ID #5076</td>
<td>5076</td>
</tr>
<tr>
<td>CHINO</td>
<td>GP w/ 38 years of goodwill in free standing medical bldg. Has 3 eq ops in a 1,200 sq ft suite. Reasonable rent. Grossed approx. $487 in 2016. NET $215K. Great icon in the community. Property ID #5143</td>
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<tr>
<td>FONTANA— GP + Real Estate!</td>
<td>Premier office with 50 years of goodwill. In a 3,000 sq ft bldg with 8 eq ops. Has the latest in technology. Grossed approx. $2.3M in 2016. Net of $968K. Property ID #5140</td>
<td>5140</td>
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<tr>
<td>CORONA— GP w/ 30 years of goodwill in single story medical bldg. Near new developments. Has 3 eq ops. Buyer’s net $157K. $35K/mo. Property ID #5133</td>
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<tr>
<td>HEMET GP + Condo Suite</td>
<td>Has over 40 years of goodwill to offer. Icon in the community. Located in a single story tri-plex condo bldg. Has 4 eq ops. No Denti-cal. Net of $114K. Property ID #5152</td>
<td>5152</td>
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<tr>
<td>RIVERSIDE—GP + Real Estate!!</td>
<td>Established in 1975 in free standing historic bldg. Has 4 eq ops in a 2,000 sq ft office. Projecting approx. $284K for 2016. Property ID #5146.</td>
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<tr>
<td>TEMECULA—Modern designed practice w/ 3 eq ops. Projecting approx. $1.2M. Net of $444K. Property ID #5155.</td>
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<tr>
<td>TEMECULA— Turn Key. modern designed General Practice with 3 eq ops and 3 plumbed not eq. Established in 2005. NO HMO. Grossed approx. $263,156 for 2016. Property ID #5149.</td>
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<tr>
<td>COSTA MESA, Port Huenemo, Rancho Cucamonga, Rialto + Real Estate, &amp; Valencia</td>
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</tbody>
</table>

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Today's political climate is more tumultuous than ever, reaching a level of polarization that often spills into daily interactions. Individuals on all sides are emboldened to share their viewpoints, with conversations taking place in coffee shops, supermarkets and yes, even the dentist's office.

But like the holiday dinner table, a dental office is no place for political or religious discussions.

The Dentists Insurance Company reports an increase in calls to the Risk Management Advice Line regarding heated political debates erupting in the office among both staff and patients. These impassioned discussions can create a negative environment and cause tension among all involved.

While individuals certainly have a right to their own viewpoints, business owners also have a right to outline appropriate workplace behavior. A good starting point is developing a professional code of conduct for employees specifying what is and isn’t acceptable. Conversation about politics and religion should be off-limits, as should any topic that may cause another employee to feel uncomfortable.

TDIC reports a call from a concerned dentist who felt comments made by a team member during a political discussion were discriminatory. The dentist requested advice on how to address the concern without further alienating either employee or inflaming the situation.

TDIC recommended the following language:

"Teammates get upset when discussions on the job delve into political and religious topics because everyone, while entitled to their opinion, can have very strong and different points of view. That is why our office has established a policy regarding professional conduct in our practice. I am asking all of you to curtail any further discussion of politics or religious beliefs while at work to avoid making others uncomfortable or pressured to discuss topics that are not appropriate in the office."

Dentists should review their professional conduct policies or develop them if the policies are not already.
included in their employee manuals. The policies should be communicated to all staff members, including associate dentists, so the policies can then be applied universally and consistently should an incident occur.

It is easy for an employee to become defensive when confronted with an accusation of unbecoming conduct. The employee may claim he or she never made the statements in question or may challenge how the statements were interpreted. Having clearly defined professional conduct policies in place takes any interpretation out of the equation and can protect you in the event an employee makes an accusation of failing to address an uncomfortable situation.

Patients, too, have attempted to engage dental office staff in controversial conversations. While practice owners have no authority over the topics their patients can discuss, they can intervene if a patient crosses the line.

TDIC recommends that dentists speak directly with the patient, pointing out that the dental office is no place for political debates. It is important to be firm, brief and specific about what has occurred. TDIC recommends the following language:

“While I can appreciate your right to express your opinion, your comments were concerning to me and they made my staff uncomfortable. It would help us if you could curtail your discussions of politics in our practice and save them for a more appropriate forum. Your cooperation is greatly appreciated.”

Should a patient respond with belligerence or anger, it is reasonable to dismiss him or her from care. As a business owner, a dentist has the right to refuse service to anyone for any reason as long as it is not deemed to be discriminatory. While dismissing a patient simply due to differing political beliefs would be considered discriminatory, dismissing a patient who becomes threatening, hostile or does not respect your office policies would not.

The decision to dismiss should only be made if the patient is not midtreatment. Otherwise, continue treatment and begin dismissal proceedings once the treatment is complete. Be sure to follow a formal dismissal protocol. Indicate the reasons for dismissal and document the patient’s initial demeanor, statements and behavior, as well as your attempts to discuss the issue with the patient.

In today’s highly politicized world, it is often impossible to escape controversial conversations. But by outlining clear and specific expectations for staff, it is possible to create a safe, welcoming atmosphere in which to practice dentistry. And while confronting those who are vocal about their opinions can be uncomfortable, it is necessary to ensure a positive experience for patients and staff alike.

TDIC’s Risk Management Advice Line at 800.733.0633 is staffed with trained analysts who can answer office policy and other questions related to a dental practice.
4166 PALO ALTO GP
Well established practice serving young professionals and their families seeking to transition to a confident dentist capable of handling a busy schedule. $1M+ average GR. Asking $800K.

4125 LOS GATOS GP
Luxurious, state-of-the-art office built-out in 2012 (est. over 50 years), with 5 fully-equipped operatories in seller owned building located in highly desirable neighborhood. High end, all fee-for-service patients looking for patient centered, highly skilled dentist with excellent communication skills. Seller is making a career change but will be available for a smooth transition. 2016 GR $956K+ with 4 doctor days and 3 hygiene days per week. Asking $737K.

4155 SAN MATEO GP
General family and restorative practice with special emphasis on esthetic dentistry. Established over 38 years in desirable San Mateo neighborhood. 1,060 square foot has been continuously upgraded and has 3 fully-equipped ops and 3 digital x-ray units. Average gross receipts $558K+ with just 3 doctor days and 3 hygiene days per week. 100% of patients are private pay. Asking $379K.

4103 SAN FRANCISCO GP
Vibrant downtown location in historic high-rise bldg. Retiring doctor offering 30+ years of goodwill. 4.5 days of hygiene, 1,500+ active patients, 20-25 new patients/mo. Gorgeous, spacious facility in approx. 2,500 sq. ft. 2014 GR $768K. Average adjusted net income $274K+ Asking $599K.

4145 ROSEVILLE GP

4129 PETALUMA GP
GP located in stunning 1,856 sq. ft. seller owned facility. State-of-the-art office includes 6 ops, staff lounge, reception area, private office, business office, lab area, sterilization area, consult room, separate storage area, bathroom plus private bathroom. Asking $525K.

4169 NAPA GP
General practice in seller owned building in a prime location. Remodeled, state-of-the-art, 2,000 square foot, beautiful office with 7 ops. Experienced & dedicated staff. Average gross receipts $1.1M+ with just 3 doctor days/week & 8 hygiene days/week. Over 2,000 loyal patients. Asking $817K. Owner will work back for approx. 2 years.

4168 SAN JOSE GP
Great location with ez freeway access in the Almaden Valley area of San Jose off Almaden Expressway/Branham Lane. Approx 150-200 active patients (no Delta Premier). 45+ years of goodwill and long term staff willing to stay with Buyer. Restorative practice with most specialties referred out. Priced to sell at $125K.

4150 SANTA CRUZ COUNTY GP
Seller retiring from successful 33 year general practice. Fee-for-service only practice. Fully-equipped 4 op facility in beautiful, remodeled Seller owned building. Asking 654K. Building also for sale.

4108 HUMBOLDT COUNTY GP
Well-established, high performing general practice boasts 6 fully equipped ops. in 2,900 sq. ft. free standing office w/ Digital X-ray, 2 platinum Dexis sensors, Cerec Omnicam & MCLX units. Loyal & stable pt. base in charming community, w/ a small town feel. Perfect for a dentist who wants to escape the grind and live along the coastline. 2016 GR $1.5M+. Seller willing to help for smooth transition. Asking $995K.

4140 MENLO PARK GP
GP offering 35+ yrs of goodwill, this gem on the Peninsula is truly a find. Incredible downtown location in upscale office with ample onsite parking. 4 ops in 950 sq. ft. 2016-2014 average GR $567K with average adj. net of $156K. Most services other than crown & bridge are referred out. 750+ active patients. 4 hygiene days a week generate 40-45% of the revenue. Owner will help for a smooth transition. Resume must be provided. Asking $417K.

4093 SAN JOAQUIN ORTHO
Established over 35 years with a solid reputation, near several referral sources in seller owned building. 2,500 sq. ft. office with 1 chair open bay in professional center. Avg. Gross Receipts $763K. Asking $561K. The building is available to purchase as well for $608K.

UPCOMING:
SANTA ROSA GP
SAN JOSE GP
SONOMA COUNTY PERIO
<table>
<thead>
<tr>
<th>Location</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>6126 FRESNO</td>
<td>Located at busy intersection. Collected $616,000 with profits of $364,000. 4-Ops. Nice office.</td>
<td>$350,000</td>
</tr>
<tr>
<td>6125 OAKLAND AREA</td>
<td>Firmly entrenched in one of the most vibrant urban settings in the Bay Area. Collections average $735,000 per year. High income zip code with well employed Millennials next door. 10+ new patients per month. Digital and paperless.</td>
<td>$350,000</td>
</tr>
<tr>
<td>6124 SAN RAMON</td>
<td>100% Out-of-Network. 5-Ops. 6-days of Hygiene. $700,000 per year performer.</td>
<td>$350,000</td>
</tr>
<tr>
<td>6122 SANTA CLARA</td>
<td>Great exposure, fantastic curb appeal. Office just remodeled. 5-Ops. 2016 topped $700,000 on 4-day week. Perfect platform to operate 6-days a week. With focus and youthful enthusiasm, practice easily tops $1+ Million per year in short order.</td>
<td>$350,000</td>
</tr>
<tr>
<td>6121 NAPA VALLEY FAMILY</td>
<td>High respect community asset. Collections last 5-years have averaged $1.28 Million per year. Beautiful facility. Condo is optional purchase.</td>
<td>$350,000</td>
</tr>
<tr>
<td>6120 OAKLAND’S PIEDMONT</td>
<td>Highly coveted area. Right off Highway 13. 3-days of Hygiene. 4-Ops with 5th available. 2016 collected $650,000+.</td>
<td>$350,000</td>
</tr>
<tr>
<td>6119 NORTH BAY ORTHO</td>
<td>Desirable family community. Best technology, cone beam and paperless. Owner works part-time. Revenue streams averaged $775,000/year in past. Strong profits. Does no marketing to local Dental Community.</td>
<td>$350,000</td>
</tr>
<tr>
<td>6118 SAN FRANCISCO’S EAST</td>
<td>Forty percent partnership in well positioned and branded practice. 2016 produced $2.64 Million and collected $2.53 Million, reflecting 10% improvement over 2015. Full complement of specialties. 300+ new patients in 2016. 6-month Trial Agreement wherein interested Candidate shall see ability to Net $350,000+ per year.</td>
<td>$350,000</td>
</tr>
<tr>
<td>6112 HEALDSBURG</td>
<td>Ideal as part-time practice in desirable locale or nice foundation to grow. 100% Out-of-Network. 2016 topped $210,000 in collections. Full Price $30,000.</td>
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<tr>
<td>6107 EUREKA</td>
<td>100% Out-of-Network with insurance industry. 2016 collected $930,000+ on Doctor’s 20-hour week. Doctor’s schedule booked 3-months out. 7+ days of Hygiene. Highly respected. Full Price $250,000. Condo is optional purchase.</td>
<td>$350,000</td>
</tr>
<tr>
<td>6098 WEST PETALUMA</td>
<td>Petaluma has become the business center of the North Bay! Business parks are growing and young families are drawn to this great family community per unique amenities of this Historic River City. Collected $468,000 with Profits of $212,500. 4-days of Hygiene.</td>
<td>$350,000</td>
</tr>
<tr>
<td>6089 MOUNT SHASTA</td>
<td>Small town living renowned for outdoor lifestyle. 3-day week collected $950,000. Very strong bottom line. Digital including Pano. Full Price $350,000.</td>
<td>$350,000</td>
</tr>
</tbody>
</table>

**ANTELOPE VALLEY** Prior tenant grossed $1.8 Million. 60,000 autos pass this intersection each day. $80 Billion in new government contracts will make this the highest growth area in SoCal for next 10-years. New DDS overwhelmed. Will work back for MSO or Specialist to build to $1.5 Million. Renovated 8 Op office. Working Owner will net $500,000 at $1.5 Million, and $800,000 when Grossing $2 Million. Full Price $350,000.

**BELLFLOWER** Starter or 2nd office. Low rent. Do $500,000+ first year. Lots of patients. 6-Ops. Full Price $195,000.

**CERRITOS – EMERGENCY SALE** Grossing $450,000. 3 Hygiene days. Digital with Pano. Well-equipped for Implants. Full Price $350,000.

**DIAMOND BAR** 5-Ops. Grosses $500,000.

**GLENDALE** High identity corner location. Absentee Seller. 6-Ops plus separate 850 sq. ft. Grosses $1 Million. Refers Endo, OS and Implants. Full Price $950,000.

**INLAND EMPIRE - EMERGENCY SALE** Shopping Center. Operated by part-time Associate. Fantastic staff. Grossing $350,000. Owner-Operator will do $500,000+. 5-Ops plumbed, 3 equipped. Gorgeous office. Full Price $350,000.

**LAKE ELsinore - HMO** Established 40 years. Popular Seller wants to work back 2 days. Grossing $550,000. Lots of room to go to $800,000 first year. 6-Ops. Low rent.


**LOS ANGELES - HMO** Grossing $1.5 Million.

**ORANGE COUNTY BEACH CITY - HMO** Grossing $4.4 Million at two locations. Cap checks $23,000 per month. Absentee Owner. Full Price $4.4 Million. Hands-on Owner will do $5.5 Million.

**PEDO - PASADENA AREA** Refers 30-to-40 ortho patients per month. Grossing $450,000. Low overhead. Fantastic for GP Group. Full Price $390,000. Building available.

**RIVERSIDE** Location to share. 4-Ops, nice corner suite. Share $1,500 per month rent. Investment required or Seller willing to sell facility and work back. Many options. Full Price $90,000.

**SAN DIEGO** Grosses $1.8 Million.

**SAN DIEGO COUNTY** Interstate 15 and Highway 76. Gorgeous office. Grosses $600,000.

**SAN FERNANDO VALLEY** Established 40-years. Recently renovated with the best. Absentee Owner. Previously did $1 Million. 6-Ops. Grossing $550,000.

**TEMECULA** Grosses $1.5 Million.

**TORRANCE** Strip Center on Hawthorne. 3-Ops. Grosses $300,000. Refers Endo, OS, Implants, Perio and Ortho. Close to Palos Verdes. Full Price $295,000.

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When a dentist receives a subpoena or law enforcement request for patient information, the dentist needs to assess the circumstances of the request, the dentist's obligation to provide information and the patient's rights under federal and state law. A subpoena is a legal demand for an individual to appear at a legal proceeding or for documents and material needed for a legal proceeding. A subpoena or law enforcement request should be dealt with as soon as possible. This article deals largely with subpoenas for documents and material, as well as law enforcement requests for patient information, and provides guidance and points to consider in different situations.

Subpoena

If law enforcement serves a subpoena on the dentist, the dentist and staff should provide the officers with access to the subpoenaed items and the dentist should contact his or her attorney immediately. No one should impede law enforcement’s access to the subpoenaed documents.

In many cases, receipt of a subpoena likely arises out of a civil lawsuit and the dentist should evaluate whether he or she is able to comply with the demand for records. Consider these questions:

- Is the subpoena issued part of a civil action in California? Out-of-state subpoenas are not enforceable in California, except for subpoenas issued in federal cases.
- Do you have the requested records? If not, provide the requestor with an affidavit stating such.
- Is the subpoena issued as part of a state administrative hearing or court proceeding? Such proceedings have patient notification requirements. Consult with an attorney for more information.

Subpoenas and Law Enforcement Requests for Patient Information

CDA Practice Support Staff

Is the dentist a party to the lawsuit? If yes, the dentist should contact his or her professional liability carrier.

Does the subpoena meet the requirements to make it valid? A subpoena is valid if:

- It is personally served on the dentist or someone authorized by the dentist to receive a subpoena.
- It is issued by the clerk of the court or attorney handling the lawsuit.
- It is addressed to the dentist or someone qualified to certify the requested records.
- It contains a date specified for production of records that is at least 20 days after the subpoena was issued and at least 15 days after it was served on you and at least 20 days after notice of the subpoena was received by the patient.
- It specifies each item or category of items to be produced.
It is accompanied by a valid “proof of service” or a patient’s written authorization. Neither is required if the patient is subpoenaing his or her own records. If the patient is a minor, service shall be made on the minor’s parent, guardian, conservator or similar fiduciary, or if one of them cannot be located with reasonable diligence, then service shall be made on any person having the care or control of the minor or with whom the minor resides or by whom the minor is employed, and on the minor if the minor is at least 12 years of age. The date of a valid proof of service must be at least 20 days if served in person (25 days if served by mail in California) before the date demanded for production of records and at least five days before the subpoena is served on the dentist or the dentist’s custodian of records (10 days if served by mail in California).

If the subpoena is valid and the dentist is not a party to the lawsuit, produce the records as requested, sign the affidavit and submit a statement for costs incurred in responding to the subpoena.

Requests From Attorneys for Records Pursuant to Evidence Code §1158

If an attorney at law or his or her representative presents a written authorization signed by an adult patient or the patient’s legal representative, a parent or guardian of a minor or the heir or personal representative of a deceased patient, a dentist shall promptly make all of the patient’s records under their custody or control available for inspection and copying by the attorney or his or her representative. Copying of the records shall not be performed by the dental practice when the requesting attorney has employed a professional photocopier as his or her representative to obtain or review the records on his or her behalf. If the records requested are maintained electronically and if the requesting party requests an electronic copy, the dental practice shall provide the records in the electronic form and format requested, if readily producible. If not readily producible in the requested format, provide records in a form and format agreed upon by both the practice and requesting party. A dental practice must accept a signed and completed authorization form for the disclosure of health information if both of the following conditions are satisfied: 1. The practice determines that the form is valid. 2. The form is printed in a typeface no smaller than 14-point font and is in substantially the same form as the sample on page 328.

Per Evidence Code section 1158, a dental practice may seek reimbursement from the individual who provided the written authorization for copying costs (10 cents per page for standard size documents or actual costs for reproductions of oversized documents or X-ray film), clerical costs (maximum rate of $4 per quarter hour), actual postal costs and retrieval costs. If a copying service is used, you may charge no more than $15 plus the cost of the service.

Requests From Agencies or Law Enforcement Without a Warrant or Subpoena

Access to patient information must be provided to an individual with a legitimate warrant or court order. Most enforcement agencies will first seek permission from the practice owner before conducting an inspection. If access to the premises is not granted in a timely manner, an enforcement agency may obtain a warrant or court order. Whether to allow access to official representatives without a warrant or court order is up to the dentist. The dentist and staff should carefully examine an inspector’s credentials and, if desired, call the telephone number on the individual’s business card.

Dental Board: The dental practice must provide the requested information if the dental board investigator produces a form signed by the patient authorizing the release of information to the board.

Coroner: California law requires health care providers to provide information upon a coroner’s request when authorized by the decedent’s representative, or to help identify the decedent, locate next of kin or investigate deaths that may involve public health concerns, organ or tissue donation, child or elder abuse, suicide, poisoning, accident, sudden infant death, suspicious deaths, unknown deaths or criminal deaths.

Law Enforcement: Sometimes law enforcement will request that a health care provider make available protected health information. Although it is prudent to insist upon a subpoena, HIPAA does allow a dentist, without patient authorization, to release protected health information to law enforcement under the following circumstances:

- To report injuries resulting from criminal acts or deadly weapons.
- To respond to court orders, search warrants, court-issued subpoenas or regulatory agency order.
- To respond to requests for information about a crime victim.
- To respond to requests for information about a crime victim.
- To alert law enforcement of a suspicious death.
- To provide evidence of criminal conduct. Before providing the requested information, verify the identity and credentials of the individual receiving it.
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Knowing how, means doing all of the following - with precision:

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4. Performance of “due diligence” requirements, to prevent later problems.

5. Preparation of all documentation for stock sale, when applicable.


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Authorization for Disclosure of Health Information Pursuant to Evidence Code Section 1158

The undersigned authorizes the medical provider designated below to disclose specified medical records to a designated recipient. The medical provider shall not condition treatment, payment, enrollment or eligibility for benefits on the submission of this authorization.

Medical provider: ___________________________________________________________
Patient name: _____________________________________________________________
Medical record number: _____________________________________________________
Date of birth: ________________________________
Address: _________________________________________________________________
Telephone number: _________________________________________________________
Email: ________________________________
Recipient name: ___________________________________________________________
Recipient address: ________________________________________________________
Recipient telephone number: ________________________________________________
Recipient email: ___________________________________________________________

Health information requested (check all that apply):
☐ Records dated from __________ to __________
☐ Radiology records: ☐ images or films ☐ reports ☐ digital/CD, if available
☐ Laboratory results dated.
☐ Laboratory results regarding specific test(s) only (specify): ________________.
☐ All records.
☐ Records related to a specific injury, treatment or other purpose (specify): ________________.

Note: Records may include information related to mental health, alcohol or drug use, and HIV or AIDS. However, treatment records from mental health and alcohol or drug departments and results of HIV tests will not be disclosed unless specifically requested (check all that apply):
☐ Mental health records.
☐ Alcohol or drug records.
☐ HIV test results.

Method of delivery of requested records:
☐ Mail
☐ Pick up
☐ Electronic delivery, recipient email: ________________

This authorization is effective for one year from the date of the signature unless a different date is specified here: ________________.
This authorization may be revoked upon written request, but any revocation will not apply to information disclosed before receipt of the written request. A copy of this authorization is as valid as the original. The undersigned has the right to receive a copy of this authorization.

Notice: Once the requested health information is disclosed, any disclosure of the information by the recipient may no longer be protected under the federal Health Insurance Portability and Accountability Act of 1996 (HIPAA).

Patient signature*: _______________________________________________________
Date: ___________________________________________________________________
Print name: ___________________________________________________________________

*If not signed by the patient, please indicate relationship to the patient (check one, if applicable):
☐ Parent or guardian of minor patient who could not have consented to health care.
☐ Guardian or conservator of an incompetent patient.
☐ Beneficiary or personal representative of deceased patient.

Regulatory Compliance appears monthly and features resources about laws that impact dental practices. Visit cda.org/practicesupport for more than 600 practice support resources, including practice management, employment practices, dental benefits plans and regulatory compliance.
Extensive Buyer Exposure allows us to offer you Unsurpassed Northern Database & Largest Broker in Northern California

BAY AREA

AC-566 SAN FRANCISCO: Spectacular views of Washington Square. 3ops +2 add’l, 1400sf Price Reduced to $200k
AC-578 SAN FRANCISCO Patient Charts: near Union Sq., 7 Doctor pts/day and 8 Hygiene pts/day $190k
AC-624 SAN FRANCISCO: Wonderful Patients, solid income in great stand-alone bldg. $475k
AC-640 SAN FRANCISCO: On 23rd Floor of Prestigious SF Bldg, 2ops in 700sf. Seasoned Staff, Seller Retiring $175k
AC-649 SAN FRANCISCO Facility Only: Richmond District, 3 ops+1 add’l, Equipment less than 5yrs old $155k
AG-645 SAN FRANCISCO: Low Overhead, compact practice ready for expansion or relocation. Retail/Commercial area. 2nd Floor $125k
AG-669 SAN FRANCISCO: RARE opportunity in the heart of the City! 2 ops LOW OVERHEAD! $88k
AN-513 REDWOOD CITY: The practice of your dreams! 900 sf w/ 4 ops + 2 add’l Now $350k
AN-686 SAN FRANCISCO: The office designed w/patient flow and maximum office efficiency. 1,000 sf w/ 4 ops. $825k
BC-520 HAYWARD Facility: Located in Downtown, 1500 sf, 4 equipped ops, X-Rays in 3 ops. $65k
BC-662 HAYWARD: Starter Practice in the “Heart of the Bay”, near Hospital, 3ops in 1056sf ONLY $75k
BC-681 WALNUT CREEK: Remodeled office located in this semi-rural community, 1000sf w/ 4 Ops. $432k
BC-682 CONCORD: Located in desirable, bustling community w/ seasoned, caring staff. 836sf w/ 3 Ops. $224k
BN-504 RICHMOND: Established Practice & Real Estate! 1450 sf w/ 2 ops + 2 add’l $100k/RE $700k
BN-679 ANTIOTH: Established for more than 50 years W/ Large patient base! 3,600 sf w/ 9 Ops. $1.1mil/RE $1.2mil

BAY AREA CONTINUED

CC-632 SAN RAFAEL: Small town life, vibrant-growing city, 6-8 pts/day, 3ops in 800sf office in beautiful bldg $165k
CC-661 SAN RAFAEL: Starter Practice in beautiful location w/ like-new Equipment hardly used, 3 ops, 900sf Reduced $190k
CC-676 NOVATO: Located at busiest location in a well-known retail center in, 12+- npts/mo, 4 ops in 1,90sf $600k
CG-616 NAPA: State of the Art Practice - Seller moving out of state! $425k
DC-480 SILICON VALLEY: Multi-Specialty Practice, 14+ops in 7500 sf, Owner Financing available Terms $1.075M
DC-671 SAN JOSE: Starter Practice in desirable neighborhood, 6 npts/mo. 3ops in 900sf $150k
DC-692 DUBLIN Facility: Modern, Digital Office, 5ops in 1800sf, $210k w/ the Cone Beam Unit or $165k w/out Cone Beam Unit
DN-631 CAMPBELL: Rare Opportunity! 1100 sf w/ 3 ops, busy retail shopping ctr $249k
DG-519 SANTA CLARA Facility: Move In Ready! 2240 sf w 6 fully equipped ops $225k
DG-635 CASTRO VALLEY: Excellent Location & Stellar Reputation! Solo Group Practice $650k
DN-665 SANTA CRUZ AREA: Loyal, stable, multi-generational patient base. FFS. 1,460 sf w/ 4 ops. $150k
DN-691 SAN JOSE: UNIQUE! 1450 sf w/ 5 ops $985k
DN-688 MONTEREY: Equipped with state-of-the-art equip & latest technology! 1,900 sf w/ 5 ops. $1.4mil/RE $795k
DN-693 SAN JOSE Facility: Attractive & Spacious! Faces one of the city’s major thoroughfares. 1,080 sf w/4 ops. $150k

NORTHERN CALIFORNIA

EN-634 ROSEVILLE: Great place to work & play! $150k
EN-625 SACRAMENTO: Building available for purchase! $475k
EN-627 CARMICHAEL: Reduced $190k
EN-628 ORANGEVALE: $450k
EN-626 CARMICHAEL: $375k
EG-685 LINCOLN/ROCKLIN: $650k
EG-687 TURLOCK: $150k
IG-687 TURLOCK: $160k
IN-569 MADERA: $400k
IC-468 SAN JOAQUIN VALLEY SPECIALTY PRACTICES
JN-691 LINDSAY Facility: $298k
JN-690 LINDSAY: Reduced $125k
JN-689 LINDSAY: Reduced $95k
EN-664 SACRAMENTO Facility: $275k
EN-651 SACRAMENTO: $225k
EN-654 CITRUS HEIGHTS: $210k w/ the Cone Beam Unit or $165k w/out Cone Beam Unit
EN-657 Yuba City Facility: $249k
EN-661 Yuba City: Reduced $125k
EN-662 Yuba City: Reduced $95k
EG-655 SOUTHERN BUTTE CO: $400k
GN-667 BUTTE COUNTY: $315k
GN-668 BUTTE COUNTY: $350k
GN-656 NO. TEHAMA CO: Great Location! $475k
GN-641 YUBA CITY: Building available for purchase! $475k
GN-639 CHICO: $210k
GN-244 OROVILLE: $125k
GN-663 OROVILLE: Collected $125k
GN-668 ORCHARD & SPA Facility: $475k
GN-669 N. AMERICAN RIVER: $400k
GN-666 YAGNA AREA: $275k
GN-667 BEAR VALLEY: $225k
GN-668 SIERRA NEVADA: $425k
GN-669 AMERICAN RIVER: $450k
GN-667 LAKE COUNTY: $275k
GN-668 LAKE CO: $300k
GN-669 LAKE CO: $350k
IC-543 CENTRAL VALLEY Ortho: Collected $125k
IC-543 CENTRAL VALLEY Ortho: Collected $95k
IC-543 CENTRAL VALLEY Ortho: Collected $55k
IC-543 CENTRAL VALLEY Ortho: Collected $400k
IC-543 CENTRAL VALLEY Ortho: $200k
IC-543 CENTRAL VALLEY Ortho: $150k
IC-543 CENTRAL VALLEY Ortho: $150k

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NORTHERN CALIFORNIA CONTINUED

EG-673 SACRAMENTO: Beautiful established dental practice lease opportunity! Call for Details!
EG-685 LINCOLN/ROCKLIN: Perfect Location in amazing community! Retail Shopping Center w/ 4 ops $570k
EN-625 SACRAMENTO: Looking for a HMO practice in a great Location! 2,500 sf w/5 ops $450k
EN-626 CARMICHAEL: Lifestyle you just can’t beat! HMO 1,250 sf w/ 3 ops $300k
EN-628 ORANGEVALE: Great place to work, play & live. HMO 1,310 sf w/ 4 ops + 1 add’l $375k
EN-627 CARMICHAEL: Remarkable HMO opp. awaits your talent & skill! 1,200 sf w/3 ops + 1 add’l $268k
EN-634 ROSEVILLE: Beautifully designed, well-appointed and fully digital! 2352 sf w/4 ops + 2 add’l $235k
EN-660 ROSEVILLE: Highly-established, well-respected, fee-for-service practice w/ loyal patient base. 2,950 sf w/ 5 ops $995k
EN-654 CITRUS HEIGHTS: Well-Established, & loaded with 30+ years of goodwill! 1300 sf, 3 ops + 2 add’l $150k
EN-651 SACRAMENTO: Well-known for delivery excellent & compassionate care. 1750 sf, w/ 4 ops. $150k
EN-664 SACRAMENTO Facility: Great corner location, excellent visibility and easy access! 2,300 sf w/ 4 ops. $55k
EN-689 SACRAMENTO Facility: Bring your talents, hang your sign & make it your own! 2,000 sf w/ 4 ops. $150k
EN-702 SACRAMENTO: Long-established practice w/ an Emphasis on preventative vs reactive dentistry! 1,600 sf w 4 ops + 1 add’l. $495k
FC-489 CLEARLAKE: Great lifestyle. 2015 Gross $915k on 3 day week, 4ops. Real Estate 3600 sf shared, interest “Pride Institute” designed office $470k
FC-650 FORT BRAGG: Family-oriented Practice, 5ops in 2000sf, 6 npts/mo $350k for the Practice & $400k for the Real Estate
FC-677 FORT BRAGG: Beautiful, FFS Practice, 4ops +1 add’l, in 2375sf, Grosses over $1M annually $500k
GC-472 ORLAND: Live & Practice in charming small town community. 1000 sf w/ 2ops, Seller Retiring. $160k
GG-453 CHICO: 5000 sf w/ 7 ops Perfect for 1 or more dentists! $200k
GG-454 PARADISE: 2550 sf w/ 9 ops, 40 yrs goodwill! Amazing Opportunity! $525k
GN-244 OROVILLE: Must See! Gorgeous, Spacious 2500 sf w/5 ops! $315k
GN-399 REDDING: Loyal patient base & relaxed workweek schedule, 1440 sf w/3 ops $150k

SOUTHERN CALIFORNIA

HN-213 ALTURAS: Well managed, consistent revenues! Collected ~$760 in 2016! 2200 sf w/ 3 ops + 1 add’l. $195k
HN-280 NO EAST CA: Only Practice in Town 900 sf w/ 2 ops REDUCED! ONLY $60k
HN-618 SIERRA FOOTHILLS: Seller Retiring! Much room for growth by increasing office hours! 750 sf w/ 2 ops $95k
IC-687 TURLOCK: Established quality practice is a remarkable opportunity for you! 2,000 sf w/ 5 Ops. $298k

CENTRAL VALLEY

IC-468 SAN JOAQUIN VALLEY: High-End Restore Practice! 6 ops in 2500+ sf office. Call for Details! $425k
IN-569 MADERA: Stellar reputation and load with goodwill! 2,900 sf w/ 7 ops $634k
IN-690 LINDSAY: Stable, multi-generational patient base who are loyal & appreciative. 1,700 sf w/ 3 ops. $150k/ RE 150k

SPECIALTY PRACTICES

BC-600 CONCORD Ortho/Pedo Charts Only: Continue treatment to these Ortho/Pedo patients Call for Details! $400k
BC-709 HAYWARD Ortho: Provide personalized care to wonderful patient base, 5-8 npts exams/mo, 4 chair/bays, 194sf $215k
IC-543 CENTRAL VALLEY Ortho: 1650 sf w/ 5 chair bays & plumbed for 2 add’l, Strong Refs & Satisfied Pts Base $125k

“Ask the Broker” can now be found at WWW.WESTERNPRACTICESALES.COM
Persistence — Goal and Habit Tracker and Motivator ($1.99, Samuel Clark)

In his book, Making Habits, Breaking Habits, author Jeremy Dean states that it takes an average of 66 days to form a habit. Having the discipline to maintain a certain behavior for a length of time so a habit can form is extremely difficult. For example, patients who need to establish good brushing and flossing habits need accountability. Persistence is an extensive goal- and habit-tracker app designed to help people reach their objectives. Persistence starts with a simple interface listing all active goals. New goals can be added by tapping the “+” button in the upper right. Each goal can be customized with its own color and category name. A certain goal is entered numerically along with its desired daily frequency, the days of the week the goal applies to and a target number to reach before the goal is completed. Goals can also have a specified end date. Once a customized goal is saved, users can track its progress from the active goals list or by a color indicator to the left of the goal. No color indicator means the goal is on or ahead of schedule, a red indicator means off target and a blue indicator means more needs to be accomplished for the day to be on target. To add progress to a goal, users simply select one from the listing, add or subtract the numeric counter and save the information. If there are days that goals cannot be met for whatever reason, such as being sick or traveling on an airplane, skipped days can be integrated into goals so progress tracking is unaffected. For those who are ahead of schedule, users can reset and increase their daily targets within a goal. Quick actions, such as editing, archiving or deleting goals, can be performed on any goal by swiping it to the left or right. Users also can receive reminder notifications for any goal by scheduling them within the app. A daily log is also available within the app to keep track of any progress made. For anyone who needs motivation to make positive changes in their daily lives, including patients desiring to establish good brushing and flossing habits, Persistence can be incorporated to keep track of the things that need accountability so that their objectives can be reached. Packed with customization features, this app can fit into the lifestyles of many different people and their various schedules.

— Hubert Chan, DDS

PhoneSoap ($49.99, PhoneSoap)

Billing itself as “the first and only cell phone charger that cleans and sanitizes while it charges,” PhoneSoap utilizes two UV-C lamps to produce a specific wavelength of light to pass through the cell walls of bacteria and virus to impair their DNA. Once the DNA is compromised, the cells die and can no longer cause infections or diseases. While PhoneSoap was created to focus on cell phones, anything put inside will be safely sanitized — “If it fits, it cleans.” The sanitizing process only takes 10 minutes to sanitize 99.9 percent of your phone (based on independent third-party test results with staphylococcus aureus, salmonella and E. coli), with a blue indicator on the front letting you know when sanitizing is complete. PhoneSoap is designed to fit even the largest smartphones and engineered to charge any phone. There is a standard USB port on the back of the unit, compatible with the charging cable provided with virtually any phone, allowing users to charge their phones while sanitizing. The unit also has unique acoustic outlets designed to let you hear notifications and alarms while your phone is inside.

— Blaine Wasyliw, CDA director of online services

Consumers Continue to Shift From TV to Mobile Devices

A new study by Accenture highlights the huge shift in the way consumers around the world prefer to view video. TV continues its downward trend as smartphones and tablets continue to increase in popularity.

Here are some of the highlights:

■ Twenty-three percent of people prefer watching TV worldwide, compared to 52 percent last year.
■ Forty-two percent of consumers like to watch TV shows on laptops or desktop computers. (This was 32 percent last year.)
■ For short video clips, 41 percent of consumers (28 percent last year) prefer smartphones while the number of consumers who prefer to watch clips on laptops and desktops fell from 47 percent to 44 percent.

For more information, visit accenture.com.

— Blake Ellington, Tech Trends editor
Going Viral: Getting the Bugs Out of Your Travel Plans

The following Dr. Bob column was originally printed in the September 2010 issue of the Journal.

Today’s germophobic public displays a deep instinct for self-preservation, one that has been heightened to the point where patrons of supermarkets, users of handrails, pushbuttons and grocery carts are encouraged to avail themselves of thoughtfully provided antibacterial wipes before they touch anything except their wallets.

Market managers with a jaundiced eye on the produce-squeezers, melon-thumpers and the “sell-by-date” searchers recognize their establishments are hotbeds of sepsis. Hence, the free wipes calculated to reduce the annoyance of clients decimating each other with some exotic amalgam of customer-borne communicable diseases. It’s the right thing to do; the out-of-round, three-wheeled carts provided enough angst as it is.

All of which makes the recent death of the world’s oldest man more newsworthy. At 113 years of age, the U.K.’s Henry Allingham, still keen as mustard, remembered clearly his birth in 1896 when there were no bacteria, just vapors, assorted plagues and wimpy germs that responded willingly to the wonderful emollient effect of chest poultices of camel dung and the popular malodorous asphidity bags worn around the neck.

It is widely believed that Allingham’s record-breaking lifespan is directly attributable to the fact that he never hung around any of the “germiest tourist attractions” in the world as delineated in a recent CNN article. In case you wish to enter your son’s college dorm on the list, here’s the competition:
The Blarney Stone
Statistics indicate that 400,000 people puckered up and kissed Ireland’s Blarney Stone last year. Why would otherwise sane individuals want to do this? Because by hanging upside down and risking the sudden onset of cerebral hemorrhage, an ancient tradition is fulfilled. Originated by leprechauns (the same guys who brought us the pot-at-the-end-of-the-rainbow hoax), the tradition claims the gift of eloquence will be yours as your lips join the remains of some 92 million kissers before you. In a society where logorrhea is already pandemic, the last thing we need is a bunch of rock kissers whose only hope of employment is in the over-crowded field of politics.

Oscar Wilde’s Tomb
The body of author and playwright Oscar Wilde (1854–1900) is interred in the Père Lachaise Cemetery in Paris. Women who wouldn’t be caught dead inverted at the Blarney Stone have smooched a veritable rainbow of lipstick hues on Wilde’s tombstone to the extent his name is no longer visible. Someday in the future, a germaphobic maintenance person at the cemetery may sanitize the site, only to discover that for the last 50 years smoochers have bestowed their respects to one Marcel Flaubert, a fishmonger from Marseille. Then we will know what wild is really like.

St. Mark’s Square
Also known as Piazza San Marco or, locally, as Piazza de Pigeon Poope, this Venetian attraction is visited by millions of tourists and pigeons who view each other with mutual loathing. What began as a simple goodwill gesture by tourists anxious to spend as many lira as possible in the shortest amount of available time, started offering the resident pigeons little treats in the form of inedible pizza crusts. Word got around and soon birds from as far away as Times Square flew in on the jet stream to partake of the largesse. Pigeons, as an avian species, are lacking a sphincter where it most counts and as a result, tourists sans umbrellas were up to their patellas in airborne pigeon runoff before Imodium could be incorporated by local pizzerias.

Grauman’s Chinese Theater
In 1927, movie star Norma Talmadge accidentally stepped into some wet cement at the theater and immediately called her attorney. No, what probably happened was owner Sid Grauman called his lawyer and a settlement involving 50 pairs of new shoes placated the plaintiff. Sid, however, shrewdly parlayed this incident, accurately predicting that having celebrities imprint their hand and footprints into more wet cement would galvanize more than 4.5 million fans a year to flock to Whacko Central, USA, to compare their own plebian extremities. As far as can be determined, antibacterial wipes for the fans are unavailable, but the site is mopped daily and steam cleaned once a week.

Market Theater Gum Wall
For those citizens whose collapsed 401(k) plans have negated foreign travel, it is no longer necessary to look beyond Seattle’s infamous Gum Wall. Located in the Pike Place Market, there stands a wall of chewed gum some 50 feet long and 15 feet high. Originally a convenient place to park one’s gum before entering the nearby Market Theater, it immediately polarized the largely college patrons to stick to the custom until now it ranks as one of the most colorful displays of germ-enhanced monuments in the world. Believing that domestic germs are superior in every respect to foreign species, people eager to gain a place on the World’s Germiest Tourist Attraction roster, aided by people who don’t even normally chew gum, have happily contributed to the mess and refuse to go home without a loopy-grinning picture taken to commemorate their visit. Travelers, adventurers and all those who like to prattle endlessly about their treks obviously need to visit all these attractions, because, like Everest, they are there. If you wish to vie for the honor of being the World’s Oldest Person Who Can Operate His Own Wheelchair, you might give them a miss.
Take a peek at bright ideas.

Get illuminated at CDA Presents.
Earn C.E. learning cutting-edge techniques and get fired up by industry-leading speakers. Come explore your talent, tools, inspiration and community in a new light.

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cdapresents.com

The Art and Science of Dentistry
Part of the Opalescence family, Opalescence Go prefilled, disposable trays are a professional take-home whitening system. Offering a prescription-strength formula at an affordable price, Opalescence Go whitening is easier to use than over-the-counter products, and it’s available in three concentrations and three delicious flavors.