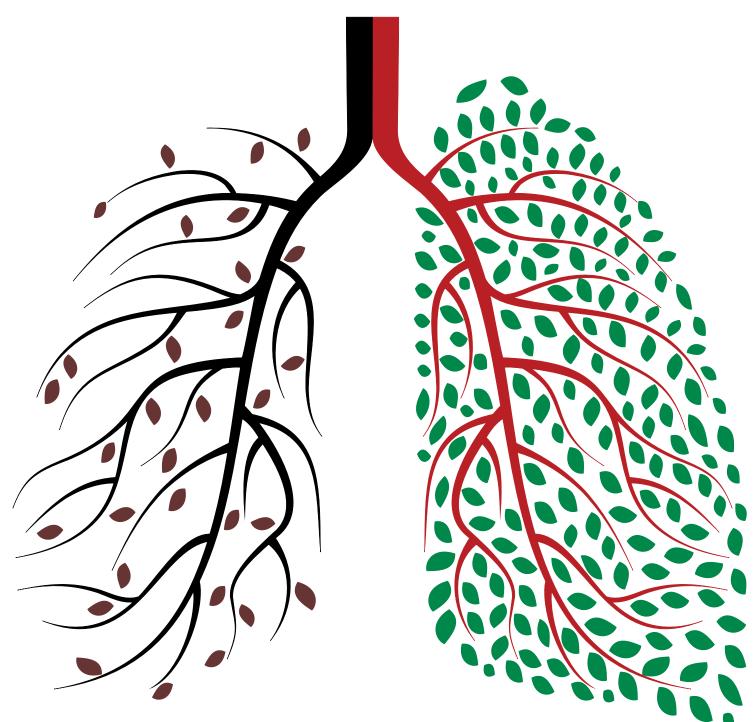


JOURNA DENTAL ASSOCIATION

August 2021

Periapical Pathosis
Cannabis Use
Youth and Tobacco Use
Tobacco Cessation



Helping Dental Patients Quit Tobacco:

What Can We Do and Why Should We Do It?

Benjamin W. Chaffee, DDS, MPH, PhD





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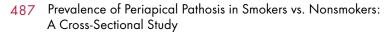
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511 Tobacco Cessation in Dental Settings: A Team-Based Approach C.E. Credit

This article provides accessible, practical recommendations on tobacco cessation strategies for dental professionals, including all members of the practice team. Emphasized is the importance of assessing a patient's readiness to quit and choosing appropriate interventions that meet the individual needs of the patient and practice.

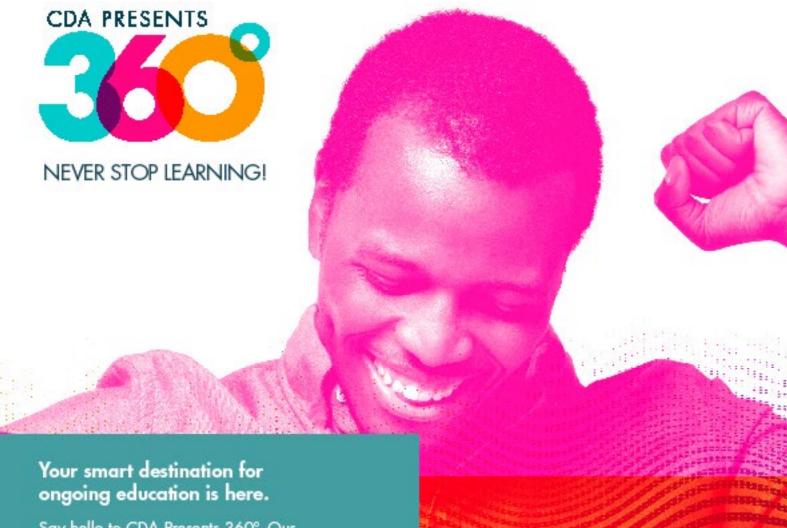
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The Intersection of Value

Ruchi K. Sahota, DDS, CDE

t was a Friday night in the early 1990s. "Boy Meets World" would be on TV in about 30 minutes. My mom was not home yet. And I was fuming. How could she ruin my life like this? All I wanted was my mom. All I wanted was her to start our Friday night routine with the pizza, the ABC TV shows, the board games and all of us positioned in our respective favorite lounging spots in the living room. Where was my mom? When would she return? And why was she not home?

My mom was late that Friday because she was a single mother, private-practice-owning dentist and overall superwoman trying to juggle everything. She would often be late coming home, but never late for dinner. She would often bring work home, but never started working until we slept. She would often be overwhelmed going over the profit and loss statements, but never let us think that was the reason we had to buy things on sale.

Thirty years later, I understand. Thirty years later, I am aware of her constraints from that time. Thirty years later, I value her efforts to maintain the tradition of those fun Friday nights. I value the work ethic she modeled. I value how she managed all the various schedules. I value how she coped with her emotions throughout. And finally, I value how she nurtured two children into independent adults amid it all.

Thus, it is safe to understand that in this crazy roller-coaster COVID-19 year, many people say the mandated call to stop, shelter and be still allowed them to ruminate on what they value both now and in their past. Many stopped to spend time with family. Many sheltered in place and sat in a solitude



The concepts of value, self-reflection, gratitude and responsibility are so finely intertwined. As the COVID-19 cloud entered the atmosphere, many began to self-reflect.

that allowed them to spend time with themselves. And so many of us were still — for the first time in our lives.

The concepts of value, self-reflection, gratitude and responsibility are so finely intertwined. As the COVID-19 cloud entered the atmosphere, many began to self-reflect. Many asked what they valued about the dental profession and perhaps whether they valued it all. Those who were close to retirement wondered if they were willing to invest back into offices that they had been forced to close or downsize for some time. Many gave into the urge to retreat and closed their offices. Many start-up practices or newer offices had reason for concern. How would they build momentum for continued growth in a time when patients questioned leaving their houses at all? Meanwhile, many were able to consolidate time and efforts and had an optimal year.

As a new normal became commonplace in dental offices in California, patients continued to return to our dental chairs. Some visited the dentist because they had pain and that pain forced them to leave their home for the first time. Gratitude satiated these visits. Dentists were appreciated for being open and able to see patients. Dentists were appreciated for maintaining safe environments to help these patients heal. Many of these visits transformed

into life discussions because it was the first real social interaction the patient had experienced with someone who was not a loved one. Dentists turned into counselors. The dentist discussed the risks, benefits and alternatives of the full-coverage restoration. And then, the counselor side of the dentist listened to the stressors and thoughts of the patient's life in the pandemic.

And sometimes instead of gratitude satiating a dental visit, it was pain and only pain that drowned the visit. Patients presented with chief concerns that were frustrating them. Those frustrations were often a slippery slope that led to anger and fear. Amid this pandemic, not only have dentists been treating pain and infection, but they have also been providing human contact and listening ears to help quell emotions.

And though the full-coverage restorations have a fee associated with them, the time dentists spend in talking with patients, allowing for grace and space and assisting the directing of feelings — is often not compensated. The phone calls offices made to follow up and ensure that postoperative complications and questions are mitigated — are not reimbursed. The efforts made to manage traffic in the patient's mind to maintain comfort and ease in the dental chair — are not factored into the fee for the restoration.

But this is the nature of our generous profession. When hospitals ran out of gloves and masks, local dentists donated their PPE reserves. Dentists signed up to help in COVID-19 vaccine administration in their personal time. Dentists opened their offices confidently — knowing they had always kept infection control as a paramount pillar of their office. Did society see our value in these efforts?

While many of our partners, family members and friends stayed home on Zoom, dentists left their homes to go to work. Dental teams were able to interact with other humans — in real life, instead of on laptops. While stressful, we found value in the opportunity for some social interaction. Dental teams were able to ask another human being how they were and receive an answer in not just words spoken but also in body language. We were able to influence a sense of safety and security. Dental teams were able to share laughter with their patients. We felt gratitude for these moments of joy (albeit at times, brief).

As the year progressed, many patients brought smiles to dentist offices — as they were content to return to routine oral health care. As spring rolled around the corner, some patients brought their dentists fruit from their gardens. Referrals continued. Compassion and grace were shared. Life was discussed and life advice was shared from both ends of the room.

As this crazy roller-coaster year progresses and the new normal continues to develop, value, influence, gratitude and responsibility will continue to intersect in dental offices. Dentistry will continue to generously give its time and effort to interact, listen and heal. And perhaps 30 years from now, there will be a sense of understanding of our constraints and efforts during this time as well.

Ruchi K. Sahota, DDS, CDE, practices family dentistry in Fremont, Calif., and serves on the CDA Board of Trustees. She is also a certified dental editor, a consumer advisor for the American Dental Association, past president of the Southern Alameda County Dental Society and a fellow of the American College of Dentists, International College of Dentists and the Pierre Fauchard Academy.

The Journal welcomes letters

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Research: Dental Procedures Are Safe in Pandemic

A new study from The Ohio State University dispels the misconception that patients and providers are at high risk of catching COVID-19 at the dentist's office. The study was published in May in the Journal of Dental Research.

Because SARS-CoV-2 spreads mainly through respiratory droplets, and dental procedures are known to produce an abundance of aerosols, fears were that flying saliva during a cleaning or a restorative procedure could make the dentist's chair a high-transmission location.

The Ohio State University researchers set out to determine whether saliva is the main source of the spray, collecting samples from personnel, equipment and other surfaces reached by aerosols during a range of dental procedures.

By analyzing the genetic makeup of the organisms detected in those samples, the researchers determined that watery solution from irrigation tools, not saliva, was the main source of any bacteria or viruses present in the spatter and spurts from patients' mouths.

Even when low levels of the SARS-CoV-2 virus were detected in the saliva of asymptomatic patients, the aerosols generated during their procedures showed no signs of the coronavirus. In essence, from a microbial standpoint, the contents of the spray mirrored what was in the office environment.

For the study, the team enrolled 28 patients receiving dental implants and restorations using high-speed drills or ultrasonic scaling procedures in The Ohio State College of Dentistry between May 4 and July 10, 2020. Researchers collected samples of saliva and irrigants before each procedure; 30 minutes after the procedure, they collected condensate from providers' face shields, the patient's bib and an area 6 feet away from the chair.

Genome sequencing technology allowed the researchers to first characterize the microbial mix in preprocedure saliva and irrigants, which they could then compare to organisms in the aerosol samples collected later. With the analytical method they used, the researchers did not need to characterize the microbes — they instead looked for variations in sequences that provided enough information to identify the family of bacteria or viruses to which they belonged.

No matter the procedure or where the condensate had landed, microbes from irrigants contributed to about 78% of the organisms in aerosols, while saliva, if present, accounted for 0.1% to 1.2% of the microbes distributed around the room.

Salivary bacteria were detected in condensate from only eight cases. Of those cases, five patients had not used a preprocedural mouth rinse. The SARS-CoV-2 virus was identified in the saliva of 19 patients but was undetectable in aerosols in any of the cases.

Learn more about this study in the Journal of Dental Research (2021); doi.org/10.1177%2F00220345211015948. ■





A Link Between Childhood Stress and Early Molars

A study conducted by researchers from Penn Dental Medicine and the University of Missouri-Kansas City shows that children from lower-income backgrounds and those who go through greater adverse childhood experiences get their first permanent molars earlier. The findings, published in the Proceedings of the National Academy of Sciences, align with a broader pattern of accelerated development often seen under conditions of early-life stress.

"I've long been concerned that if kids grow up too fast, their brains will mature too fast and will lose plasticity at an earlier age. Then they'll go into school and have trouble learning at the same rate as their peers," said Allyson Mackey, PhD, an assistant professor in the department of psychology at Penn, who led the research.

Dr. Mackey and her team studied MRI scans of 117 children ages 4 to 7 who had been participating in two Penn brain development studies. A scan called a T2 weighted scan revealed the morphology of the tooth, showing the researchers just how close the molars were to breaking through the gumline. The researchers developed a novel scale to precisely rate each tooth's position on a scale of 1 to 4. Four molars each received a score and were averaged, leaving a single score per individual.

Controlling for factors like age and gender, the researchers then looked for associations between early environment and molar eruption and found that income and adverse childhood

Enzymes Break Down Biofilm That Leads to ECC

A study from scientists at Penn Dental Medicine offers a strategy for disrupting the biofilm that causes early childhood caries (ECC) by targeting the yeast-bacterial interactions that make ECC plaques so intractable.

In contrast to some current treatments for ECC that use antimicrobial agents that can have off-target effects, potentially harming healthy tissues, this treatment uses an enzyme specific to the bonds that exist between microbes. The study was published in the journal mBio.

The work builds off research from a 2017 paper by Geelsu Hwang, PhD, and colleagues, which found that molecules called mannans on the Candida cell wall bound tightly to an enzyme secreted by S. mutans, glycosyltransferases (Gftb). In addition to facilitating the cross-kingdom binding, Gftb also contributes to the stubbornness of dental biofilms by manufacturing gluelike polymers called glucans in the presence of sugars.

While some cases of ECC are treated with drugs that kill the microbes directly, potentially reducing the number of pathogens in the mouth, this doesn't always effectively break down the biofilm and can have off-target effects on "good" microbes as well as the soft tissues in the oral cavity.

In the new study, researchers wanted to try a different approach that would directly target the insidious interaction between yeast and bacteria and opted to target the mannans in the Candida cell surface using three different mannandegrading enzymes. They found that the pH of the surrounding medium was higher when exposed to the enzymes, indicating an environment that was not as acidic and thus less conducive to tooth decay.

Dr. Hwang said a nonalcohol-based mouthwash with the new enzymes added could be developed for use by children as a preventive measure against ECC.

Read more of this study in mBio (2021); doi.org/10.1128/ mBio.00651-21.



experiences are both individually associated with molar eruptions status.

"It's really important for us to understand how to detect early maturation sooner," Dr. Mackey said. "Right now, we're relying on seeing when kids hit puberty, which might be too late for some meaningful interventions. If

we can see that a child is experiencing this maturation earlier, we might be able to direct more intervention resources toward them."

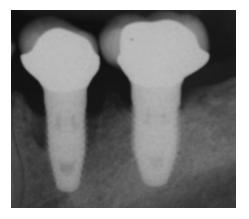
Learn more about this study in the Proceedings of the National Academy of Sciences (2021); doi.org/10.1073/ pnas.2105304118.

Artificial Intelligence in Dentistry

Predicting Treatment Outcomes of Diseased Implants

A team led by the University of Michigan School of Dentistry developed a machine learning algorithm, a form of artificial intelligence, to assess an individual patient's risk of regenerative outcomes after surgical treatments of peri-implantitis.

The algorithm is called FARDEEP, which stands for Fast and Robust Deconvolution of Expression Profiles. In the study, published in the journal Theranostics, researchers used FARDEEP



to analyze tissue samples from a group of patients with peri-implantitis who were receiving reconstructive therapy. They quantified the abundance of harmful bacteria and certain infection fighting immune cells in each sample.

Patients who were at low risk for periodontal disease showed more immune cells that were highly adept at controlling bacterial infections, said Yu Leo Lei, PhD, senior author and assistant professor of dentistry.

The team was surprised that the types of cells associated with better outcomes for implant patients challenge conventional thinking.

"Much emphasis has been placed on the immune cell types that are more adept at wound healing and tissue repair," Dr. Lei said. "However, here we show that immune cell types that are central to microbial control are strongly correlated with superior clinical outcomes.

"Surgical management can reduce bacterial burdens across all patients, however, only the patients with more immune cell subtypes for bacterial control can suppress the recolonization of pathogenic bacteria and show better regenerative outcomes."

In the future, it may be possible to predict the risk of peri-implantitis before a dental implant is placed, Dr. Lei said. More human clinical trials are required before FARDEEP is ready to be used widely by clinicians.

Learn more about this study in Theranostics (2021); doi:10.7150/thno.57775.

Enhancing Efficacy of Sleep Disorder Treatments

In a new study, researchers from the University of Copenhagen's department of computer science collaborated with the Danish Center for Sleep Medicine to develop an artificial intelligence algorithm that can improve diagnoses, treatments and our overall understanding of sleep disorders. The study was published in the journal npj Digital Medicine.

"The algorithm is extraordinarily precise. We completed various tests in which its performance rivaled that of the best doctors in the field, worldwide," said Mathias Perslev, PhD, lead author of the study.

Today's sleep disorder examinations typically begin with admittance to a sleep clinic where a person's night sleep is monitored using various measuring instruments. A specialist in sleep disorders then reviews the seven to eight hours of measurements from the patient's overnight sleep.

The doctor manually divides these seven to eight hours of sleep into 30-second intervals, all of which must be categorized into different sleep phases. It is a time-consuming job that the algorithm can perform in seconds.

"This project has allowed us to prove that these measurements can be very safely made using machine learning, which has great significance. By saving many hours of work, many more patients can be assessed and diagnosed effectively," said Poul Jennum, MD, professor of neurophysiology and head of the Danish Center for Sleep Medicine.

By collecting data from a variety of sources, the research team behind the algorithm have been able to ensure optimal functionality. In all, 20,000 nights of sleep from the U.S. and a host of European countries have been collected and used to train the algorithm.

The sleep analysis software is freely available at sleep.ai.ku.dk and can be used by anyone, anywhere. Just a few measurements taken by common clinical instruments are required for the algorithm, so use of this software could be particularly relevant in developing countries where access to the latest equipment or an expert is limited, according to the authors.

Read more of this study in npj Digital Medicine (2021); doi.org/10.1038/s41746-021-00440-5.



Helping Dental Patients Quit Tobacco: What Can We Do and Why Should We Do It?

Benjamin W. Chaffee, DDS, MPH, PhD

GUEST EDITOR

Benjamin W. Chaffee, DDS, MPH, PhD, is an associate professor of oral epidemiology and dental public health at the University of California, San Francisco, School of Dentistry. His research interests include tobaccorelated behaviors, caries management and oral health disparities. Conflict of Interest Disclosure: None reported.

or a number of years, I had the privilege of teaching first-year dental students about tobacco, oral health and supporting dental patients with tobacco cessation. Through a mix of lectures, assignments, role playing and small group activities, we detailed how tobacco ravages the oral cavity. We lamented decades of avoidable death brought on by an industry that peddles addiction to poison. We memorized the 5 A's, made a run at motivational interviewing and were mindful of the psychological and physiological aspects of nicotine addiction. Mostly, we challenged unspoken assumptions that this would be easy, that patients would quit using tobacco the instant an authoritative voice with a mouth mirror told them they should, as if they were just waiting to be informed that smoking is bad. We grappled with the reality that many, if not most, nicotinedependent dental patients would not be willing or ready to quit, despite our willingness and readiness to help.

We never donned a gown, lifted a waxer or examined a single ridge, groove or tubercle. Yet, one of my greatest compliments received on a course

evaluation stated, "This is the first class in dental school that I felt like I was becoming a dentist." What we did practice was being knowledgeable, empathetic communicators who connect with their patients, not with a warning and empty advice but with tangible, evidence-based resources to reach a healthier state. Essentially — the practice of health care.

Students challenged me occasionally. We debated the relative harms, possible merits and professional obligations around electronic cigarettes and cannabis. We pondered whether it was better to be stern or humorous (hint: be yourself). No question came more unexpectedly than when a student asked, "But, what if I just don't care?"

The comment was not so much about apathy for this line of work but about a line between the teeth and the human vessels who carry them from the waiting room to the dental chair. Deep breath. I proposed that all of us in that room, likely all of us in this profession, at some point along our journey had said we've chosen this career to help people, to restore lost confidence behind a smile, to extract pain from a throbbing jaw. What

more meaningful help could we offer than a possible exit from something as dangerous and destructive as tobacco?

In this issue of the Journal of the California Dental Association, four articles provide yet more evidence of those dangers to oral health and offer practical, actionable recommendations for providing better tobacco prevention and cessation support for our patients.

Drs. Joseph Katz and Ilan Rotstein interrogate a health center database of nearly 1 million patients to uncover differences in diagnosed periapical pathosis between patients with and without a history of smoking. Consistent with hypothesis, the prevalence of periapical abscesses was nearly threefold higher among current and former cigarette smokers than never-smokers. This strong association persisted in all subgroups defined by sex and race/ethnicity, underscoring that no one is safe from the damaging effects of combustible tobacco.

I hope that my article will remind readers that we have a responsibility to our patients not only to address "smoking" but an increasingly diverse array of tobacco and nicotine products, including electronic cigarettes and oral tobacco¹ and associated substances like cannabis (marijuana). Examining a nationally representative prospective cohort of U.S. adults, my analysis found that adults who consistently reported cannabis use over a three-year period were at nearly twice the odds of later reporting multiple conditions indicative of poor oral health, including after statistical adjustment for other risk factors like tobacco smoking.

Drs. Jean Calvo, Rebecca Renelus and Michelle Tsao frame the pediatric dentist's role in tobacco use prevention, highlighting the unique position of pediatric providers to intervene before established tobacco use takes hold. The vast majority of adult tobacco users initiated use in adolescence,²

yet few dental professionals reported asking their adolescent patients about tobacco.³ Pediatric providers must be particularly attuned to changing trends in the tobacco-product landscape, with e-cigarettes at the forefront. Lauded by some as a potentially less harmful alternative to combustible tobacco, the arrival of e-cigarettes corresponded with a surge in use among teenagers, becoming entrenched as the most commonly used tobacco product by far among U.S. adolescents.⁴

Ms. Elizabeth Couch and Ms. Janelle Urata outline a framework for involving

Patients welcome and expect their dental providers to ask them about tobacco use and encourage them to stop.

the entire dental team when it comes to supporting patients to stop tobacco use. Dental assistants, dentists, dental hygienists and front office staff can all take part in delivering a consistent, supportive message and substantive aid. When everyone believes in this shared goal and shares responsibility in achieving it, promoting full-person health grows into the ethos of your practice.

So, back to my student's question. Why should we care? As I would tell students myself, very often, our efforts to help will not be successful given how strongly nicotine addiction grips its victims — much more vise than vice.

For one, patients welcome and expect their dental providers to ask them about tobacco use and encourage them to stop.⁵ Also, tobacco counseling is so much a part

of our job description that there's a CDT code for it (D1320), now reimbursable under the California Medi-Cal Dental Program.⁶ Beyond expectations and payments, supporting tobacco cessation is also our professional responsibility, as affirmed in a resolution overwhelmingly adopted by the CDA House of Delegates.⁷

Finally, an effective patient intervention can require only a few minutes. Even if not always successful, summed over encounters with many patients, the successes add up to meaningful gains in health and quality of life. Consistently and persistently offer your patients opportunities and resources to live tobacco and nicotine free and, over the years, you won't only be counting restored smiles on your career ledger, but lives saved too.

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PROFESSIONAL PRACTICE TRANSITIONS



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Practice Sales • Valuations/Appraisals • Transition Planning • Partnerships • Mergers • Associateships

NORTHERN CALIFORNIA

46 Years in Business 39 Years in Business

ALAMEDA: 4 Ops in busy shopping center. 29 yrs Goodwill. 2019 GR \$246K on 27 hrs/wk. Room to grow!#CA1268

DAVIS/WOODLAND: GP practice/Condo with 37 yrs. Goodwill. 2019 GR \$770K. 7 Ops, 5 Equipped, Digital Sensors and Pano in sought-after area. #CA1732

EAST BAY AREA PEDO: Well-established with 8 Ops, Digital, plumbed for Nitrous, and high NP count. Associate-driven with Delta PPO. 2019 GR \$832K on 3-4 days/wk., 2020 Production \$523K. #CA2523

FAIR OAKS/CITRUS HEIGHTS AREA: Successful practice w/ 38 yrs. Goodwill. Nice décor, Digital, 6 hyg days/wk. Growth potential with Ortho/Implants. 4 Ops in 1,100 sf. 2019 GR \$970K+ on 32 hrs/wk. #CA656

SONOMA COUNTY: Stand-alone 3,000 sf. 72

FREMONT ORAL SURGERY: New Listing 34 yr history, diverse high-tech community. 4 Ops Digital, 7-10 y/o equipment, Pano. 2019 GR \$548K on 3.5 days/wk. #CA2754

GREATER SACRAMENTO: Paperless, hiend retail area, 5 Ops 30 y 5 Foodwill. Most Specialties referr 2 10 13 k\$781K on 32 hrs/ wk. Seller can work back post-sale. #CA2465

GREATER SONORA AREA: Rural lifestyle GP/Real Estate, 5 Ops, Dentrix, Strong hyg prog in stable community. 2019 GR \$698K. #CA1713

HAYWARD: New Listing! Great neighborhood practice +RE opportunity. 4 Ops, digital, updated. 2019 GR \$730K. #CA2771

LAKE TAHOE AREA: 4 Ops, 37+ yrs Goodwill. Rural lifestyle GP in growing resort community. 2019 GR \$760K. #CA1715

LAKE TAHOE AREA: GP practice with 5 Ops w/ 6th Open, Operatory views of Lake Tahoe, only 34 Delta Premier patients, 2,100 sf. 2019 GR \$579K on 22 avg. Dr. hrs/wk.

MILLBRAE: Role Reversal, 5 Ops. 2019 GR \$1M+ on 4 days/wk. and 6 hyg days. Seller offering 6 mo. employment and work back 6 mo. after sale. Digital, Pano, Waterlase & Periolase. #CA1139

NORTHERN CA PERIO: 4 Ops, Consult Rm, Upgraded Tech with Digital, LANAP, Paperless. 2019 GR \$900K+. Draws from lg area with little competition. #CA1553

NORTHERN SACRAMENTO: Busy location, Paperless, 3 Ops+4th shared, CEREC, Digital Pano. 2019 GR \$671K on 24-32 hrs/wk.

NORTHERN SACRAMENTO: 5 Ops, busy retail shopping center. Digital, strong hygiene, and high NP count. Room for growth with specialties. 2020 GR \$900K. #CA2464

OAKLAND: 3 Ops, Room to expand, Digi X-rays, Paperless, 40+ yrs Grewill. 2019 GR \$675K w/room togo of the alaties. Prime location, retiring of ever will help with a smooth transition. Seller-owned RE to purchase or lease, #CA1380

REDDING AREA: Modern office with 5 Ops, 4 Eq., Digital, Newer CEREC, 23 NP/mo with no marketing. Strong Hygiene, specialties referred. 2019 GR \$558K. #CA1742

SACRAMENTO: New Listing! 5 Ops+RE in a busy medical/dental/retail area. Digital, 50 yrs Goodwill, 6 hyds/wk. and 3.5 Dr. days/wk. 2019 GR of \$697K with specialties referred. #CA2620

SAN JOSE: Practice+RE, 10 ps, Modern design in open concept in de in la secation. 2019 GR \$374K. #CA2613

SAN MATEO: New Listing! 5 Ops, Digital, iTero Scan, CEREC, Laser, Paperless, Microscope. Seller-owned stand-alone building to lease. \$1.4M GR on 4 days/wk. #CA2596

SAN RAMON FACILITY ONLY:

New Listing! Desirable Bishop Ranch location.
5 Ops with great exposure. Digital, Laser, Digital Pano, Open Dental w/ 10 computers, bright, modern design. #CA2588

SONOMA COUNTY: New Listing! 4 Ops in spacious layout in heart of the area off main highway. Est 22 yrs with 5 star Google reviews,

SONOMA COUNTY: Stand-alone 3,000 sf, 72 NP/mo. & 10 hyg days. 6 Ops, Pano, Dexis, Cameras, Laser, Dentrix. Business & RE for sale or Lease. Doctor Retiring. 2019 GR \$2.3M+. #CA544

VACAVILLE AREA: Price Reduced! Centrally-located & hi-traffic location with 25+ yrs goodwill. 5 Ops in 1,700 sf. 2019 GR \$556K on 32 hrs/wk. #CA645

CENTRAL CALIFORNIA

CENTRAL COAST: 5 Ops, digital, 25+ yrs Goodwill. Newly renovated, practice sees 30 NP/mo. Strong hyg prog. 2019 GR \$1.1M+. #CA1218

CENTRAL VALLEY/MODESTO:

New Listing! 8 Ops, high visibility retail, Open 20+ yr, Digital, soft/hard tissue lasers, 3,300+ active pts., 24+ NP/mo., 4 hyg days/wk., 18.5 hour Dr. work week. 2019 GR \$852K, 2020 84% of 2019. #CA2721

MODESTO AREA: Est. area with 60+ yrs. goodwill. 5 Ops, 2019 GR \$1.1M+ on 3 days/ wk. Dental Condo also available for purchase or lease, Seller may consider financing. #CA635

MONTEREY: New Listing! 4 Ops, Paperless, Digital, Pano. 2019 GR \$1.1M with Adj. Net over \$450K. Post-COVID revenue has grown even more! RE for sale, non-Delta Premier office FFS and some PPOs #CA2614

SANTA CRUZ/APTOS PERIO: New Listing 4 Ops+RE, Paperless, Digital, CBCT, 27 years goodwill. Seller will help with smooth transition of strong referral base. #CA2725

STOCKTON: 1/3-2/3 share of 3 GP partner practice. 2019 GR \$508K on 32 hrs/wk. Digital, paperless. Most specialty referred. Add'l 1/3 ownership of separately listed practice in group also avail, allowing 2/3 ownership. #CA1389

STOCKTON: Practice+RE available, 5 Ops, 5 Hyg. Days/wk. 2019 GR \$812K on 32 hr. week. High level of Ortho, seller can work back. #CA2006

SOUTHERN CALIFORNIA

ANTELOPE VALLEY: New Listing! 7 Ops in fast-growing community. Paperless with Dentrix, digital x-rays, 8 days of hyg/week and dedicated staff. Room to grow with specialties! #CA2612

ARCADIA: New Listing! 4 Ops and 1-2 hyg days/wk. 2020 GR of \$300K, with upside potential. Office has older equipment, ready for a buyer to modernize it to their liking. Retiring seller. #CA2642

BAKERSFIELD: 6 Ops, 40 yrs Goodwill, great reputation in the area. 6 hyg days/wk. Most Specialty referred. Digital pano, digital X-rays. 2019 GR \$600K. RE also for sale. #CA1274

BAKERSFIELD: *New Listing!* 6 Ops, 5 Equipped, Digital, 2020 Collections \$1M+ with 6 days hygiene and 2 P/T associates. #CA2587

BURBANK: New Listing! Big opportunity for large practice merger, 6 Ops, Digital, seller retiring. 6 days of hygiene, specialties referred. Seller will transition, open to financing options. 2019 GR \$918K. #CA2632

COASTAL LA COUNTY: Prime Location! 3 Ops on major road. Modern design in bright space. Paperless with Digital Pan/Ceph and refers out specialties. No Delta Premier. 2019 GR \$863K. #CA2489

CORONA: 4 Ops, Digital, excellent growth opportunity. Main street location in small strip center. 2019 GR \$280K. #CA2002

HUNTINGTON BEACH: PRICE REDUCED FOR QUICK SALE! 5 Ops, desirable loc, Digital, Strong hyg prog. 2019 GR \$604K. #CA685

HUNTINGTON BEACH: 4 Ops, located in a busy retail center with great visibility. Practice utilizes Digital X-rays and Easy Dental PMS. 2019 GR \$466K. #ČA673

INDIO: New Listing! 4 Ops, single-story medical/retail center. Digital, CEREC w/milling unit and oven. GR \$764K in 2019 and \$535K in 2020. 7 Hyg days/wk. Great Opportunity. #CA2619

LONG BEACH: RE Ownership an option! Upper middle-class residential practice est. in 1950. Existing 4 Ops, 3 Equip, Digital, Easy expansion next door to add 3 Ops, 2 are equip Most Specialty referred. Strong post-COVID production. 2019 GR \$696K. #CA671

LOS ANGELES: Cash/PPO office in great DTLA Location. 3 Ops with low rent. Digital with scanner and lasers. 2020 GR \$299K on 2 days/wk. #CA2493

ORANGE COUNTY: Price Reduced! 5 Ops, Digital, Retiring seller. Excellent reputation, affluent area, high quality care. Modern, welcoming office with strong hyg prog. Room to grow specialties. 2019 GR \$642K. #CA1676

ORANGE COUNTY: Strip center location at a major intersection. 2019 GR \$329K with low overhead and great take-home Net. 5 Ops, 3 equipped, seller works average 25 hrs./wk. Great potential, low asking price of \$175K. A must-see! #CA1728

ORANGE COUNTY: New Listing! 4 Ops in sought-after area. 34 yrs Goodwill, many hi-end procedures done in-house but room to grow other specialties. Digital. FFS/Cash. #CA2704

OXNARD: 7 Ops, nice of the, paperless, digital, 11 days of he seek. 2019 GR \$1.55M. #CA1820

OXNARD: 4 Ops, Digital X-rays, Est. 35+ yrs ago. Seller owned it for 3 yrs and has a primary office in LA. 2019 GR \$662K. #CA1164

PALM DESERT: 4 Ops 27 yrs Goodwill. Strong hyg prog w/ hi-end patient base of locals/snowbirds. 2019 GR \$809K on only 16 days/mo. with low overhead. Call today!

SAN GABRIEL VALLEY: 4 Ops, Digital Xrays, 65 yrs Goodwill. Most pecialty work referred out, most P O I as are accepted. Busy road with great vis bindy, open 4 days/wk. Nicely appointed; excellent opportunity. #CA596 SOUTH BAY LOS ANGELES: Ready to retire! 7 Ops, real estate for sale also. 50% Denti-Cal, some HMO and PPO. 2019 GR \$568K. #CA1050

SOUTH ORANGE COUNTY PERIO: 4 Ops, 3 Equip, Coastal Corna, Lity Lodern, Busy strip center location near hand residential. 2019 GR \$845K. #CA643

SANTA BARBARA: New Listing! 4 Ops in beautiful setting. Digital, FFS, strong hygiene, and room to grow with specialties. Consistently collects \$1M+/yr. with manageable overhead. #CA2531

SANTA BARBARA: New Listing! 4 Ops with Digital x-rays, 5 hygiene days/wk. Most specialties referred, beautiful area. 2019 GR \$790K with attractive net. #CA2722

VALENCIA: New Listing! 4 Ops, digital X-Ray, Pano, 5 y/o equipment, 2019 GR \$605K and 2020 \$507K, 30+ years of goodwill.Retiring seller, priced to sell! #CA2691

SAN DIEGO

DEL MAR: *New Listing!* 4 Ops, Digital, Open Dental, Conservative Practitioner who refers out specialties. 4 days of hygiene per week. Seller is eager for a quick sale. Excellent opportunity in a very desirable location. #CA2724

NATIONAL CITY: 6 Ops, 14 yrs Goodwill, strip mall with high visibility, Digital, loyal staff and patients. 2019 GR \$754K. #CA1465

SANTEE: Practice+RE - 7 Ops, Digital, Pan, in excellent location with parking. Growing area with many years of goodwill.

OUT OF CALIFORNIA

BIG ISLAND, HAWAII: 3 Ops, non-digital, excellent location plus rare option to purchase office space. Room to grow! #HI1929

PORTLAND, OR: New Listing! Great location. 5 Ops, 4 equipped, Digital, Pano, 50% Medicaid. Turn-key practice on main road. 2019 GR \$646K. #OR2757

SOUTHWEST PORTLAND, OR: 7 Ops, 6 Equip, Dentrix, Dis (a) 24.5. Well-maintained leased space. 2010 Or. \$598K. #OR115

SOUTH OF PORTLAND, OR - ORTHO: Growing community outside "Big City". Wellestab near referring doctors. Updated, spacious, turnkey! 2019 GR \$1.3M+ #OR1550

SOUTHERN OREGON: New Listing! 5 Ops, Paperless, CEREC, Laser, and much more. Doctor is available to stay on for transition, if desired. Turn-key office. 2020 GR \$1.5M. #OR2688

SOUTHERN OREGON: Quaint GP in ideal location in desirable town. 4 Ops with room to grow adding days and specialties. Open 31 yrs. Digital with EagleSoft. \$276K GR in 2020. #OR2574

TRI-CITIES, WASHINGTON: New Listing Small modified start up, fully equipped! Access to 1500 patient records, Open Dental software, laser, x-ray sensors. Desirable location, affordable rent. #WA2629



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Prevalence of Periapical Pathosis in Smokers vs. Nonsmokers: A Cross-Sectional Study

llan Rotstein, DDS, and Joseph Katz, DMD

ABSTRACT

Introduction: Tobacco smoking presents a health hazard that negatively affects oral health. The possible link between tobacco smoking and periapical pathosis has been a subject of long debate. However, recent systematic reviews and meta-analyses have indicated that tobacco smokers had an increased prevalence of pulpal and periapical disease. The purpose of this study was to assess the prevalence of periapical pathosis in smokers versus nonsmokers and to examine the differences between males and females and between African American and Caucasian patient populations.

Method: Integrated data of hospital patients were used. Data included the corresponding diagnosis code for periapical abscess (PA). History of smoking, including current and past smoking, was retrieved by searching the appropriate query in the database. The relative risk of smoking and its association with gender and race were calculated and analyzed statistically; p < 0.05 was considered statistically significant.

Results: Out of 953,741 patients examined, 6,283 were diagnosed with periapical abscesses. The relative risk for the presence of periapical abscesses in African Americans was 3.37 whereas the relative risk in Caucasians was 0.75. The difference was statistically significant for both African Americans and Caucasians (p < 0.0001). The relative risk for the presence of periapical abscesses in the smokers' groups was 4.14. The relative risk was significantly higher in female smokers than in male smokers (p < 0.0001). The relative risk for the presence of periapical abscesses in African Americans who smoked was 7.13 compared to the relative risk of 2.36 in African Americans who didn't smoke. The relative risk for the presence of periapical abscesses in Caucasians who smoked was 3.63 compared to the relative risk of 0.68 in Caucasians who didn't smoke. The differences were statistically significant (p < 0.0001). The relative risk for the presence of periapical abscesses was higher in African Americans than in Caucasians in both smoking and nonsmoking groups.

Conclusions: Under the conditions of this study, it appears that a strong correlation exists between tobacco smoking and the presence of periapical pathosis. Gender and race may play a role in the prevalence of such lesions.

Practical implications: Smoking cessation and prevention protocols should be adopted and recommended to patients.

Keywords: Apical abscess, apical lesion, apical pathosis, smoking, tobacco smoking

AUTHORS

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obacco smoking is considered a public health hazard that negatively affects not only the overall health of individuals1-3 but also their oral health.4-5

The possible link between tobacco smoking and the formation of periapical disease has been a subject of debate. 6-14 While some studies have reported a correlation between smoking and periapical disease, 6-10 others didn't find such correlation. 11-14 The inconsistencies in the reports may be due to variation in methodology, number and type of subjects, inclusion and exclusion criteria and data analysis.

Recent systematic reviews and meta-analyses of the available literature have indicated that tobacco smokers had an increased prevalence of pulpal and periapical disease.⁶⁻⁷ One such systematic review reported that in the nine case-control studies analyzed, a significant positive association was found between tobacco smoking and the prevalence of periapical periodontitis, with an odds ratio of 2.78.6 Furthermore, the three longitudinal cohort studies analyzed indicated that the risk ratio of smoking related to the prevalence of periapical disease was 2.11.6 Another systematic review and metaanalysis demonstrated that smokers

had twice the chance of having apical periodontitis and/or root canal treatment as compared to nonsmokers.⁷

It has been hypothesized that tobacco smoking may have an impact on the periapical tissues by affecting the flow rate of the blood supply to the tooth, thereby limiting circulation of immune response components and nutrients to the dental pulp. 15 This may lead to necrosis of the dental pulp and formation of periapical disease. 10,11,15-16

An advantageous approach to assess the correlation between tobacco smoking and the formation of periapical disease is through epidemiological methods. These methods enable the analysis of large cohorts of patient populations as well as multiple variables. 17-19

The purpose of this epidemiological study was therefore twofold: to assess the prevalence of periapical pathosis in smokers versus nonsmokers and to examine the differences between males and females and between African American and Caucasian patient populations.

Material and Methods

The University of Florida (UF) Integrated Data (IDR) i2b2, provided by the UF Health Office of the Chief Data Officer for the period of June 2015 to April 2020, was used. The study was

exempt from IRB approval because there were no HIPAA identifiers, and as such, it was not considered a human-subject study.

Data aggregate from inpatients and outpatients visiting the UF Health Center were recorded using the electronic patient record Epic. The different diagnoses were coded using the international coding systems ICD 10. The patient population analyzed was mixed, presenting with different disease conditions including periapical abscesses without sinus (ICD 10 K04.7). Diagnosis was made based on clinical examination and imaging data confirming the diagnoses of periapical abscess without sinus tract.

Inclusion criteria included the corresponding diagnostic code for periapical abscesses without sinus (ICD 10 K04.7). There were no exclusion criteria because all codes were computerized and specific diagnoses of periapical abscesses in the total hospital patient population were searched using the appropriate ICD 10 code. History of smoking, including current and past smoking, was retrieved by searching the appropriate query in the database.

Demographics of the patients' aggregates were deidentified and provided by the UF IDR. A statistical analysis was done using MedCalc software to evaluate the relative risk (RR), which is a standard method of showing a strength of association between two covariates where the first is a bad outcome.

The RR of smoking on the prevalence of PA and its association with gender and race were calculated with a 95% confidence interval, and the statistical difference between the study groups was assessed using MedCalc software. A value of p < 0.05 was considered statistically significant.

Results

The total hospital population studied was 953,741, 46% male and

TABLE 1

Gender Distribution of Patients With Periapical Abscesses Compared to the Total Number of Hospital Patient Population

	Males	Females	Total patient population
Periapical abscesses	2,819 (44.86%)	3,464 (55.14%)	6,283
Hospital	438,937 (46%)	514,804 (54%)	953,741
RR	0.89	1.02	
% 95 CI	0.8730-0.9223	0.9988-1.0445	
p value	< 0.0001	0.0636	

RR: relative risk; CI: confidence interval

TABLE 2

Ethnicity Distribution of Patients With Periapical Abscesses Compared to Number of Same Ethnic Patient Population in Hospital

	African American	Caucasians	Other ethnicities	Total patient population
Periapical abscesses	2,150 (34.2%)	3,431 (54.6%)	702	6,283
Hospital	109,845 (11.5%)	482,558 (50%)	361,338	953,741
RR	3.37	0.75		
% 95 CI	3.2916-3.4698	0.7392-0.7706		
p value	< 0.0001	< 0.0001		

RR: relative risk; CI: confidential interval

54% female. A total of 6,283 patients were diagnosed with PA. The RR for males was 0.89 and the RR for females was 1.02 (TABLE 1). In the male group, there was a statistically significant difference between patients presenting with PA as compared to the total hospital male population (p < 0.0001). In the female group, no statistically significant difference was found in patients presenting with PA as compared to the total hospital female population.

Out of the 6,283 patients with PA, 34.2% were African Americans and 54.6% were Caucasians (TABLE 2). An additional 11.2% pertained to other ethnicities. However, the relatively small numbers in each of the other ethnic groups weren't deemed valid for analysis.

The RR for PA in African Americans was 3.37 whereas the RR in Caucasians was 0.75 (TABLE 2). The difference was statistically significant for both African Americans and Caucasians (p < 0.0001).

The RR for PA in the smokers groups was 4.14 (TABLE 3). The RR was higher in female smokers (4.51) than in male smokers (3.81). The differences were statistically significant (p < 0.0001).

The RR for PA in African Americans who smoked was 7.13 compared to RR of 2.36 in African Americans who didn't smoke (TABLE 4). The RR for PA in Caucasians who smoked was 3.63 compared to RR of 0.68 in Caucasians who didn't smoke (TABLE 4). The differences were statistically significant (p < 0.0001). The RR for the presence of PA was higher in African Americans than in Caucasians in both smoking and nonsmoking groups (TABLE 4).

Discussion

Overall, the results of this crosssectional study indicate that the relative risk for presenting with periapical pathosis is significantly higher in smokers than in nonsmokers. Our results agree with

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Prevalence of Periapical Abscesses in Male and Female Hospital Patients									
Smokers Total Males Females									
Periapical abscesses	1,996 (31.7%)	963 (34%)	1,035 (30%)						
Hospital	73,118 (7.6%)	38,318 (52.4%)	34,800 (47.6%)						
RR	4.14	3.81	4.51						
% 95 CI	3.9937-4.2996	3.5966-4.0465	4.2618-4.7732						
p value	< 0.0001	< 0.0001	< 0.0001						

RR: relative risk; CI: confidential interval

TABLE 4

Risk of Smoking in African Americans vs. Caucasians

	No. of smokers (AA)	No. of smokers (CAU)	No. of nonsmokers (AA)	No. of nonsmokers (CAU)
Periapical abscesses	610	1,298	944	1,087
Hospital	12,978	54,172	60,535	241,811
RR	7.13	3.63	2.36	0.68
% 95 CI	6.6040-7.7084	3.4627-3.8204	2.2309-2.5118	0.6464-0.7203
p value	< 0.0001	< 0.0001	< 0.0001	< 0.0001

AA: African Americans; CAU: Caucasians; RR: relative risk; CI: confidential interval

other recent meta-analyses and systemic reviews. 6-7 Moreover, our results show that the risk for the presence of periapical pathosis in African Americans who smoked was significantly higher compared to the risk in African Americans who didn't smoke. Additionally, the risk for the presence of periapical pathosis in Caucasians who smoked was significantly higher compared to the risk in Caucasians who didn't smoke.

Interestingly, our study showed that the risk for the presence of periapical pathosis in African Americans who smoked was higher than that of Caucasians who smoked. The reason for this finding is not completely clear. One study reported a statistically significant positive correlation between the expression of RAGE and NF-kappa beta.²⁰ When African Americans and Caucasians were compared, a statistically significant difference was noted, whereby the African American group exhibited a higher expression of RAGE.²⁰ A positive linear correlation of their presence was also demonstrated in inflamed periapical

tissues. Nonetheless, other factors may explain the difference between the two population groups. It could be due to the distribution of African Americans in the total hospital patient population, social economic factors unique to this hospital patient population or due to other inflammatory factors that predispose African Americans to present with more periapical pathoses or delay in their healing.

It has been demonstrated that tobacco smoking can adversely affect oral tissues. Smoking reduces blood supply to bone by a mechanism of vasoconstriction.²¹ In turn, vasoconstriction induces metabolic changes. Smoking is associated with decreased bone mineral density and increased fracture risk. Furthermore, it was reported that smoking affects the host responses to infections and has a long-term chronic effect on many inflammatory and cell-mediated processes and humoral immunity.²² Therefore, it is plausible to assume that the healing process of bone following inflammatory insult will be delayed with the smokinginduced vasoconstriction and disruption of the inflammatory immune response.

Tobacco use has been shown to alter the turnover of cells during periodontal tissue repair and the immune response of the affected host. This modifiable habit is considered a major risk factor for periodontal diseases and a potential risk factor for endodontic diseases. 12,23 The detrimental effect of tobacco use depends on the number of cigarettes a patient currently smokes²⁴ as well as the intensity, duration of smoking and the time since smoking cessation.²⁵ Furthermore, it was reported that the outcome of various dental treatment procedures is less favorable in patients who use tobacco, i.e., smoke cigarettes. 23,25

Tobacco-induced periodontal destruction is caused by a wide range of effects impacting the different functions of cells, tissues and organs. Some of these effects are opposed to each other due to the effects of different tobacco constituents. For example, it was reported that all components of cigarette smoke, tar and hydroquinone to a greater extent and nicotine and catechol to a lesser extent, caused a suppression in the production of IL-1b and TNF-a.²⁶ Nonetheless, when summarizing the properties of the tobacco-induced alterations in metabolism of the vasculature, connective tissue and bone as well as on cell mediated and humoral immunity, it is likely that the use of tobacco disrupts the physiological balance between anabolic and catabolic mechanisms due to alterations in the immune system and tissue mechanisms. 22,27-28 Special consideration should be given to the possible association between periodontal diseases and periapical lesions. Common risk and confounding factors, such as bone resorption as a response to inflammatory and infectious challenges, effect of drugs associated

with bone modulation and reaction to advanced glycation end products and systemic factors, may be involved.

In recent years, several studies have been carried out to determine the relationship between tobacco use and endodontic diseases or treatment outcomes, including wound healing after periapical surgery²⁹ and the prevalence of apical periodontitis among smokers. 9,11,30 However, the significance in the results varied. It has been reported that the dental pulp of smokers is immunologically deficient in TNF-a and hBD-2.31 This coupled with smoking-associated decrease in bone mineral density may explain the increased incidence of periapical lesions in smokers versus nonsmokers.

Extrapolation of the results of this cross-sectional hospital-based study to the general population should be done with caution. First, the study analyzed only individuals seeking treatment in a specific hospital in a specific area of the United States, making it a singlecenter study. Second, patients admitted for treatment in the hospital may have certain underlying systemic conditions that may have an effect on the results. The specific systemic conditions of the patients or preexisting endodontic treatments as related to their smoking habits and presence of periapical pathosis was not studied. Third, socioeconomic factors may affect the decision of certain populations to seek medical and dental care in specific health centers. Fourth, information about smoking habits was self-provided by the patients and was not verified by other means. Fifth, as part of the diagnosis, the presence of periapical pathosis was confirmed by radiographic images. However, the specific technique used to take radiographic images (2D or 3D) was not assessed.

These findings are clinically significant. Tobacco smoking presents a health hazard to systemic and oral health. This study found a significantly higher relative risk for the presence of periapical pathosis in smokers as compared to nonsmokers. The relative risk for the presence of periapical pathosis was almost twice as high in African Americans who smoked than in Caucasians who smoked. It is recommended that smoking cessation and prevention protocols should be recommended to patients, with a focus on higher risk populations.

In conclusion, the results of our study support other recent studies demonstrating a correlation between tobacco smoking and the presence of periapical pathosis. Further multicenter studies are warranted to shed more light on the possible association between tobacco smoking and periapical disease. Nonetheless, it is recommended that smoking cessation and prevention protocols should be adopted and recommended to patients.

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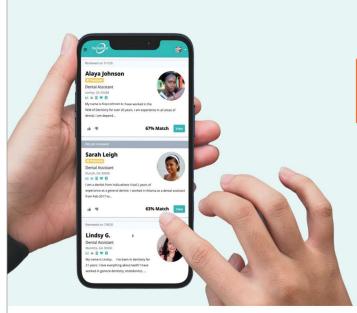
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Cannabis Use and Oral Health in a National Cohort of Adults

Benjamin W. Chaffee, DDS, MPH, PhD

ABSTRACT

Background: Cannabis use is common and increasing among adults. Evidence connects cannabis use to poor periodontal health, but few prospective studies exist of adults in the United States.

Methods: This investigation examined associations between cannabis use and self-reported adverse oral health conditions among participants (N = 18,872) in the Population Assessment of Tobacco and Health (PATH) Study, a nationally representative cohort. Survey-weighted regression modeling estimated associations between cannabis use and seven self-reported measures of oral health status, adjusted for tobacco use and other disease risk factors.

Results: Reporting past-30-days cannabis use in any of PATH Waves 1-3 was positively and statistically significantly associated at Wave 4 with multiple periodontal disease sequalae and with self-rated fair or poor overall oral health (adjusted odds ratio versus never-users: 1.75; 95% confidence interval: 1.52, 2.01).

Conclusions: These findings provide further evidence that cannabis use is an independent risk factor for poor oral health, although study limitations (self-reported outcomes, limited information on cannabis use frequency and modality) must be considered.

Practical implications: Dental professionals should engage patients in clear, nonjudgmental dialogue about cannabis use to address oral health risks and avoid potential patient safety issues in care delivery. General recommendations for addressing cannabis use in dental practice are presented.

Key words: Cannabis, marijuana, oral health, dental practice

AUTHOR

Benjamin W. Chaffee, DDS, MPH, PhD, is an associate professor of oral epidemiology and dental public health at the University of California, San Francisco, School of Dentistry. His research interests include tobaccorelated behaviors, caries management and oral health disparities. Conflict of Interest Disclosure: None reported. annabis is complex in its chemical composition, consisting of hundreds of compounds and over 60 cannabinoids, the most well-known of which, Δ9-tetrahydrocannabinol (THC), is strongly psychoactive. Cannabis is complex sociopolitically, being classified by the U.S. federal government as a schedule I drug without accepted medical use but regulated in more than 30 states as a medical product and/or legal recreational product for adults. In this publication,

A number of studies have shown associations between cannabis use and clinical measures of periodontal disease.

the term "cannabis" is used generally to refer to herbal cannabis, marijuana, hemp, cannabinoid-based products and other related substances, whether used with medical or recreational intentions; however, those distinctions merit attention in considering the overall health and societal implications of cannabis use and regulation.³

As a recreational drug, cannabis is the most used worldwide after alcohol and tobacco,⁴ and use is increasing. California voters approved Proposition 215 in 1996, becoming the first U.S. state to permit cannabis sales for medical purposes.⁵ Twenty years later, passage of Proposition 64 allowed for legal recreational cannabis sales statewide.⁶ Nationally, 35% of 12th grade students reported using cannabis within the past year,⁷ matching the

reported prevalence among young adults aged 18–26.8 Use among older adults is less common (13% past-year use in 2018) but increasing,8 particularly in states allowing some form of legal sales.^{2,9}

Cannabis use has several known health effects. The National Academies of Sciences, Engineering and Medicine concluded that existing evidence is at least substantial that cannabis and cannabinoids are effective in managing chronic pain, nausea and vomiting associated with chemotherapy and muscle spasticity associated with multiple sclerosis. However, cannabis smoke shares numerous chemical constituents with tobacco smoke and has been associated with adverse cardiovascular and respiratory outcomes.

A number of studies have shown associations between cannabis use and clinical measures of periodontal disease. 14-16 Many of the existing studies have been cross-sectional in design and/or focus on adolescence and earlier adulthood, limiting the evidence base. The present investigation features prospective data on cannabis use behaviors and self-reported oral conditions from a large nationally representative cohort of U.S. adults. This publication has two objectives:

- Assess the associations between cannabis use and selfreported oral health conditions in a national cohort.
- Describe several key implications of patient cannabis use for dental practice.

Methods

Study Data and Design

This study draws data from the Population Assessment of Tobacco and Health (PATH) Study, a prospective cohort study of U.S. youth and adults,

described elsewhere.¹⁷ PATH features an area-probability, four-stage stratified design with oversampling for young adults, tobacco users and African Americans to allow more precise statistical inference in those subgroups. Through sample weighting, PATH findings can be generalized as nationally representative of the U.S. noninstitutionalized civilian population. PATH participants are invited annually to complete a computer-assisted, in-home questionnaire that includes items related to their use of tobacco products and health status, including oral health. The PATH Study is ongoing; to date, fully deidentified public use datafiles have been made available online for four annual waves of adult participants (age ≥ 18) from Wave 1 (data collected September 2013 to December 2014) to Wave 4 (December 2016 to January 2018). The PATH Study gained an NIH certificate of confidentiality and ethical approval from the Westat Institutional Review Board. Adult participants provided informed consent and received \$35 for each wave of participation. Adult PATH oral health data have been featured in several previous publications. 18-20 The present longitudinal analysis compares adverse oral health outcomes reported at Wave 4 according to patterns of cannabis use reported at Waves 1, 2 and 3.

Study Variables

At Wave 1, adult participants were asked, "Have you ever used marijuana, hash, THC, grass, pot or weed?" and, after defining a "blunt," "Have you ever smoked part or all of a cigar, cigarillo or filtered cigar with marijuana in it?" In Waves 2 and 3, near identical questions were posed but referred to marijuana use "in the past 12 months." Participants who responded affirmatively to any of the above questions were asked, "Have you used marijuana, hash, THC, grass, pot or weed within the

past 30 days?" For the present analysis, cannabis never-users were defined as participants who reported never-use at Wave 1 and no-use in the past 12 months at waves 2 and 3. Cannabis ever-users reported Wave 1 ever-use and/or past 12-month use at waves 2 and/or 3 but did not report past-30-days use at any wave. The remaining participants reported past-30-days cannabis use at ≥ 1 wave. Daily or monthly frequency and amount of cannabis use were not recorded. As an imperfect proxy for intensity of cannabis use, the category of

The present longitudinal analysis compares adverse oral health outcomes reported at Wave 4 according to patterns of cannabis use reported at Waves 1, 2 and 3.

past-30-days users was further subdivided according to how many of the three waves participants reported past-30-days cannabis use (i.e., 1, 2 or all 3 waves).

Analysis included seven measures of oral health assessed at Wave 4. All participants were asked, "Overall, how would you rate the health of your teeth and gums?" — specified in this analysis as fair or poor versus good, very good or excellent. All participants were also asked, "In the past 12 months, how many of your permanent teeth have been removed because of tooth decay or gum disease?" (later specified as ≥ 1 versus none), "In the past 12 months, have you observed any bleeding after brushing or flossing or due to other conditions in your mouth?" and "In the past 12 months, have you ever

had any teeth become loose on their own, without an injury?" Additionally, participants who had reported visiting a dentist in the past 12 months were asked, "In the past 12 months, have you been told by a dentist, hygienist or other health professional that you lost bone around your teeth?," "In the past 12 months, have you been told by a dentist, hygienist or other health professional that you have gum disease?" and "In the past 12 months, have you been told by a doctor, dentist or other health professional that you have precancerous oral lesions?"

Covariables were participant characteristics plausibly associated with cannabis use and also potential risk factors for poor oral health in three categories: sociodemographic variables, health variables and substance-use variables. Included sociodemographic variables were age, sex, race/ethnicity, household annual income and educational attainment. Health variables were a lifetime history of diabetes, body mass index, having "your teeth cleaned by a dentist, hygienist or other health professional" in the past 12 months and weekly frequency of interdental cleaning (flossing) reported at Wave 3. Substance-use variables were Wave 3-past-30-days use of alcohol, cigarette smoking (never, former, light: 1–9 cigarettes/day, heavy: ≥ 10 cigarettes/day) and current use ("some days" or "every day") of electronic cigarettes (any type), noncigarette combustible tobacco (cigars, pipes or hookah) or smokeless tobacco (moist snuff, chewing tobacco or snus). The PATH Survey questionnaires are publicly available.21

Statistical Analysis

Included in this analysis were PATH Study adults who participated in all four

waves, had a longitudinal survey weight, had nonmissing cannabis use information at Waves 1–3 and reported their status for ≥ one of the seven oral health outcomes at Wave 4 (N = 18,872). Separate surveyweighted multivariable logistic regression models were fitted for cannabis use at Waves 1-3 (independent variable) and each of the seven Wave 4 oral health conditions (dependent variable), with adjustment covariables included as specified in TABLE 1. Additionally, for each oral health condition, two models were fitted: One specified cannabis use in three categories (never, ever and any past-30-days use); the other featured five use categories (never, ever and past-30days use at one, two or all three of Waves 1–3). Missing covariable values (1.1% of covariable data) were multiply imputed (15 iterations) using the mi command suite in Stata 16.1. Adjusted odds ratios were considered statistically significant if 95% confidence intervals excluded the null value (i.e., odds ratio = 1).

Results

Cannabis ever-use was common among participants. The prevalence of having ever used cannabis, inclusive of blunts, was nearly 40%, equaling the prevalence of ever cigarette smoking (TABLE 1). Thirteen percent of participants reported past-30-days cannabis use in at least one of PATH Waves 1–3, including 5% who reported past-30-days use at all three waves. Among factors associated with cannabis use were current light or heavy cigarette smoking (46% smoking prevalence among any-wave, past-30days cannabis users versus 9% among cannabis never-users), socioeconomic position (23% prevalence of holding a college degree among any-wave past-30days cannabis users versus 32% among cannabis never-users) and age (30% prevalence of any-wave, past-30-days

cannabis users among participants aged 18 to 24 versus 2% among participants aged 65 or older). Overall, the population characteristics of the analytic sample were broadly representative of the U.S. population (TABLE 1).

Of the oral health outcomes included in this analysis, the most commonly reported conditions at Wave 4 were bleeding after brushing or flossing (26% prevalence) and fair/poor self-rated oral health (20%). Among all participants, the next most common conditions were having a tooth extracted (11%) and

Thirteen percent of participants reported past-30-days cannabis use in at least one of PATH Waves 1 - 3.

loose teeth (5%). Among participants who had seen a dentist in the previous 12 months, being informed of bone loss around teeth (8%) and gum disease (7%) were more common than being informed of a precancerous oral lesion (< 1%).

Past-30-days cannabis use in any of Waves 1–3 was positively and statistically significantly associated at Wave 4 with six of the seven adverse oral health conditions included in the analysis (TABLE 2). Precancerous oral lesion was the only outcome not statistically significantly associated with cannabis use, but the direction of the association was also positive, and the small number of events limited statistical power. The associations with self-rated oral health, gum bleeding, loose teeth and precancerous lesions were numerically strongest among

participants who reported past-30-days cannabis use in all three of Waves 1–3, suggesting a stronger association with greater cannabis use intensity (TABLE 2).

Discussion

In this nationally representative population, reported cannabis use was positively and prospectively associated with multiple measures of poor oral health, including a number of conditions (gum bleeding, loose teeth, alveolar bone loss and gum disease) indicative of periodontitis. Compared to participants who had never used cannabis, those who consistently reported recent cannabis use over a three-year period had nearly double the odds of subsequently reporting poor or fair overall oral health, gum bleeding and loose teeth, including after statistical adjustment for sociodemographic, socioeconomic and behavioral risk factors such as tobacco smoking. For dental practice, these results suggest that clinicians can expect a higher prevalence of poor oral health among cannabis-using patients and should consider cannabis use alongside tobacco use as modifiable risk factors central to managing oral health and key topics on which to advise patients.

The associations identified in the present analysis are consistent with several findings reported previously. In a national cross-sectional study of U.S. adults, frequent cannabis use was associated with more deep pockets and greater clinical attachment loss compared to nonuse.15 Similarly, frequent cannabis use was associated with severe periodontitis among adults in Puerto Rico, 16 but an association was not observed with clinical attachment loss among adolescents in Chile.²² In a prospective investigation in New Zealand, cannabis use during adolescence and young adulthood was associated with worsening periodontal

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Participant Characteristics		
Characteristic	N	Weighted Percent
Cannabis use		
Never	8,699	60.3
Ever (Not past 30 days) ¹	5,858	27.1
Past 30 days (any wave) ²	4,315	12.5
1 wave ³	1,440	4.4
2 waves ³	1,248	3.6
3 waves ³	1,627	4.5
Age		
18-24 years	3,590	9.2
25-34 years	4,655	19.2
35-44 years	3,168	17.3
45-54 years	3,057	18.3
55-64 years	2,544	17.9
≥ 65 years	1,857	18.2
Sex		
Male	8,984	47.6
Female	9,873	52.4
Race/ethnicity		
Non-Hispanic white	11,314	65.5
Non-Hispanic Black	2,781	11.2
Non-Hispanic other	1,404	8.0
Hispanic/Latinx	3,331	15.3
Annual income		
< \$10,000	2,685	10.0
\$10,000-\$24,999	3,740	17.8
\$25,000-\$49,999	4,243	22.9
\$50,000-\$99,999	4,363	28.4
≥ \$100,000	2,832	20.9
Education		
Below high school	2,016	9.5
High school or GED	4,993	26.5
Some college	6,780	32.0
College degree	5,054	31.9
Diabetes history		
Never	15,877	81.8
Ever	2,974	18.2
Body mass index		
< 18.5	362	1.6
18.5-24.99	5,991	31.8
25-29.99	5,930	33.9
≥ 30	6,180	33.1

Participant Characteristics, continued									
Characteristic	N	Weighted Percent							
Past 12 months dental cleaning									
No	7,031	31.1							
Yes	11,700	68.9							
Interdental cleaning									
None	5,316	24.7							
1-6 times/week	8,174	43.5							
≥ 7 times/week	5,324	31.9							
Alcohol use ⁴									
None	7,774	44.9							
Light	5,781	31.4							
Moderate	3,273	15.2							
Heavy	1,976	8.5							
Cigarette smoking									
Never	8,560	59.3							
Former	3,949	23.2							
Current light	3,607	10.1							
Current heavy	2,623	7.4							
E-cigarette use									
Not currently	17,762	97.0							
Currently	1,077	3.0							
Other combustible use									
Not currently	1 <i>7</i> ,368	93.4							
Currently	1,221	6.6							
Smokeless tobacco use									
Not currently	18,018	97.4							
Currently	825	2.6							

The analytic sample incudes Population Assessment of Tobacco and Health (PATH) Study adult (age \geq 18) participants who were part of all four waves, had a longitudinal survey weight, had nonmissing cannabis use information at Waves 1-3 and reported their status for ≥ 1 of the seven oral health outcomes at Wave 4 (N = 18,872). Number of participants for some variables may be less than the total sample population due to missing data. Characteristics in the table were calculated as of Wave 3 and weighted using Wave 3 $cross-section al\ weights\ with\ balanced\ repeated\ replication.$

- 1. Reported having ever used cannabis but reported no use in the past 30 days at PATH Waves 1, 2 and 3.
- 2. Participants who had reported using cannabis in the past 30 days at any of PATH Waves
- 3. Subcategories of the participants who reported past 30-day cannabis use at any of PATH Waves 1, 2 or 3, specifically, those who reported past 30-day cannabis use in exactly 1, 2 or all 3 of those waves.
- 4. The number of drinks categorized as none, light, moderate or heavy alcohol use differed by sex; for women, the number of drinks in the past 30 days defining these categories were 0, 1–9, 10–29, \geq 30; for men, the categories were 0, 1–19, 20–59, \geq 60 drinks in the past 30 days.

TABLE

Associations Between Cannabis Use and Self-Reported Oral Health Conditions

Oral Health Outcomes¹

		or Oral Health 18,830		Extraction = 18,741		Bleeding 18,860		ose Teeth = 18,837
Cannabis use category	% with outcome ²	Adjusted OR ^{2,3} (95% CI)	% with outcome	Adjusted OR (95% CI)	% with outcome	Adjusted OR (95% CI)	% with outcome	Adjusted OR (95% CI)
Never	16.9	reference	11.1	reference	22.3	reference	4.2	reference
Ever (not past 30 days) ⁴	21.7	1.40 (1.23, 1.60)	11.3	1.13 (0.96, 1.33)	30.0	1.3 <i>7</i> (1.22, 1.53)	6.2	1.45 (1.16, 1.81)
Past 30 days (any wave) ⁵	31.9	1.75 (1.52, 2.01)	13.6	1.20 (1.01, 1.43)	37.9	1.60 (1.42, 1.81)	9.7	1.87 (1.50, 2.34)
1 wave ⁶	30.8	1.73 (1.41, 2.12)	12.7	1.12 (0.88, 1.43)	33.2	1.30 (1.09, 1.55)	9.3	1.86 (1.3 <i>7</i> , 2.52)
2 waves ⁶	31.0	1.66 (1.3 <i>7</i> , 2.02)	14.8	1.34 (1.06, 1.68)	38.7	1.66 (1.39, 1.98)	9.0	1.73 (1.31, 2.30)
3 waves ⁶	33.6	1.83 (1.53, 2.19)	13.5	1.18 (0.94, 1.48)	41.8	1.92 (1.64, 2.25)	10.6	2.01 (1.54, 2.62)

Oral Health Outcomes, Continued^{1,7}

oral recuiii oreoliics, commoca							
	Bone Loss Around Teeth N = 10,389		Gum Disease N = 10,396		Precancerous Oral Lesion N = 10,402		
Cannabis use category	% with outcome	Adjusted OR (95% CI)	% with outcome	Adjusted OR (95% CI)	% with outcome	Adjusted OR (95% CI)	
Never	7.1	reference	5.9	reference	0.4	reference	
Ever (not past 30 days) ⁴	10.5	1.43 (1.13, 1.79)	8.4	1.38 (1.06, 1. <i>7</i> 9)	0.3	0.81 (0.36, 1.84)	
Past 30 days (any wave) ⁵	10.3	1.36 (1.01, 1.84)	9.2	1.41 (1.06, 1.86)	0.9	1.58 (0.75, 3.33)	
1 wave ⁶	9.4	1.29 (0.87, 1.91)	7.9	1.22 (0.79, 1.87)	1.0	1.42 (0.53, 3.80)	
2 waves ⁶	11.7	1.62 (1.01, 2.60)	11.6	1.86 (1.26, 2.76)	0.9	1.66 (0.49, 5.58)	
3 waves ⁶	10.1	1.24 (0.82, 1.87)	8.4	1.25 (0.87, 1.80)	0.8	1.73 (0.70, 4.28)	

- 1. Reported at PATH Wave 4 in reference to events in the past 12 months.
- $2. \ All \ percentages \ and \ odds \ ratios \ survey \ weighted \ to \ be \ nationally \ representative \ using \ Wave \ 4 \ all-wave \ longitudinal \ weights.$
- 3. Models adjusted for the following covariables (as specified in Table 1): age, sex, race/ethnicity, household annual income, educational attainment, diabetes (ever), body mass index, past 12 months professional tooth cleaning, interdental cleaning, alcohol use, cigarette smoking and current use of electronic cigarettes, noncigarette combustible tobacco and smokeless tobacco; missing covariable data multiply imputed.
- 4. Reported having ever used cannabis but reported no use in the past 30 days at PATH Waves 1, 2 and 3.
- 5. Participants who had reported using cannabis in the past 30 days at any of PATH Waves 1, 2 or 3.
- 6. Subcategories of the participants who reported past 30-day cannabis use at any of PATH Waves 1, 2 or 3; specifically, those who reported past 30-day cannabis use in exactly 1, 2 or all 3 of those waves.
- 7. Outcomes of bone loss, gum disease and precancerous lesions only asked of participants who reported a past 12-month dental visit at PATH Wave 4.

Abbreviations and notation: CI = confidence interval; PATH = Population Assessment of Tobacco and Health Study; OR = odds ratio; % = weighted percent.

condition over the next decade of life. 14,23 Relationships between cannabis use and oral conditions other than periodontal diseases have been less frequently studied. Xerostomia, dental caries and leukoedema have been reported as possible adverse outcomes.²⁴ Cannabis use has been associated with head and neck cancer in some studies.²⁵ However, this association has not persisted in meta-analyses, 26,27 with the caveat that most existing studies have only considered cancer risks associated with relatively low levels of cannabis use. In the present study, cannabis use was positively associated with self-reported recent experience of precancerous oral lesions, but not statistically significantly given the small number of reported events.

Tobacco use, including use of cigarettes, other combustible products and smokeless tobacco, is an unquestioned contributor to poor oral health, particularly periodontal disease.²⁸⁻³⁰ Tobacco and cannabis products are often used in combination, such as in marijuana-filled cigars (blunts), or at different times by the same individuals³¹ with potential additive health risks.³² In this analysis, cannabis use remained associated with adverse oral health conditions after statistical adjustment for cigarette smoking and use of other tobacco products and alcohol, although the specific contributions of cannabis and tobacco use may be difficult to untangle completely. Given the potential for independent impacts of cannabis use, clinicians should ask and counsel patients specifically about each product type, avoiding ambiguous language like "do you smoke?" that could apply to either. 33 Tobacco and cannabis regulation and control policies should consider the health implications of separate and combined use.

Some key limitations of the present analysis should be considered. Cannabisuse behaviors and oral health outcomes were self-reported, which could lead to underreporting. Research suggests that self-reported oral health measures have high specificity but much lower sensitivity, resulting in undetected cases.³⁴ The direction of any subsequent bias in the present associations would depend on the nature of underreporting; for example, the true associations could be stronger than observed if cannabis users were more likely than nonusers to overlook adverse oral health conditions. The follow-up period from Wave 3 to Wave 4 was brief (one year); therefore, the number of adverse

As with tobacco, the topic of cannabis should be addressed directly and nonjudgmentally without lecturing or undue pressure to quit.

oral health events occurring that period was relatively small and may not reflect long-term impacts of cannabis use. Those with past history of oral health problems were not excluded from analysis; thus, events reported at Wave 4 may not be incident occurrences but instead related to chronically poor oral health, potentially driven by use of tobacco, cannabis and other behaviors in years preceding this analysis. While the set of adjustment covariables was extensive, as with any observational study, residual confounding by factors not accounted for in adjustment is possible, such as dietary behaviors or secondhand tobacco exposure.

Additionally, the available questionnaire items did not allow separation by mode of cannabis delivery. Smoked, vaped and edible cannabis

products are likely to feature different risk profiles for oral health, which could not be explored in this analysis. Similarly, the frequency and amount of cannabis use in the past 30 days were not available. While this analysis presumes that reporting past-30-days cannabis use in three consecutive survey waves would correlate with heavier use, this approach is inferior to specific measures of use frequency and intensity. Finally, outcomes of cannabis dual-use together with tobacco or other nicotine products merit specific attention in future analyses.

Cannabis and Dentistry: Practical Considerations

Dental professionals will regularly encounter patients who use cannabis products. In practice, dental professionals should anticipate greater prevalence of oral diseases, notably periodontal disease, among their cannabis-using patients. That alone is sufficient reason to ask all patients about cannabis and to advise those using cannabis of the oral health risks.

However, cannabis is uncommonly discussed during dental visits. In a statewide survey of California dentists and dental hygienists, only 1 in 4 reported asking patients about cannabis, in contrast to the approximately 60% who asked specifically about tobacco cigarettes. ³⁵ While many dental professionals may be uncomfortable raising this topic, providers should assure patients of its relevance to oral health and the confidentiality of their health information.

As with tobacco, the topic of cannabis should be addressed directly and nonjudgmentally without lecturing or undue pressure to quit. In contrast to tobacco use, for which dentists and dental hygienists have a professional responsibility to encourage cessation and connect patients with evidence-based support to quit, ³⁶ consensus practice guidelines and cessation

resources specific to cannabis are sparse. For heavy users seeking support to reduce or eliminate cannabis consumption, dental professionals can recommend resources from the Substance Abuse and Mental Health Services Administration, which includes the National Helpline (1.800.662-HELP) and an online locator to find nearby behavioral health treatment services (www.samhsa.gov/marijuana). Notably, over three-fourths of cannabis users also use tobacco products,³¹ and motivation to quit tobacco use among cannabis-tobacco dual-users may be high.³⁷ Thus, many cannabis-using patients may be receptive to tobacco cessation support from dental providers.

Given the strong similarity between cannabis smoke and tobacco smoke, ¹¹ it is highly plausible that cannabis smoke, like tobacco smoke, may impair postsurgical healing after common dental procedures, such as tooth extractions, implant placement and periodontal surgery. Postoperative instructions for patients, written and verbal, should include all forms of smoking, with abstaining from both tobacco and cannabis explicitly emphasized. Mentioning cannabis smoke by name is important, as some patients may associate "smoking" only with tobacco.

Dental professionals may encounter patients with dental anxiety and/or oral pain who choose to self-medicate with cannabis products in advance of a dental visit. However, patients under the influence of THC during dental care may suffer from enhanced anxiety and agitation, may lack the capacity to make health care decisions and provide informed consent and may be too impaired to drive safely to and from their visit. 24,38,39 All of these symptoms are serious threats to patient safety and treatment success. A recommendation is to create a practice policy regarding cannabis use that is clearly communicated to all patients and all members of the dental care

team. Under a proactive policy, patients are informed not to arrive under the influence of psychoactive drugs, and any patients who do are identified and reappointed for a later date when they can be treated safely.⁴⁰

THC can elevate heart rate, and this tachycardia may be more pronounced during the stress of a dental surgical procedure. ⁴¹ For the routine cannabis user, particularly in the presence of other underlying cardiovascular risks, local anesthetics containing epinephrine, if not entirely avoided, should be administered with considerable caution given the risk of a serious cardiovascular event. ⁴²

Conclusions

This analysis identified associations between cannabis use and multiple adverse oral health conditions, most related to periodontal disease. Results were longitudinal, from a large generalizable sample, and adjusted for multiple confounding variables, including tobacco use. While the self-reported nature of the survey measures is a clear limitation, internal consistency across reported outcomes and external consistency with prior investigations further justify that dental practitioners consider cannabis use a plausible risk factor for periodontal disease. Clear, nonjudgmental patient communication about cannabis use is recommended not only to address long-term risks to oral health but to avoid potential patient safety issues in dental practice.

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The Pediatric Dentist's Role in the Prevention and Cessation of Tobacco Use Among Children and Adolescents

Jean Marie Calvo, DDS, MPH; Rebecca Renelus, DDS; and Michelle Tsao, DMD

ABSTRACT

Most tobacco users began using tobacco products by age 18. Pediatric dentists play a vital role in providing care and advocating for the health of all children and adolescents. Helping to ensure all youth achieve their optimal health includes the critical role of pediatric dentists to prevent initiation of tobacco use among their patients. With myriad risk factors for tobacco use, pediatric dental providers are likely to encounter many youth tobacco users. The multitude of harms from tobacco use have severe lifetime consequences for users. Pediatric dentists should support the prevention and cessation of tobacco product use by youth.

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obacco use in children and adolescents remains an epidemic in the U.S. Today, more than 600,000 middle school students and 3 million high school students in the U.S. smoke cigarettes.1 And every day, more than 1,200 people in the U.S. die from smoking and smoking-related complications.1 Furthermore, this epidemic is not limited to smoking. In 2020, nearly 7% of middle school students and 25% of high school students reported currently using a tobacco product.² Despite the direct link between tobacco use and poor health outcomes, established more than half a century ago, the initiation and use of tobacco products

among youth remains startlingly consistent.³ In response, all health care providers, especially pediatric dentists and others who work with youth, must make every effort to prevent the initiation and promote the cessation of tobacco use among their patients.

According to the U.S. surgeon general, nearly 9 in 10 individuals who use or have used tobacco products began using by age 18, and their progression from occasional to daily smoking occurs by age 26. Among teen tobacco users, 75% smoke into adulthood, even if they intend to quit after a few years. Although smoking among youth has declined over the past few decades as a result of successful public health

campaigns and tobacco intervention strategies, the decrease is slowing down.

Electronic cigarettes (e-cigarettes), also known as electronic nicotine delivery systems (ENDS), have been the most popular tobacco product among youth since 2014. E-cigarettes create an inhalable vapor from a liquid that contains nicotine. While e-cigarettes do not contain tobacco as an ingredient, they are deemed tobacco products by the FDA because their nicotine ingredients are often derived from tobacco. 4 E-cigarettes have many other ingredients, including those that are known to be toxic and have caused medical complications including death.⁵ Despite recognizing e-cigarettes as tobacco products under their regulation in 2016, the FDA has exercised discretion in enforcing tobacco restrictions on e-cigarettes. As of 2021, no e-cigarettes have been authorized for use in the U.S. by the FDA.⁶ However, authorizations are currently under review with anticipation of more regulation of e-cigarette production and distribution in the near future. Also known as vaping, the use of e-cigarettes may be particularly alluring to youth due to the array of fruit flavors and clever product innovations. Most e-cigarettes contain addictive nicotine, which is extremely harmful to the developing brains, lungs and hearts of young users. In 2020, approximately 1 in 20 middle school students and 1 in 5 high school students reported using e-cigarettes. Additionally, e-cigarette use is easier to conceal compared with traditional smoking, making it easier for youth to use discretely at home and school.8

Due to the relatively new introduction of e-cigarettes, policy for regulation controlling this form of tobacco has been slow to follow. However, California has been at the front line in policy regarding e-cigarettes. In 2020, California signed into law Senate Bill 793 banning the sale

of all flavored tobacco products, including e-cigarette cartridges and cigarettes, in both retail stores and vending machines. This law was set to take effect Jan. 1, 2021; however, lobbying efforts by tobacco and e-cigarette manufacturers spearheaded a campaign to repeal the law, and as a result, the bill will now appear on the California 2022 ballot to let voters decide the ultimate outcome. This groundbreaking law is on top of the recent California law that increased the age limit to purchase products containing tobacco and nicotine from 18 to 21 years.

Most e-cigarettes contain addictive nicotine, which is extremely harmful to the developing brains, lungs and hearts of young users.

Historically, the federal government has given states the individual right to delegate and manage tobacco policy and sales. Though California has taken steps in policy to change attitudes toward e-cigarettes, not every state has followed suit, and accomplishing that goal will require larger-scale efforts, such as instituting a nationwide policy. 10 For example, while traditional cigarettes must have warning labels and a list of ingredients on their packaging, e-cigarettes do not. The law does not require that e-cigarette packaging inform users of the product's ingredients, not to mention the harmful toxins present in inhalation and exhalation. Thus, manufacturers can package e-cigarettes in a way that is appealing to an uninformed adolescent. Though advocates are

beginning to make progress in their push for policy change regarding e-cigarettes, the overarching fight against tobacco use demands much more work.¹⁰

Another commonly used tobacco product among youth is smokeless tobacco, also known as dip, chew or chewing tobacco. Its consumption entails chewing and sucking instead of smoking. Made popular in the 1970s by baseball players believing it was a safer alternative to smoking, smokeless tobacco is making a comeback due to users' ability to consume it without detection at school and other places where smoking is banned.¹⁰ The 2020 National Youth Tobacco Survey found that 3.1% of high school students have used smokeless tobacco, with a third of that group using smokeless tobacco between 20 and 30 days out of the previous 30. Smokeless tobacco use in high school male students is higher at 4.8%, compared to 1.4% in female students.¹¹ In 2020, approximately 1.2% of middle school students reported use of smokeless tobacco in the past 30 days, only a small decrease from 2.2% in 2011.12

The cancer risk of using smokeless tobacco differs from that of traditional cigarettes by location and type of cancer. Lung cancer is the leading cause of cancer death in adult men and women, with approximately 80% of lung cancers caused by smoking. Smoking increases risk of cancers of the mouth, larynx, pharynx, esophagus, kidney, cervix, liver, bladder, pancreas, stomach, colon and rectum. ¹³ Meanwhile, smokeless tobacco is linked to higher risk of oral cancers, including cancer of the mouth, tongue, cheek and gums as well as esophagus and pancreas. ¹⁴

U.S. regulation does not prohibit the marketing to children and adolescents of smokeless tobacco products with flavors (except menthol). Flavors such as mint and fruit are often marketed to young or inexperienced users, as this demographic

perceives such flavors to be more harmless. Furthermore, incorporating flavors into smokeless tobacco products can help to mask the taste of tobacco, which may not appeal to younger users.¹⁶

One tobacco product that is relatively new in the U.S. and gaining traction with the adolescent and youth population is hookah. According to the National Youth Tobacco Survey in 2011, 7.3% of all middle school and high school students reported having used hookah. This percentage increased to 14.3% of all high school students in 2013. In California specifically, one study found that in 2013 to 2014, 15.2% of high school students reported ever using hookah. In a subsample population in Southern California in 2014, it was reported that hookah was the most common tobacco product used by 11th and 12th grade students. This increase in use is multifactorial; one factor may be that many youth do not perceive hookah to be as harmful as other tobacco products such as cigarettes, cigars and smokeless tobacco. Though data have shown an increase in hookah use among adolescents, hookah is very understudied and poorly regulated, and more research is needed in order to inform and influence federal and statewide policies.¹⁷

Risk Factors for Child and Adolescent Tobacco Use

Several significant risk factors are associated with early tobacco use, including social and physical environments, biological and genetic factors, mental health and socioeconomic status.²

The social and physical environment in which a child resides is the primary risk factor for early tobacco use. Young people are more impressionable and susceptible to the influences of their immediate surroundings. Studies show that young men and women are more likely to start smoking if they have parents or peers who use tobacco products. ¹⁸ Pediatric dentists should be especially aware of the need to counsel young patients on tobacco prevention and cessation if the parents are known to be tobacco users. Furthermore, social media influences, such as mass media's representation of tobacco, can make young people have a more favorable view of tobacco products and increase their desire to experiment with them. ¹⁹

Overall, the role of genetics in determining tobacco risk is both important and complex.²⁰ While a

One national study found that 4 in 10 children in the U.S. are exposed to secondhand smoke.

person's genetic risk profile does not predict whether they will try cigarettes, biological and genetic factors can make youth more sensitive to nicotine dependence and also make quitting smoking harder. Additionally, the Centers for Disease Control and Prevention reports that parents who smoke during pregnancy not only increase the chances of regular cigarette use in their children,² but smoking during pregnancy also increases risk for birth defects, low birth weight and preterm birth.²¹

Mental health is an important factor for pediatric dentists to consider, particularly in young adults. Comorbid psychiatric disorders such as anxiety and substance abuse, weight concerns and low self-esteem are correlated with increased incidence of smoking in teens.²²

Other major influences that increase tobacco use in youth include lower socioeconomic status, a lack of support from parents, poor academic performance in school and the accessibility of tobacco products. Meanwhile, lower smoking rates are correlated with youth who are part of a religious group or tradition, have a strong racial or ethnic identity or are high academic achievers.²³

As pediatric dentists build relationships with their patients, they must keep in mind these risk factors and influences regarding tobacco use. Understanding the risk factors surrounding youth tobacco use helps health care professionals provide earlier and more targeted counseling and prevention plans, and it improves their ability to identify at-risk youth.

Harms of Child and Adolescent Tobacco Use

Exposure to tobacco at a young age entails many adverse health risks, including mental and physical health problems, poor education outcomes, substance use disorders and premature death.24 For example, children and adolescents exposed to continuous secondhand smoke are more likely to experience respiratory conditions such as asthma and are at an increased risk of experiencing ear infections.²⁵ Intrauterine exposure to tobacco also increases the risk of birth defects, such as cleft lip and palate, preterm birth, low birth weight and sudden infant death syndrome.²¹ One national study found that 4 in 10 children in the U.S. are exposed to secondhand smoke.²⁶ The high prevalence of tobacco use witnessed by children exposes them not only to the physical harm from tobacco smoke but also to the social and psychological harm of cigarettes.²⁶

One study by Agaku et al. found a disconnect between the perceived harm

of tobacco-attributable health risk and adolescents' perceived harm due to their own susceptibility.²⁷ Current studies and trends show that an increasing number of middle school and high school students are trying for the first time marijuana and tobacco-related products, with each product group having varying degrees of perceived harm. As a study by Barrington-Trimis et al. states, "E-cigarettes are recruiting a new group of users who would not likely have initiated combustible tobacco product use in the absence of e-cigarettes."28 Often, marketing campaigns advertise smokeless tobacco products as having more "healthfulness" than traditional cigarettes and associate their products with individuals who are physically active and healthy.²⁹ This kind of marketing is skewing youth' perception of the harms associated with tobacco use in different forms.

Researchers have also taken interest in the connection between tobacco use and marijuana use, as both are a public health concern. One study found that the use of tobacco or marijuana within the past 30 days among the adolescent population was very common. The same study also found co-use of marijuana and tobacco was more common within this population than use of tobacco or marijuana only.²⁴ This finding may be due to the variation in state legislation of tobacco and marijuana products. California represents a unique environment in which strong tobacco regulations are in place, but marijuana use has become normalized. The connection between tobacco use and marijuana use could be partly due to the two products' similarity in appearance or to the fact that each can be used in a combustible or vaporized form.²⁴ Research shows that tobacco and marijuana use are strongly correlated in young people.³⁰ This is an especially important finding, as youth co-use of tobacco and marijuana

is associated with higher-risk behaviors, such as driving under the influence, unsafe sex and dropping out of high school, and has also been associated with the exacerbation of mental health symptoms.³⁰

Tobacco Prevention and Cessation in the Pediatric Dental Office

With the shocking prevalence, known harms and new, alluring methods of tobacco and nicotine consumption among adolescents, the prevention of youth initiation of tobacco use is of the utmost importance. Pediatric dentists

Research shows that tobacco and marijuana use are strongly correlated in young people.

are routinely treating children of all ages in their offices and should play a vital role in preventing tobacco initiation. The American Academy of Pediatric Dentistry (AAPD) recommends that all pediatric dentists begin providing counseling on tobacco use to children aged 6 to 12.31 This practice entails educating both patients and parents about the consequences of tobacco use, including secondhand smoke. The AAPD also recommends that pediatric dentists provide referrals to primary care and behavioral providers for substance use, including tobacco use. Furthermore, the AAPD endorses pediatric dentists' documenting tobacco use by patients and parents in records, promoting smoke-free health care facilities and grounds and serving as role models by not using tobacco.

Parents also support the AAPD's call for pediatric dentists to provide tobacco prevention and cessation counseling. Over 90% of nontobacco-using parents favor pediatric dentists talking with children and parents about abstaining from tobacco use and the danger of these products.³² Even more interesting, three-quarters of tobacco-using parents support tobacco counseling for their children. Additionally, there may be a role for pediatric dentists to discuss with their patients' parents about the parents' tobacco use. Reducing or eliminating parental smoking will increase the health of pediatric patients as well as reduce the risk of the child taking up tobacco products themselves

While parents and organized dentistry clearly support tobacco counseling in pediatric dental offices, pediatric dentists are not necessarily prepared to provide these services. Only about 1 in 5 pediatric dentists report having received training on tobacco counseling — even though the majority of pediatric dentists agree that they should play a role in tobacco interventions with their patients.³³ Pediatric dentists who feel more prepared to talk with their adolescent patients about tobacco use are more likely to do so.34 Therefore, pediatric dental residency programs can help prevent the initiation of tobacco use in children by equipping their residents with the training to offer tobacco counseling.

Recent trends demonstrate that health care professionals should consider all children to be at risk of initiating tobacco use. However, identifying children and adolescents who are currently using tobacco products can be much harder to do. Research has not uncovered many clear oral signs of tobacco product use in children and adolescents except rare examples of e-cigarette explosions causing

oral trauma in teens.³⁵ Research has identified cigarette smoking as being prevalent in young individuals with aggressive periodontitis, and tobacco users are at an increased risk for destruction of periodontal tissues.³⁶

Furthermore, researchers found that when adolescents are asked about past and current tobacco use with various products, from e-cigarettes to roll-yourown tobacco to traditional cigarettes, many who use or have used tobacco do not consider themselves to be tobacco users and may not self-report their tobacco use when questioned by health care professionals.²⁷ Adolescents without symptoms of nicotine dependence and who consider themselves to be "social smokers" are more likely to deny identifying themselves as tobacco users. With no clear clinical signs to identify young tobacco users, and the unlikelihood of self-disclosed tobacco use by youth, pediatric dentists must routinely educate all of their patients on the risks and harms of tobacco use.

As pediatric dentists are dedicated to their patients' oral and overall health, a tobacco and nicotine prevention plan should be a part of this effort. With the social, environmental and biological risk factors for tobacco use prevalent in our society today, pediatric dental providers are likely to encounter child and adolescent tobacco users. Pediatric dentists should be prepared to counsel these patients and provide them with resources. Disappointingly, research shows that most adolescents who try to quit smoking are not successful.³⁷ However, pediatric dentists have an opportunity to increase the success rate of quitting by engaging and supporting their patients in these efforts. Importantly, the most common assisted method adolescents employ to quit smoking is talking with a health care professional.³⁷

However, dentists are less likely to have counseled adolescents to quit smoking than their primary care medical counterparts. Pediatric dentists should take every opportunity to counsel patients on tobacco cessation, as physician and dentist advice in this area is known to be associated with adolescents' attempts to quit smoking. Additionally, pediatric dentists should train their auxiliary staff to engage with patients on tobacco use prevention and cessation. Most adolescent tobacco users are in the "precontemplative" stage of behavioral

The most common assisted method adolescents employ to quit smoking is talking with a health care professional.

change, and every interaction with a health care professional is an opportunity for these young people to move toward change.⁴⁰ Pediatric dentists play a crucial role in initiating behavior change and cessation among youth tobacco users.

When a pediatric dentist encounters a young patient who wants to stop their tobacco use, the provider needs to be well-versed in effective resources and interventions. Behavioral interventions, such as individual counseling, group counseling and text-messaging programs as well as multimethod interventions, have proven successful in facilitating smoking cessation in adolescents.⁴¹ Current evidence does not support the efficacy of pharmacological tobacco interventions with children and teens; however, the American Academy of

Pediatrics (AAP) recommends the use of nicotine-replacement therapy for moderately to severely addicted individuals.^{42,43} An important step in supporting child and adolescent patients in tobacco cessation is referral to primary care or behavioral health providers for support.

Pediatric dentists are trained in many types of behavioral interventions for improving the oral health of the children they treat. One of these methods, motivational interviewing (MI), is a patient-centered communication technique that relies on four professional values of partnership, acceptance, evocation and compassion.44 MI is not only useful for inspiring change in diet, oral hygiene and oral health, but can also be applied to smoking cessation.45 MI is a tool that evidence shows to be effective in promoting smoking cessation among youth.46 Pediatric dentists are able to apply MI across their clinical spectrum to inspire behavior change among their patients.

Pediatric dentists can also use the "2A's + R" (ask, assist, refer) model (FIGURE) — a brief intervention endorsed by the AAP for tobacco counseling with their patients.⁴³ Ask patients if they use tobacco products, assist them in their quit attempt and refer them to cessation services. When asking youth patients if they use tobacco products, providers should use language that children and adolescents will understand. Discussions with patients about quitting smoking should focus on the negative impact of tobacco use. When assisting a pediatric patient in developing a quit plan, the pediatric dentist should assess the patient's desire to quit tobacco products and set a quit date within two weeks. In assisting with the cessation plan, the pediatric dentist should help the patient to identify their

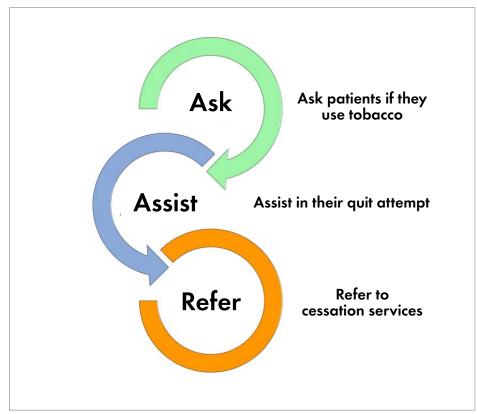


FIGURE. 2A's + R: brief tobacco cessation intervention.

tobacco use triggers, discuss withdrawal symptoms with the patient, help them to identify social support and highlight the importance of self-care, such as healthy eating, exercise and mindfulness. The pediatric dentist should also document the cessation counseling in the patient's chart and be sure to follow up with the patient about the quit attempt. Finally, the pediatric dentist should refer the patient not only to their primary care provider but also to tobacco cessation resources, many of which are free (BOX). Patients interested in quitting tobacco use should receive information about these services.

With the relentless epidemic of tobacco use and the severe health risks of tobacco, health care professionals must make every effort to prevent youth initiation of tobacco and nicotine products. Those who work in any health care setting, including pediatric dentists, general dentists and dental auxiliaries, have a vital role to play in protecting

the health of our youth. With their patient relationships, frequent visits and medical and behavioral knowledge, pediatric dentists are primed to play a key role in this endeavor. Furthermore, pediatric dentists should actively advise, encourage and counsel youth and adolescents to cease tobacco use.

ACKNOWLEDGMENT

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Cessation Resources for Youth

Smokefree Teen

- A free, web-based program for the National Cancer Institute and National Institute for Health.
 - Visit teen.smokefree.gov to learn more or sign up for this program.

Smokefree TXT

- · A free mobile text messaging program for the National Cancer Institute for advice, tips and encouragement to help quit smoking.
 - To sign up for Smokefree TXT, text QUIT to IQUIT (47848).

1.800.QUIT.NOW

• A free one-on-one quitline for immediate support in tobacco cessation.

QuitStart

- A free app for teens who want to guit smoking designed and run by the National Cancer Institute.
 - · This is free for download on iTunes and Google Play.

California Health & Wellness smoking cessation program

• Call 877.658.0305 and ask to speak with a health educator.

California Smokers' Helpline

1.800.NO.BUTTS

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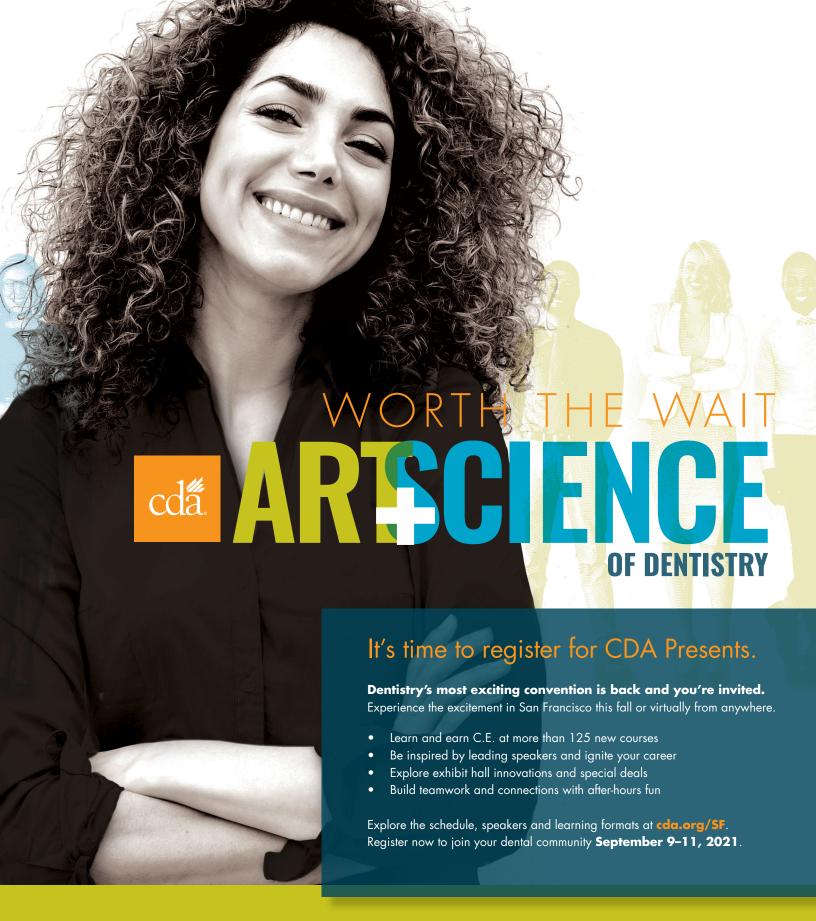
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Tobacco Cessation in Dental Settings: A Team-Based Approach

Elizabeth T. Couch, RDH, MS, and Janelle Urata, RDH, MS

ABSTRACT

Tobacco use causes harm to the entire body and is a major risk factor for oral conditions such as periodontal disease, tooth loss, implant failure and oral cancer. Given the negative oral health effects of tobacco use, the dental practice is an ideal setting for implementing brief tobacco treatment interventions and education. This article provides accessible, practical recommendations on tobacco cessation strategies for dental professionals, including all members of the practice team. Emphasized is the importance of assessing a patient's readiness to quit and choosing appropriate interventions that meet the individual needs of the patient and practice.

Key words: Tobacco use cessation, counseling, dental professionals, pharmacotherapy

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obacco use negatively affects the entire body and greatly diminishes the overall health and quality of life of its users. Each year, more than 480,000 Americans and 35,000 Californians die from tobacco-related causes, more than human immunodeficiency virus (HIV), illegal drug use, alcohol use, motor vehicle injuries and fire-arm related events combined.² Moreover, tobacco users are more likely than nonusers to develop heart disease, stroke, respiratory disease and cancer.1 In addition to these systemic health risks, tobacco use also has detrimental effects on the oral cavity and increases the risk of periodontal disease, tooth loss, delayed wound healing, implant failure and oral cancer.^{3,4}

Despite steady declines in smoking rates over the last few decades, approximately 20.8% of U.S. adults (50.6 million)⁵ and 14.6% of California adults (4 million)⁶ continue to use tobacco products. Among youth in California, roughly 1 in 8 high school students currently use a tobacco product, with electronic cigarettes (e-cigarettes) now being the most commonly used (10.9%). Significant disparities in tobacco use also exist based on race and ethnicity, gender, sexual orientation, age, educational attainment, income and geographic region. Encouraging tobacco cessation among current users is an important strategy in reducing the burden of tobacco use among vulnerable populations and improving the overall health of the public.

TABLE 1			
Common Barriers to Treating Tobacco Use and Possible Solutions			
Common Barriers	Response		
Dental professionals don't have time to treat tobacco use in practice.	Anyone on the dental team can help patients quit. Even brief interventions (< 3 minutes) have been shown to improve quit rates among patients.		
It is not the responsibility of dental professionals to provide tobacco cessation treatment.	Tobacco use causes oral disease and decreases the success of many dental treatments. Tobacco prevention and cessation are central to the dental profession and a standard of care.		
Dental professionals do not get reimbursed for tobacco cessation treatment.	Dental plans in California generally do not include benefits for tobacco cessation but those benefits may be available through medical insurance. The Medi-Cal Dental Program now provides reimbursement to dental professionals who provide tobacco cessation support using CDT code D1320 (Tobacco Counseling for the Control and Prevention of Oral Disease).		
Patients will get mad or leave the practice.	Research shows that dental patients expect their dental provider to ask about tobacco use. Patients also report greater satisfaction when dental professionals engage in tobacco cessation.		
Dental professionals lack training in	In addition to this paper, there are many resources available to		

help providers treat tobacco use (TABLE 3).

As part of the health care team, dental professionals play a key role in providing tobacco cessation assistance to their patients. Tobacco cessation interventions, even brief discussions provided by dentists and dental hygienists in practice, are effective in helping patients quit. In fact, many health organizations have publicly supported dentists and dental hygienists' role in tobacco cessation as a standard of practice and professional responsibility.8 The ethical responsibility to promote a patient's health and wellbeing (i.e., beneficence) should also be considered.9 Given that tobacco use is an important risk factor of oral and systemic disease, it is imperative that dental professionals recognize their ethical responsibility to support their tobacco-using patients in practice.

treating tobacco use.

Despite encouragement from health organizations, dental professionals still fall behind other health professions in providing tobacco cessation support for their patients. In a national study of health professionals, dentists and dental hygienists were less likely to assist their patients in making a quit attempt than physicians and nurses.¹⁰ In a recent study of dental professionals in California,

it was found that most dentists and dental hygienists reported asking about tobacco use and documenting it in the patient's chart (hygienists: 80%; dentists: 73%), but far less reported providing assistance to their tobacco-using patients (hygienists: 27% to 49% and dentists: 10% to 31%, depending on the form of assistance).11 Despite evidence showing that dental professionals are effective in promoting tobacco cessation,7 and many calls upon the profession to take greater action, there remains a major gap in moving evidence-based tobacco cessation into widespread practice. Furthermore, the growing popularity of novel products, like e-cigarettes, means that dental providers must be ready to address questions relating to their use and cessation. Increasing dental professionals' engagement in evidencebased tobacco cessation is a critical step in improving the health and well-being of patients and the public at large.

The U.S. Department of Health and Human Services (USDHHS) and the U.S. Surgeon General (USSG) recommend using the 5 A's approach (ask, advise, assess, assist, arrange) as a brief intervention for treating tobacco use and dependence in clinical practice.⁷

This model provides an organized framework to understand and address tobacco use and relies on the dental team to implement all steps of the intervention. A second approach, also supported by the USDHHS and USSG, is an abbreviated version of the 5 A's approach known as the ask-advise-refer (A-A-R) model or the ask-advise-connect (A-A-C) model. When using the A-A-R model, the dental team is responsible for identifying and advising tobacco-using patients to quit but refers patients to outside resources for assistance and counseling support (FIGURE 1). Dental professionals have the option of implementing one or both models and can tailor them to fit the individual needs of their patients and practice. This paper provides an overview of these brief interventions and reviews strategies and resources to help dental professionals implement tobacco cessation interventions in practice.

Perceived Barriers Among Dental Professionals

When asked about barriers to providing tobacco cessation support, dental professionals have most often cited lack of time, perceived patient resistance, lack of reimbursement and lack of training. 14-16 Understanding such barriers and ways to overcome them are critical steps in developing and implementing tobacco cessation in practice (TABLE 1). Regarding time, many studies have shown that even brief interventions with a patient, lasting less than three minutes, can significantly increase a patient's quit rate.12 Screening for tobacco use and providing tobacco cessation counseling are also positively associated with patient satisfaction with their dental provider.¹⁷ In a survey of over 3,000 dental patients, almost 60% believed that dental offices should provide tobacco cessation treatment services.¹⁸ In June 2019, the

Medi-Cal Dental Program became the first dental insurer in California to reimburse dental professionals for providing tobacco cessation treatment. ¹⁹ However, private dental insurers in California have yet to provide such reimbursement. Tobacco cessation-related resources and training for the entire dental team is a critical component of implementation.

Dental Team's Role in Improving Tobacco Cessation Interventions in Practice

While brief interventions can be carried out by a single provider, it is often more efficient and effective to involve the entire dental team. Dentists, dental hygienists, dental assistants and front office staff all play a critical role in implementing tobacco cessation interventions in the practice (TABLE 2). Specific actions should be taken to help standardize tobacco use identification and interventions in the daily workflow to assure that all patients are properly screened and provided with ongoing support when tobacco use is identified. FIGURE 2 provides a schematic example of how brief interventions in dental practice can be incorporated into the workflow for the entire dental team. Dental teams have the flexibility to assign roles to each team member that meet the specific needs of their patients and practice. Even so, developing a tobacco cessation program will require a tobacco cessation champion or coordinator within the practice who will help implement, organize and support dental staff on their various duties. This "champion" can be the dentist, dental hygienist or any member of the dental team. By taking action to improve tobacco cessation delivery, dental practices have the opportunity to significantly improve the oral and overall health of their patients and community.

TABLE 2				
Examples of Roles and Duties Carried Out by Members of the Dental Team				
Dental Team Members	Examples			
Dentist	 Program leader Initiate the program with staff and appoint program coordinator Communicate the purpose and plan of action Assign duties to team members Counsel patients about the risks/benefits of quitting Provide/review/support tobacco cessation interventions Discuss, recommend and prescribe medications for those willing to quit Refer to cessation support services Evaluate cessation program at regular intervals 			
Dental hygienist	 Program coordinator (champion) Discuss tobacco use and health implications with patients Ask, advise, assess and assist tobacco-using patients Review assessment with dentist when dental exam is provided Refer patients to a quitline or local program Evaluate effectiveness of cessation program Assist in motivating/providing trainings to staff 			
Dental assistant	 Ask about tobacco use and update patient's health record Order/download/print cessation materials Assist with follow-up, making calls and tracking key dates in the patient's chart Encourage and support the patient in their quitting process 			
Front office staff	 Update chart reminders and set up automated alerts Use code D1320 during billing process when appropriate Send quit date and follow-up reminders to patients Complete an online referral before the patient leaves the office Send Rx to pharmacy, if needed Send congratulatory messages and gestures to patients who are attempting to quit 			
oles and duties will vary based or	the specific needs of the dental practice and the training of dental team members			

Roles and duties will vary based on the specific needs of the dental practice and the training of dental team members.

Brief Interventions

The 5 A's Approach

The first step in the 5 A's approach involves **asking** about tobacco use with all patients at every encounter. The dentist, dental assistant or dental hygienist can easily incorporate this step as part of their routine health history assessment, just as they would when evaluating current medications and vital signs. When asking about tobacco use, it's important that clinicians take a sincere and sympathetic approach, conveying concern for the patient's health and well-being. With the availability and popularity of noncigarette tobacco products (i.e., e-cigarettes, cigars,

hookah, etc.), especially among youth, patients aged 12 years and older should be asked about their use of all tobaccorelated products, including e-cigarettes and cannabis. Moreover, because 90% of current tobacco users started using before the age of 18,13 it's essential that dental professionals discuss tobacco use with their youth patients. Information collected from all patients should be documented in the patient's health record and addressed at each subsequent visit. Stickers in a patient's chart or indicators within electronic health records can help to alert providers of a patient's tobacco use and can serve as a reminder to review their status during future appointments.

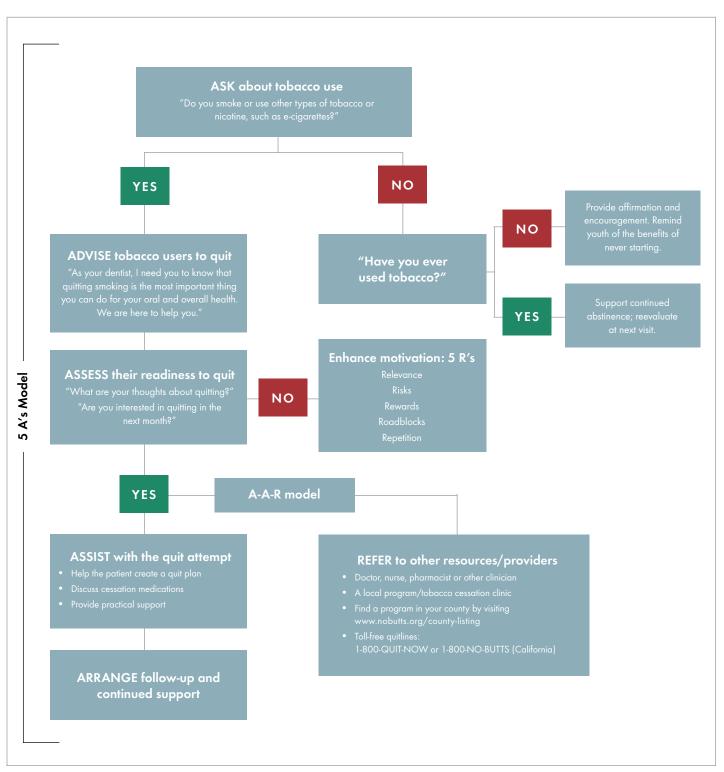


FIGURE 1. Brief interventions in dental settings: 5 A's model and A-A-R model.

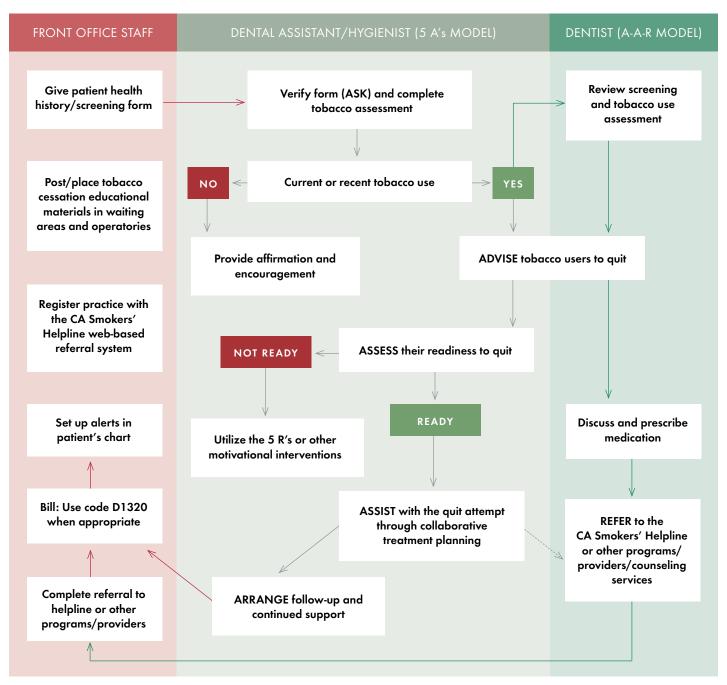


FIGURE 2. Example of tobacco cessation workflow in dental settings. (Adapted from the University of Colorado Anschutz Medical Campus, School of Medicine, Behavioral Health and Wellness Program. A Patient-Centered Tobacco Cessation Workflow for Healthcare Clinics, 2015.)

Dental professionals have the responsibility to help patients improve their oral and overall health, so when tobacco use is identified, the next step is to advise that patient, in a clear, strong and personalized way, to quit. The advice should be delivered in a nonjudgmental

manner to avoid alienating a patient or making them feel defensive. Advice to quit should not only demonstrate concern for the patient, but also a commitment to helping them quit (when ready). When appropriate, clinicians should personalize their advice to quit

by linking a patient's tobacco use to health concerns, oral conditions or social and environmental risks. For example, some patients receiving dental implant treatment may respond to information about the increased risk of implant failure or poor treatment outcomes.

Other patients with children or pets may respond to information about the negative impacts of secondhand smoke exposure.

After advising a patient to quit, the next step is to assess their readiness to make a quit attempt. It is important to recognize that not all patients have the same level of readiness to quit. In fact, when met with a behavior change like quitting smoking, most people (about 70%) find that they are not ready to take action.²⁰ For most tobacco-using patients, behavior change is a cyclical process involving multiple quit attempts and subsequent relapses. This behavior change process is known as the Transtheoretical Model (or Behavior Change Model) and involves five "stages of change" ranging from not thinking about quitting (precontemplation stage) to successfully quitting over an extended period of time (maintenance stage) (FIGURE 3).20 Patients may circulate in and out of different stages before successfully quitting for good. Understanding a patient's stage of readiness to quit is a critical component of tobacco cessation interventions and defines the next course of action for a clinician. Patients who are not ready to quit will receive a much different intervention than those patients who are ready to make a quit attempt. Conversations about readiness can be woven into the dental visit at different times (e.g., after an oral examination to explain signs of tobaccorelated gum disease or during treatment planning) to allow for a more tailored and organic conversation between providers and patients.

For patients not ready to quit (precontemplation or contemplation stage), dental professionals should focus on the goal of enhancing a patient's motivation and willingness to quit (see "Incorporating Motivational Interviewing Techniques" on page 519). This can also

be a time to enhance a patient's confidence in making a quit attempt by providing relevant information and support. When attempting to enhance motivation, the USDHHS recommends implementing the 5 R's approach, which involves discussing relevance, risks, rewards, roadblocks and repetition. Clinicians can start by encouraging a patient to indicate how quitting may be personally relevant to them. Personal information such as health concerns, health risks, family or social situations (e.g., having children at home), age, gender and other characteristics can

For patients who are still not ready to quit, repetition at subsequent appointments is critical.

have the greatest impact on a patient's motivation to quit. If a patient is not interested in quitting or doesn't think it's important (precontemplation), the clinician should spend time discussing the risks of continued use and the potential rewards of quitting. Risks can be short term (e.g., shortness of breath, tooth staining, increased risk of respiratory infections, poor treatment outcomes, etc.), long term (e.g., heart disease, respiratory illness, diabetes, cancer, shortened lifespan, etc.) or environmental (e.g., risks to family members, social isolation, financial strain, etc.). When discussing rewards, clinicians can highlight those that seem most relevant to the patient. Examples include improved health, improved sense of taste/smell, saving money, setting a good example for children, feeling better

physically, improved appearance (e.g., reduced wrinkling/aging, whiter teeth, improved self-esteem, etc.).3 If a patient is interested in quitting but doesn't feel confident in their ability to quit (contemplation), clinicians should spend more time discussing the roadblocks to quitting and provide information and potential actions to address such barriers. Common barriers may include withdrawal symptoms, fear of failure, lack of support, enjoyment of tobacco use, being around others who use tobacco and limited knowledge of effective treatment options.³ For patients who are still not ready to quit, repetition at subsequent appointments is critical. To promote autonomy with the patient and avoid resistance in the future, clinicians should consider asking permission to return to a conversation at subsequent visits. For example, one might ask the patient, "Would it be OK if we revisit this at your next appointment?" Dental professionals should remind patients that quitting tobacco use is a process and that they are here to help when and if the patient becomes ready.

For patients who are ready to quit, preferably in the next month (preparation stage), clinicians should assist those patients in making a quit attempt or refer them to outside support (See A-A-R Model below). Dentists and dental hygienists are well-positioned to assist patients in their quit attempt, while dental assistants and receptionists can complete referrals and provide additional resources. Including the entire team when assisting patients can help foster support and camaraderie among the team and boost a patient's confidence in their quit attempt. Assistance includes helping create a quit plan, discussing cessation medications and providing counseling support. The STAR method helps patients develop a quit plan and involves four preparatory steps for the patient:

Action Steps Action Steps • Congratulate patient on • Enhance motivation their success Use the 5 R's, MI, etc. Continue to monitor Inform the patient that you tobacco use status are available for support Provide relapse prevention should they want to quit in support when needed the future Maintenance Successful quit attempt **Precontemplation** (> 6 months) · Not thinking about quitting Can be the most difficult stage Unaware of need to quit Working to prevent May be resistant to discussing relapse and continue behavior change behavior change Contemplation **Action** Thinking about quitting • Recently quit (< 6 months) (< 6 months) • Successful in remaining • Recognizes the need to quit, abstinent for 24 hours to but not ready to act 6 months Benefits of use still outweigh the costs of quitting **Action Steps Action Steps** • Support patient during **Preparation** quit attempt Enhance motivation · Ready to quit in the next month • If still abstinent, congratulate Use the 5 R's, MI, etc. • May begin reducing tobacco use patient, reinforce strategies to Answer questions and provide be successful support, if needed • If relapse occurs, reassure patient, increase follow-up **Action Steps** support and discuss any modifications to their quit plan • Help patient create a quit plan • Reassessing stage of change may be necessary • Prescribe or recommend medication Abbreviation: 5 R's = relevance of quitting, risks of tobacco use, rewards of quitting, roadblocks to successfully quitting, and repetition. Adapted from

Prochaska JO, DiClemente CC, Norcross JC. In search of how people change. Applications to addictive behaviors. Am Psychol 1992;47(9):1102-1114.

FIGURE 3. Behavioral change model for tobacco cessation and action steps for dental professionals.

- Setting a quit date, ideally within two weeks.
- Telling friends and family about their decision to quit and requesting support.
- Anticipating roadblocks and challenges that may occur during the quit attempt, such as withdrawal symptoms or social situations where someone may be tempted to use.
- Removing tobacco use from their environment, including their car and home.¹²

When providing practical counseling, it's important to remember that abstinence is the ultimate goal. Once a patient has made a quit attempt, clinicians should encourage the patient to abstain from any use of tobacco products. Clinicians should review the patient's past quit attempts and discuss possible challenges and triggers, including ways to overcome them (e.g., avoiding certain social situations, changing routines, replacing behavior with a healthy alternative, etc.). When exploring strategies for overcoming obstacles and triggers, it is important to involve the patient in identifying solutions, as patients often know what strategies will work best for their lifestyle. Certain activities or behaviors, such as drinking alcohol, are strongly associated with relapse^{21,22} and should be limited or avoided, especially during the first 30 days of a quit attempt. Patients who are living with tobacco users should encourage those individuals to join them in their quit attempt or at least avoid using tobacco when the person is present. These strategies, along with proper medication (see below), will help reduce a patient's urge to use tobacco, especially in the early stages of a quit attempt.

Once a patient has received assistance with their quit attempt, the final step in the 5 A's approach is to **arrange** follow-up. This can also be a time to refer a patient

for specialist support, if needed. While front office staff often schedule follow-up appointments, any member of the team can contact a patient to follow up and review their progress. Ideally, the first follow-up contact should be scheduled the first week of a patient's quit attempt and a second contact should be made one month later. Follow-up contacts can be completed over the phone, email, text or in person depending on the patient's preference. For patients who have remained abstinent, this is a time to congratulate them on their success and

Clinicians should review the patient's past quit attempts and discuss possible challenges and triggers.

encourage continued abstinence. For those who have relapsed, this encounter can be a time to remind patients that quitting is a process and often involves multiple quit attempts before abstinence is achieved.²³ During follow-up contacts, clinicians should help identify challenges encountered during the patient's quit attempt, assess medication use and potential problems and remind patients of other resources and support options available, like more intensive treatment, if needed. See TABLE 3 for a summary of the 5 A's approach and examples of ways to communicate with patients.

The A-A-R Approach

Many dental professionals may feel that they do not have the time or training to provide adequate tobacco cessation services to their patients using the 5 A's approach. The USDHHS recommends that those clinicians implement an alternative approach, known as the Ask-Advise-Refer (A-A-R) model or Ask-Advise-Connect (A-A-C).¹² This approach is a truncated version of the 5 A's model and involves asking about tobacco use, advising patients to quit and referring (or connecting) patients who are willing to quit to outside resources, such as a local tobacco cessation program or toll-free quitline. Other providers outside of the dental team are then responsible for assisting the patient during the quitting process and arranging follow-up contact.9 Dental providers are encouraged to have a list of multiple referral options available to provide patients with resources that meet their specific needs or preferences.

The California Smoker's Helpline (CSH) is a valuable resource and provides patients with culturally sensitive counseling services from trained treatment specialists. In addition, it also provides self-help materials, referrals to additional resources (if needed), e-chat features and text-messaging programs. Counseling provided by the CSH is available in multiple languages and serves various populations including adults, teens, smokeless tobacco users, e-cigarette users and pregnant women. When referring patients to the CSH, clinicians can either passively share the telephone number (1.800.NO.BUTTS) or proactively refer patients through the CSH web-based referral system. Those who are proactively referred to the CSH will receive a call from a treatment counselor within 48 hours of the referral. When compared to passive referrals, proactive referrals to the quitline result in higher quitline participation;^{24,25} therefore, dental professionals are encouraged to actively refer patients whenever possible. Dental professionals can register their practice

TABLE 3

The Five A's Approach to Tobacco Cessation: Sample Dialogue Suggested Actions and/or Language Ask: Ask about tobacco use at every visit "Do you ever smoke or use any type of tobacco product?" • "How often do you use [tobacco product]?" • Tobacco use status (current, former, never) • "I take time to ask all of our clients about tobacco use because it's important." Amount used (daily/weekly) • Document patient response • "There have been some tissue changes in your mouth, and your gum health Advise: Advise users to quit is getting worse since your last visit. Your use of [tobacco product] is affecting • Give clear, nonjudgmental, strong personalized advice to quit. your health." · Connect advice with oral findings. "The best thing that I can do for you today to protect your current and future health is to advise you to stop using [tobacco product]." Assess: Assess their willingness to quit • "Would you like to try to quit tobacco in the next month/year?" • "On a scale of 1-10 (0 being not at all important and 10 being very important), Is the tobacco user willing to make a guit attempt at this time? how important is it for you to quit using [tobacco product]?" "What would it take for you to give quitting a try?" Assist: Assist with a quit plan For patients who are ready to quit: "Would you like to create a quit plan with me today?" Work with the patient on a quit plan: • Set a quit date within two weeks For patients who are not ready to quit: Review past quit attempts • Provide a brief intervention or motivational interview and the 5 R's approach. · Avoid other tobacco users and alcohol • "Why is quitting relevant to you?" • Tell family and friends "What do you think are the barriers preventing you from quitting tobacco?" Remove tobacco from home, work and car • Recommend or prescribe pharmacotherapy Arrange: Arrange follow-up contact For patients not ready to quit: • "If it's okay with you, I'd like to check in with you at your next appointment to Document in their chart and schedule a follow-up appointment to see where you are in your decision-making." review progress and provide additional tobacco cessation counseling. For patients who are ready to quit: • "If it's okay with you, I'd like to schedule a follow-up appointment or phone call to discuss your progress." "You can call 1-800-QUIT-NOW for free telephone support." (Refer users to cessation services.)

Stead LF, Buitrago D, Preciado N, Sanchez G, Hartmann Boyce J, Lancaster T. Physician advice for smoking cessation. Cochrane Database Syst Rev 2013 May 31;2013(5):CD000165. doi: 10.1002/14651858.CD000165.pub4. 2008 Update. June 2015. Agency for Healthcare Research and Quality, Rockville, Md.

on the CSH website to begin referring patients using the web-based program (TABLE 4). Options to refer patients through direct email messaging or peer-to-peer electronic health records are also available but may require additional IT resources. For patients who would prefer in-person or local group programs, the CSH also houses a listing of local cessation programs where dental teams can search for local programs available within their county (TABLE 4). Dental professionals can also reach out to their local public health department's tobacco

control program for tobacco cessation services provided in their community.

Incorporating Motivational Interviewing Techniques

Motivational interviewing (MI) is an approach used in health care to help patients change behaviors, such as quitting tobacco. ²⁶ MI involves a collaborative, goal-oriented communication style designed to strengthen a person's own motivation and commitment to change, thus strengthening the relationship between the patient and the provider and

improving health outcomes. The spirit of MI incorporates four key elements: partnership (not confrontation), acceptance (not judgement), compassion (not indifference) and evocation (not advice). MI enables the clinician to foster an atmosphere of nonjudgement and a space where patients can explore and enhance their own motivation to change their behaviors. In the dental setting, MI enables dental providers to assist by coaching (not lecturing) the patient in their journey to quit. Open-ended questions, affirmations, reflective listening

TABLE 4

Tobacco Cessation Resources for Dental Professionals and Patients

Practice Resources

CDC Tips From Former Smokers

Dental Professionals: Help Your Patients Quit Smoking Fact sheets, dental-related posters, provider resources, real stories from former tobacco users, etc.

CA Smokers' Helpline (CSH)

How Health Care Providers Can Help Patients Quit Free downloadable patient education materials, provider toolkits, trainings, etc.

American Dental Hygienists' Association (ADHA)

Provider/patient/office/educator resources

American Dental Association (ADA)

Smoking and Tobacco Cessation
Provider/patient/office/educator resources

American Dental Education Association (ADEA)

Supporting Tobacco Cessation on the Clinic Floor Dental provider webinar

Rx for Change

Free training and educational materials for health professionals

Tobacco Education Clearinghouse of California (TECC)

Download or order educational materials for your office

U.S. Public Health Service Clinical Practice Guideline

Download or order educational materials for your office

CDC A Million Hearts Action Guide, Identifying and Treating Patients Who Use Tobacco: Action Steps for Clinicians

Intervention strategy toolkit for busy health professionals

California Oral Health Technical Assistance Center

Provider/patient/office/educator resources Information on motivational interviewing strategies

Patient Resources

Websites and digital resources

- The Department of Health and Human Services
- The National Cancer Institute's web-based tools and resources to help patients auit
- The California Smokers' Helpline: Free, personalized, confidential quit services
- My Last Dip: Web-based research project to help patients quit smokeless tobacco
- BecomeAnEx: Active social community, text and email messaging support, expert guidance and interactive quitting tools

Community-based or local cessation resources (e.g., programs, support groups, etc.)

Find local programs in your area

Free telephone-based quitlines

- 1-800-QUIT-NOW
- 1-800-NO-BUTTS (CA)

Text messaging and chat programs

- NCI's Smokefree TXT: Text QUIT to 47848
- · NCI's LiveHelp in English and Spanish
- The California Smokers' Helpline

Smartphone applications

NCI QuitGuide (Adults) and quitSTART (Teens)

and summary reflections (OARS) are MI strategies commonly used when discussing tobacco-related behaviors. Familiarity with these strategies and the key elements of MI increases the effectiveness of patient interactions and tobacco cessation interventions. To find resources and learn more about MI, see TABLE 5.

Approved Medications for the Treatment of Tobacco Use

Studies have shown that a combination of counseling and medication gives patients the best chance of becoming a successful quitter. Therefore, clinicians should encourage patients to use effective medications when making a quit attempt,

except where contraindicated or in populations where evidence of effectiveness may be lacking. It is also imperative that clinicians discuss the importance of adhering to a prescribed regimen and dosage once a pharmacotherapy option has been chosen. Currently, there are seven approved medications for the treatment of tobacco use and dependence.¹² Five of these medications are considered nicotine replacement therapies (NRT), which provide an individual with nicotine without the harmful components of tobacco. They can be long-acting (provide a steady stream of nicotine over time) or short-acting

(provide an acute dose of nicotine) and are available in various dosages and forms, including nicotine patches (long-acting), gum and lozenges (short-acting), nasal spray (short-acting) and oral inhaler (short-acting) (TABLE 6). The nicotine patch, gum and lozenge are generally sold over the counter, while the inhaler and nasal spray require a prescription.

Two other nonnicotine medication options are available: bupropion SR (brand name Zyban) and varenicline (brand name Chantix). Bupropion SR is an antidepressant medication that acts by decreasing cravings for nicotine. Varenicline is known as a nicotine receptor agonist and works by reducing

TABLE 5			
Motivational Interviewing Strategy: OARS			
Strategy	Example Language and/or Actions		
Open-ended questions • Encourages people to use their own words • Keeps the conversation on the individual	 "How do you feel about quitting smoking?" "What do you know about the health effects of smoking?" 		
 Affirmations Statements that acknowledge a person's own strengths Can build confidence and lead to positive change Must be genuine and authentic observations 	 "I appreciate that you are willing to talk with me about your tobacco use." "You are clearly a very resourceful person." "That's a good suggestion." "Wow, you have really shown a commitment to quitting." 		
Reflections Restating what the patient has said or the deeper meaning behind their statement Demonstrates a genuine interest in understanding the patient Allows a patient to feel understood/accepted without judgement	 "You are tired of being reminded that your tobacco use is harmful to your health." "It sounds like you are worried about how your smoking may be impacting your health and your family." "You're wondering if now is the best time to quit." 		
Summaries Statements that pull together several things that the patient has discussed Allows people to reflect on the conversation and transition from one theme to another Helps move the conversation forward	 "Let me see if I understand so far" "Here is what I have heard. Let me know if I am missing anything." "So it sounds like on one hand you love to dip, but on the other hand it is starting to affect your teeth and gums." 		

Adapted from Miller WR, Rollnick S. Motivational interviewing: Helping people change. Guilford Press; 2012.

withdrawal symptoms and diminishing the rewarding effects of nicotine. In a large clinical trial, it was found that varenicline was more effective than bupropion SR, the nicotine patch and a placebo in helping cigarette smokers quit.²⁷ In that same study, bupropion SR and the nicotine patch were more effective than the placebo.²⁷ Other studies have also demonstrated the efficacy of various medication in increasing long-term cessation rates when compared to placebo.^{28,29} In addition, the combined use of short- and long-acting NRT or the combined use of a nonnicotine medication with a short-acting NRT has been shown to be more effective at increasing cessation rates than the use of one medication alone.¹³ Precautions and contraindications of all medications should be considered before recommending and prescribing to patients. For a comprehensive list of precautions, contraindications and prescribing information, clinicians are encouraged to refer to the manufacturers' package inserts.

E-cigarettes (also known as vapes, vape pens, e-hookah, mods, etc.) are battery-powered devices that deliver nicotine by heating a liquid into an aerosol that is inhaled by its user. Over the past decade, e-cigarettes have gained attention as a potential tobacco cessation aid. However, evidence surrounding their efficacy is conflicting.30,31 Two recent clinical trials suggest that e-cigarettes (in combination with behavioral counseling) may be more effective at helping patients quit than the use of NRT.32,33 However, other cohort studies have suggested no improvement in quit rates among e-cigarette users^{34,35} and other studies have shown higher success rates in quitting through use of approved medications. 31,36,37 In the U.S., e-cigarettes are regulated as a tobacco product and are not approved as a cessation device.³⁷ If a patient is interested in using e-cigarettes as a cessation aid, it is important not to discourage a quit attempt. Instead, dental professionals should discuss the evidence-

based cessation options described above and determine a plan that best fits the specific needs of that patient.

Billing for Tobacco Cessation Counseling in Dental Settings

Dental professionals are encouraged to use the California Dental Code (CDT) D1320 when billing for tobacco cessation counseling in practice. The Medi-Cal Dental Program recognizes the important role dental professionals play in identifying tobacco use and assisting in prevention and cessation of use. As of June 2019, Medi-Cal Dental Program providers who deliver tobacco cessation counseling using CDT D1320 are provided with reimbursement. The counseling must be provided during a comprehensive oral evaluation (for any patient) or a periodic oral evaluation of an established patient (and must have both an oral evaluation code and the tobacco counseling code to receive credit). Faceto-face counseling must be documented and should include elements of the 5 A's

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Suggested Dosage and Instructions for Approved Tobacco Cessation Medications				
Product	Patient Considerations	Dosage	Instructions	Availability*
Nicotine patch OTC (NicoDerm CQ, generic) 7 mg, 14 mg, 21 mg (24-hr release)	Used to provide sustained withdrawal symptom relief and for concerns with compliance	 >10 cigarettes/day: 21 mg/day x 4-6 weeks 14 mg/day x 2 weeks 7 mg/day x 2 weeks ≤ 10 cigarettes/day: 14 mg/day x 6 weeks 7 mg/ day x 2 weeks 	 Rotate patch application site daily Do not apply a new patch to the same skin site for at least one week May remove at bedtime if patient has sleep disturbances Duration: 8-10 weeks 	OTC
Nicotine gum OTC 2 mg, 4 mg; original, cinnamon, fruit, mint	Help to serve as an oral substitute and can be titrated to manage withdrawal symptoms Contraindicated: Recent myocardial infarction, underlying arrhythmias, serious angina, TMJ disease, pregnant and breastfeeding	 1st cigarette ≤ 30 minutes after waking: 4 mg 1st cigarette > 30 minutes after waking: 2 mg Weeks 1-6: 1 piece q 1-2hrs Weeks 7-9: 1 piece q 2-4hrs Weeks 10-12: 1 piece q 4-8hrs 	 Maximum, 24 pieces/day Chew each piece slowly Park between cheek and gum when peppery/tingling sensation begins (~15-30 chews) Resume chewing when tingle fades Repeat chew/park steps until nicotine is gone (tingle does not return; ~30 min) Park in different areas of mouth No food or beverages 15 minutes before or during use Duration: up to 12 weeks 	OTC
Nicotine lozenge OTC 2 mg, 4 mg; cherry, mint	Helps to serve as an oral substitute Can be used for breakthrough cravings	 1st cigarette ≤ 30 minutes after waking: 4 mg 1st cigarette > 30 minutes after waking: 2 mg Weeks 1-6: 1 lozenge q 1-2hrs Weeks 7-9: 1 lozenge q 2-4hrs Weeks 10-12: 1 lozenge q 4-8hrs 	 Maximum, 20 lozenges/day Allow to dissolve slowly (20-30 minutes) Nicotine release may cause a warm, tingling sensation Do not chew or swallow Occasionally rotate to different areas of the mouth No food or beverages 15 minutes before or during use Duration: up to 12 weeks 	OTC
Nicotine inhaler Rx 10 mg cartridge delivers 4 mg inhaled vapor	Helps to serve as an oral substitute by mimicking hand to mouth ritual	 6-16 cartridges/day Individualize dosing Initially use 1 cartridge q 1-2 hours Initially use at least 6 cartridges/day 	 Best effects with continuous puffing for 20 minutes Nicotine in cartridge is depleted after 20 minutes of active puffing Inhale into back of throat or puff in short breaths Do NOT inhale into the lungs but "puff" as if lighting a pipe Open cartridge retains potency for 24 hours No food or beverages 15 minutes before or during use Duration: 3-6 months 	Rx
Nicotine nasal spray Rx metered spray 10 mg/mL nicotine solution	Ideal for those highly addicted and high use Most rapid delivery among other approved products	 1-2 doses/hour (8-40 doses/day) One dose = 2 sprays (one in each nostril) Maximum - 5 doses/hour or 40 doses/day 	 For best results, initially use at least 8 doses/day Do not sniff, swallow or inhale through the nose as the spray is being administered Each spray delivers 0.5 mg of nicotine to the nasal mucosa Duration: 3 months 	Rx
Varenicline Rx 0.5 mg, 1 mg tablet	Helps to reduce craving for nicotine and relieves withdrawal symptoms Screen for history of depression	 Days 1-3: 0.5 mg po q AM Days 4-7: 0.5 mg po bid Weeks 2-12: 1 mg po bid 	 Begin therapy 1 week prior to quit date Take dose after eating and with a full glass of water Duration: 12 weeks; an additional 12-week course may be used in selected patients May initiate up to 35 days before quit date OR reduce smoking over a 12-week period of tx prior to quitting and continue tx for an additional 12 weeks 	Rx

TABLE 6, CONTINUED

Suggested Dosage and Instructions for Approved Tobacco Cessation Medications				
Product	Patient Considerations	Dosage	Instructions	Availability*
Bupropion SR 150 Rx 150 mg sustained-release tablet	Helps to reduce the craving for smoking Screen for seizure disorder, current or prior diagnosis of anorexia or bulimia or use of monoamine oxidase inhibitor (MAOI)	 150 mg po q AM x 3 days, then 150 mg po bid Do not exceed 300 mg/day 	 Begin therapy 1 - 2 weeks prior to quit date Allow at least 8 hours between doses Avoid bedtime dosing to minimize insomnia Duration: 7-12 weeks, with maintenance up to 6 months in selected patients 	Rx

^{*}OTC: over the counter; Rx: requires prescription. The information in this table is not comprehensive. Please see the manufacturers' package inserts for a comprehensive list of warnings, precautions, contraindications and prescribing information. Adapted from: UCSF Smoking Cessation Leadership Center. Pharmacologic Product Guide: FDA-Approved Medications for Smoking Cessation. Copyright 1999-2019 The Regents of the University of California. All rights reserved. Updated Jan. 17, 2019.

approach. For those unwilling to quit, documentation of barriers should be included in the patient's record. ¹⁹ Creating a routine that incorporates asking about tobacco use and willingness to quit at each oral evaluation can be quickly executed with the strategies discussed in this paper.

Conclusion

Dental professionals have a unique opportunity to be leaders in tobacco cessation. Brief interventions, such as the 5 A's approach and the A-A-R model, can be carried out by all members of the dental team and easily implemented into the dental practice. Dental teams are encouraged to develop a tobacco cessation program that meets the specific needs of their patients and dental practice. By providing tobacco cessation support and recommending approved medications to patients interested in quitting, a potentially life-saving intervention can be added to routine dental care.

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C.E. CREDIT QUESTIONS

August 2021 Continuing Education Worksheet

This worksheet provides readers an opportunity to review C.E. questions for the article "Tobacco Cessation in Dental Settings: A Team-Based Approach" before taking the C.E. online test. You must be registered at cdapresents360.com. To take the test online, please click here. This activity counts as 1.0 of Core C.E.

- 1. Based on recent data, how do dental professionals (dental hygienists and dentists) and medical professionals (nurses and physicians) compare in terms of likelihood to offer their patients assistance in quitting tobacco?
 - a. Medical professionals are more likely to assist patients to quit tobacco.
 - b. Dental professionals are more likely to assist patients to guit tobacco.
 - c. Medical and dental professionals are equally likely to assist patients to quit tobacco.
- 2. Which of the following is true about the 5 A's model and Ask-Advise-Refer (A-A-R) model for patient tobacco cessation?
 - a. The A-A-R model relies on connecting patients with cessation resources outside the dental practice.
 - b. The 5 A's and A-A-R model both begin by asking all patients about their tobacco use.
 - c. The A-A-R model should only be attempted by providers experienced in motivational interviewing.
 - d. A and B only
 - e. A, B and C
- 3. Electronic cigarettes are FDA-approved as a tobacco cessation product in the United States.
 - a. True
 - b. False
- **4.** Which of the following is true about billing for tobacco cessation counseling services provided in a dental setting?
 - a. Tobacco cessation is never a billable procedure.
 - b. Claims will only be paid if providers document that the patient has guit tobacco.
 - Tobacco cessation is reimbursable under the Medi-Cal Dental Program using CDT code D1320.
- **5.** Which of the following is true about FDA-approved medications for tobacco cessation?
 - a. All of the approved tobacco cessation medications require a prescription.
 - All of the approved tobacco cessation medications are forms of nicotine replacement therapy.
 - c. Dentists can prescribe tobacco cessation medications for their patients.
 - d. Tobacco cessation medications should not be used in combination.

- 6. Which of the following is true about the California Smokers' Helpline?
 - a. Cessation support is available tailored to specific populations, like teens, pregnant women and smokeless tobacco users.
 - b. Cessation support is provided at no cost to clients.
 - Dental providers can refer directly to the helpline and the helpline will then contact the patient.
 - d. All of the above
- 7. True or False: Tobacco-related deaths in the United States account for more than motor vehicle accidents, HIV, illegal drug use, alcohol use and fire-arm-related events combined.
 - a. True
 - b. False
- **8.** True or False: The most effective form of providing cessation treatment to a dental patient is by having one dedicated dental team member carry out all of the activities with a patient.
 - a. True
 - b. False
- 9. True or False: Brief (less than five minutes) cessation discussions from dentists or the dental team have been shown to be effective in helping patients to quit using tobacco.
 - a. True
 - b. False
- **10.** Patients not ready to quit using tobacco are considered to be in what stage of the behavioral change model?
 - a. Precontemplation stage
 - b. Preparation stage
 - c. Action stage
 - d. Maintenance stage









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Proceedings From the California Dental Association Symposium on Geriatrics and Oral Health

Elisa M. Chávez, DDS; Michelle Brady, DDS; and Paul Subar, DDS, EdD

ABSTRACT

The California Dental Association and the University of the Pacific, Arthur A. Dugoni School of Dentistry convened a gathering of experts and stakeholders to conduct a strengths, weaknesses, opportunities and threats (SWOT) analysis with regard to oral health needs, dental education and workforce, financial and reimbursement structures and legislative opportunities as they relate to improving oral health for older Californians. The consensus was that change must begin in dental education, with relevant and innovative clinical experiences in geriatric care, including interprofessional education (IPE) and interprofessional practice (IPP) with appropriately trained faculty. Incentives for faculty and professional development are needed to develop role models who can appropriately manage the diverse and unique oral health care needs of older adults as part of an interprofessional team. Value-based care and novel dental benefit and reimbursement mechanisms are needed to support many older Californians who are lacking financial resources for care. Innovation in care delivery models to meet the needs of those who are most vulnerable and removed from opportunities for care are also needed to improve access to care and health outcomes across California. The entire health care team must be engaged. Oral health care must be perceived and practiced as an integral component of primary health care to achieve optimal health outcomes.

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Conflict of Interest

Disclosure: None reported.

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Conflict of Interest

Disclosure: None reported.

n Oct. 18, 2019, the
California Dental
Association and the
University of the Pacific,
Arthur A. Dugoni
School of Dentistry gathered experts and

School of Dentistry gathered experts and stakeholders to discuss past, current and future issues related to the oral health of older Californians. They conducted a strengths, weaknesses, opportunities and threats (SWOT) analysis of oral health needs, dental education and workforce issues, financial and reimbursement structures and legislative opportunities as they stand in California. Since the onset of COVID-19, many of these issues have become even more pronounced.

The pandemic has delayed routine oral health care for a full year for millions of older adults across the state, many of whom already suffered from untreated oral diseases. The impact on patients, dental education and the practice of dentistry will continue well into the future even as vaccines become more widely distributed. Profound impacts on already strained resources and access to oral health care for older adults are imminent.²

Dental academicians, private dental practitioners, public health officials, patient advocacy groups, insurance providers, health plans, organized dentistry and legislators participated in the full-day event to discuss, debate and illuminate the

way forward. Despite several invitations to various groups, no colleagues from medicine attended. Attendees listened to expert presentations and then met in small groups to reflect on what they had heard and the implications and steps California can take to secure the oral health of its older adults. The increased focus on the importance of IPE and IPP in dentistry, which has emerged in the last decade, was evident. These principles have long been a cornerstone of geriatrics.3 A consensus emerged that engaging the full spectrum of health professionals to understand the importance of and advocate for the oral health care of older adults to achieve improved outcomes in dentistry and medicine is critical. If California is to move forward and lead, then oral health care must be perceived — and practiced — as an integral component of primary health care for older adults.

Strengths To Build Upon

Strong Advocacy for Medicine and Dentistry in California

In 2014, the California State Legislature asked the California Department of Public Health (CDPH) to prepare a report on the status of oral health in California and develop a plan to address identified issues. This led to the CDPH and the Department of Health Care Services (DHCS) forming an advisory committee in 2015 to develop the California Oral Health Plan 2018–2028.4 This plan demonstrates the collaborative work and commitment of California state and local governmental agencies, professional and advocacy organizations, foundations, academic institutions and other groups to improving oral health in California. Strategies for healthy aging in the plan include:

- Improved daily oral health care training for long-term care staff.
- Guidance regarding telehealth and mobile dental programs.
- Protocols to assess risk factors

- and conduct oral and pharyngeal cancer assessment.
- Toolkits to integrate oral health into diabetes management.

Additionally, a California oral health surveillance system will include health and nutritional surveys, a behavioral risk factor surveillance system and a cancer registry.⁵ The governor preserved adult dental benefits and Proposition 56 supplemental payments in Medicaid for many older Californians living with disabilities and in poverty for fiscal year 2020–2021⁶ as a result of a broad effort from consumers, dentists, CDA and other advocacy groups.

Delta Dental found older adults have ~2.3 times higher utilization on major restorative procedures than younger adults.

Increasing Awareness, Interest and Expectations

Baby boomers are the most diverse generation of older adults in history and hold greater expectations for their oral health as an element of aging well.⁷ A recent national survey shows 93% of seniors favor a dental benefit in Medicare and 59% favor it even with an additional cost.8 Delta Dental found older adults have ~2.3 times higher utilization on major restorative procedures than younger adults. Utilization on diagnosis, prevention and basic restorations in this group is around 50% higher. Their data also show that those without prior dental insurance incur a 20% higher cost than those with prior coverage. This may be a result of diagnoses at later stages, requiring more

expensive care to restore oral health. These data demonstrate the need and desire for dental care among this population and the potential costs of delaying treatment.

Potential To Leverage Existing Federal and State Initiatives and Legislation (TABLE 1)

The CDPH report "The Status of Oral Health in California: Oral Disease Burden and Prevention 2017" illustrated that the state was not on target to deliver much of the Healthy People 2020 national goals and objectives. In 2018, A Healthy Smile Never Gets Old: A California Report on the Oral Health of Older Adults by the Center for Oral Health (COH) reported 46% of community-dwelling seniors and 65% of older adults living in California's skilled nursing homes had untreated oral diseases, with 23% and 28% respectively having immediate or urgent needs. Those in skilled nursing homes are in critical need of intervention, as poor oral health places them at risk of exacerbation of other systemic, chronic conditions and compromises quality of life and overall well-being. The report further referenced the reestablishment of the CDPH's oral health program, the increase in dental services under the Medi-Cal program, including the Dental Transformation Initiative (DTI) and the development of dental insurance coverage by Covered California for children and families. 10 Goals and strategies that were referenced in these reports could serve as roadmaps to improve access to care and outcomes in oral health for older Californians:

- Improve oral health by addressing determinants of health and promoting healthy habits and population-based prevention interventions.
- Align dental health care delivery systems, payment systems and community programs to support and sustain linkages between sites

where people live and work to sites providing clinical care (communityclinical linkages) to increase utilization of dental services among specific vulnerable populations.

 Expand infrastructure, capacity and payment systems to support prevention and early treatment through broad collaboration.

Other federal and state laws and initiatives regarding the health care of older Americans could be leveraged to improve access to oral health care, including:

- Older Americans Act. (42 USC 3001 et seq.)
- Medicare, which currently excludes dental care except in very specific circumstances (42 USC 1395 et seq.) but otherwise provides comprehensive outpatient medical benefits to adults 65 and older and younger adults with disabilities.
- Medicaid, through which California provides dental benefits for eligible older adults; however, this benefit is not guaranteed and is vulnerable to budget cuts (42 USC 1396 et seq.).
- Mello-Granlund Older
 Californians Act that established the California Department of Aging (WIC 9100 et seq.).
- In-home supportive services program for supportive services for aged, blind or disabled persons (WIC 12300 et seq.).

Importantly, on June 10, 2019, Gov. Gavin Newsom signed Executive Order N-14-19 calling for the establishment of a California Master Plan for Aging, quickly followed by the enactment of SB 228, which provides a framework for state and local decision-makers to review and address challenges facing older Californians. Section 10 of this bill states, "As the population ages, the demand for health care, long-term services and supports, affordable housing, accessible transportation, oral health care, mental

TABLE 1				
Legislation Impacting Oral Health of Older Adults				
Timeline	Federal	California		
1965-1980	 1965 Medicare and Medicaid Law 1965 Older Americans Act 1972 Medicaid extended to seniors and disabled 	1966 Medi-Cal established1980 Older Californians Act		
1980-2000	1997 PACE established	 1988 AB 560 1996 Mello-Granlund Older Californians Act established the California Department of Aging 		
2001-2020	 2010 Patient Protection and Affordability Act 2018 Action for Dental Health Act 2020 Supporting Older Americans Act 	 2010 AB 560 allowed RDHAP as a license category 2014 AB 1174 2019 Executive Order N-14-19 by Gov. Newsom followed by 2019 SB 228 that called for a Master Plan for Aging by October 2020 		

health care and other services will continue to outpace supply unless there is intentional leadership and action."¹¹

Though their potential has not yet been fully realized, each of these efforts demonstrates existing resources and future opportunities and represents a significant level of commitment to oral health issues. However, coordinated efforts from stakeholders statewide are required to capitalize on these and address the gaps in oral health care that exist for older adults in California.

California Dental Schools Contribute to Workforce and Innovation in Oral Health Care

California dental schools play a significant role in the safety net for older adults who may be on fixed incomes and/ or lack dental insurance. All dental schools in California teach geriatric content and partner with federally qualified health centers (FQHCs), school districts, mobile vans, programs for all-inclusive care for the elderly (PACE) and community health centers in service-based learning. These services, paired with wide acceptance of California's Medi-Cal Dental Program benefits and reduced fee structures, provide important opportunities for student experiences in patient care for older adults.

Many dental schools are affiliated with other health professional schools, placing them in a prime position for IPE and IPP as well as research, innovation and advocacy. There are proven models and support for the value and potential of partnerships in these areas. The development of landmark publications such as the "Surgeon General's Report on Oral Health"¹² and "Healthy People 2020"¹³ have reinforced the importance of oral health for general health and well-being. The Institute of Medicine produced key reports related to oral health such as "Advancing Oral Health in America (2011)," which recommended improving access to oral health prevention and treatment, and "Improving Access to Oral Health Care for Vulnerable and Underserved Populations," which suggested ways to reduce disparities and improve the oral health status of vulnerable populations.¹⁴ FQHCs and the Veteran's Administration are long-standing models where oral health is integral to a comprehensive health care program. California dental schools can leverage existing initiatives and models to improve dental education and access to care.

California Demonstrates Innovation in Delivery Care Models

California is the birthplace of

TABLE 2

Medi-Cal Oral Health Benefits for Adults Optional in ACA			
Essentia health benefits	Optional services		
Ambulatory services	Dental for adults		
Emergency services	Vision services for adults		
Prescription drugs	Nonemergency medical transportation services		
 Rehabilitative and habilitative services and devices 	Long-term services and support		
Hospitalization			
Preventive and wellness services, chronic disease management			
 Mental health and substance use disorders (SUD) services, including behavioral health treatment 			
Maternity and newborn care			
 Pediatric services, including oral and vision care 			
Laboratory services			

The Affordable Care Act ensures that all Medi-Cal health plans offer 10 essential health benefits. In addition, California provides other services that are not required by the federal government. Source: State Plan Section 3-Services. California Department of Health Care Services, last modified Dec. 19, 2018. www.dhcs.ca.gov; and Medi-Cal Provides a Comprehensive Set of Health Benefits That May Be Accessed as Medically Necessary, DHCS, October 2017, www.dhcs.ca.gov.

innovations in oral health care for older adults. In 1971, the forward-thinking leadership of a public health dentist, William Gee, DDS, and a social worker, Marie-Louise Ansak, led to the creation of the original PACE program, On Lok, in the San Francisco Bay Area. PACE programs are the only place within the Centers for Medicare and Medicaid Services where medically necessary oral health care is a guaranteed benefit for older adults, even in states with limited or no Medicaid dental benefits. They tested and developed a model of interdisciplinary care for frail older adults decades before the recent shift toward IPE and IPP. Oral health care is an integral component of comprehensive care for their participants.¹⁵

The University of the Pacific conducted a multiyear study of a virtual dental home (VDH) model to care for people where they go to school, work and live. The data helped shape legislation (AB 1174, 2014) that changed California law to require Medi-Cal Dental Program payment for telehealth-provided dental services and included additional duties by appropriately trained allied dental team

members. This model created a virtual dental team reach across California and other states, opening avenues for care for populations facing significant challenges in accessing basic oral health services.¹⁶

The Gary and Mary West Senior Wellness Center in San Diego incorporates dental care and a meal program into its medical and social services. The West center provides a patient-centered, metrics-based, triage approach to oral health care for older adults in a location they already frequent for other services. ¹⁷ The West, VDH and PACE models are important examples of oral health care as an integral component of care for older adults that originated in California and could be expanded or provide insight and pathways to creating new or similar models of care.

Perceived Weaknesses and Threats

Defining Geriatrics To Meet Changing Perceptions of Aging and Old Age Among Patients and Providers

Two important challenges in geriatrics lie in the definition and understanding of the word geriatrics. What does it mean to

us as educators and practitioners and what does the word mean to patients? Geriatrics is a branch of medicine that deals with the problems and diseases of old age and the medical care and treatment of aging people. The geriatrician considers age plus functional status and disease burden. Dental accreditation standards address competence with reference to providing oral health care at all stages of life. 18 According to California law, those age 62 and older qualify as senior citizens and even 55 to qualify for senior housing. 11 The practice of geriatrics also includes the care of younger people with significant medical or developmental disease or disability from age 55 or even younger in some circumstances.¹⁵ Most developed nations recognize age 65 and up as geriatric. 19 So while the concept of geriatrics is very broad without a widely agreed upon age of onset, the connotation of geriatric and geriatrics must also be considered from the perspective of those seeking care for themselves or loved ones as well as health care providers who are considering. or not considering, entering the field.

Better Coordinated Advocacy Addressing Whole-Person Needs Including Oral Health

During the last 50 years, there has been a significant downward trend of edentulism in people over the age of 65. However, this dentition remains at risk for caries and periodontal disease. Left untreated, dental diseases can impact overall health and quality of life. An estimated 1.4 million people over age 65 in California qualify for Medi-Cal Dental benefits,²⁰ but the benefits are not guaranteed and are threatened whenever the state budget tightens. Trying to navigate insurance sources of varying complexity can also result in barriers to access and disparities in care. According to one analysis, adults age 80 and older, older women and older people from various racial and ethnic backgrounds in fair or poor health are more likely to be poor.²¹ COVID-19 has further exposed these inequities, and the health and economic impact of this pandemic will compound these issues for years to come.² In the absence of guaranteed and meaningful dental benefits alongside medical benefits, oral health care will remain an out-of-pocket, and all too often out-of-reach, proposition for millions of older Californians.^{22,23}

Negative Perceptions of Aging and Lack of Awareness About the Value of Oral Health as a Component of Healthy Aging

Ageism in health care can stem from societal biases and negative stereotypes. Time constraints for addressing complex issues and lack of appropriate reimbursement for time spent and treatment rendered can be additional deterrents for providers to care for older and frail adults. Many patients can be appropriately managed with preventive and minimally invasive care,24 which are lowrevenue-generating procedures compared with more comprehensive and surgical approaches toward a restorative or aesthetic goal. Conversely, needed curative and restorative treatment may not be offered or provided to older patients by practitioners who are uncomfortable or unprepared to manage patients with complex needs.²⁵ This is complicated further by societal attitudes toward aging and oral health and the mistaken view that declining oral health and tooth loss are a natural consequence of aging. Older adults themselves, other health care providers and legislators may not put a high value on oral health as a part of healthy aging, not realizing the broad implications for health and quality of life over their lifetime.²⁶

Medicare still explicitly excludes oral health care as a covered benefit for some 60 million aged and disabled beneficiaries.²² This lack of a universal dental benefit in Medicare underscores societal attitudes toward the relationship and importance of oral health to systemic health in the aging population. These attitudes result in delays in treatment and declining oral health in

whole populations, as systems of health care persistently neglect dental needs.²⁷ The entire health care team and the public must be knowledgeable about the dynamic relationship between oral and systemic health and the opportunities to improve outcomes across all organ systems.^{24–26,28–30} The value of restoring and maintaining oral health and dentition in older adults is multifaceted.⁷ An interprofessional approach to advocacy for oral health care is needed to improve education, standards of care, reimbursement and legislation to erase the deep disparities in oral health care faced by older adults.^{26–30}

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The Affordable Care Act (ACA) was signed into law in 2010. This groundbreaking legislation mandated that qualified health care plans must provide all essential health benefits to include pediatric oral health care. One important exclusion of the ACA, however, is that oral health care for adults is not included in the required 10 essential health benefits.²² One of those stated benefits is for preventive and wellcare with chronic disease management and yet treatment for oral diseases, many of which are chronic and preventable, was listed as optional (TABLE 2). The inclusion of dental benefits in pediatrics through the ACA enhanced awareness in primary care of the importance of oral health for children and fostered improvements in medical and dental collaboration to improve outcomes in care and reduce disparities in care.³¹

Failure to include oral health care as a guaranteed benefit for older adults through Medicaid, Medicare, the ACA and other initiatives demonstrates a glaring gap in understanding the value of oral health as a component of healthy aging and limits access to care and is a missed opportunity to improve outcomes in health care for a population that is largely without adequate resources for oral health care. ^{7,31,32,33}

Burden on Older Patients Due to Diminished Financial Resources in Retirement and Limited Access to Dental Insurance

In addition to lacking coverage through government benefit programs, a large majority of older Americans do not have commercial dental coverage either. According to the "2016 Older Americans Key Indicators of Well-Being" report, an estimated 65% of all older adults, whether working or retired, did not have dental insurance, compared with less than 2% who had medical insurance.34 Insurance and income status impact utilization, which impacts oral health. 35,36 ADA Health Policy Institute analyses showed that the percentage of seniors without dental insurance decreased from 66.4% to 61.6% from 2010 to 2015. At a rate of only 33.7% insured, they had the lowest rate of coverage across all age categories.³⁷

Limited Options for Value-Based and Medical Financial Reimbursement for Oral Health Care

Over the last 10 years, there has been a shift from fee-for-service reimbursement to payments based on health outcomes (value-based payment) for medical care. Some drivers of that shift include increases in the costs of health care unrelated to improved outcomes, increased understanding of the harm caused by a fragmented health care system, large health disparities and increasing consumer awareness.³⁸ These factors are also at play in oral health

care, but development of value-based reimbursement models in dentistry is far behind medicine. The role of oral health in general health outcomes is rarely factored into these efforts on the medical side to improve outcomes; however, several insurance studies have pointed to cost savings for patients with certain conditions such as diabetes, heart disease and cerebrovascular disease when specific dental services are provided. ^{39–41} These studies strongly suggest that the inclusion of oral health care as a component of comprehensive health care has a potential financial value in addition to the value of improved oral health and overall health. ⁷

Physical Barriers to Oral Health Care

The barriers to dental care for disabled, medically compromised and homebound elderly populations could be reduced significantly with mobile and teledental services extending dental care to places that are easily and normally accessible, such as residential facilities, senior centers and homes. 42,43 However, there are significant challenges to house-call dentistry including high overhead, low patient volume, labor-intensive practice, low reimbursement and difficulty finding a willing dental team. Many mobile practices rely on out-of-pocket reimbursements because nonworking older adults have been shown to have less insurance coverage than younger populations.³⁷ Reaching into communities more broadly through mobile programs, telehealth or care that is co-located with other health or social services can remove barriers, establish standards of care and provide important resources for vulnerable older adults. 42,43

Limited Opportunities for Faculty Training in Geriatrics To Train the Next Generation of Providers Threatens Our Workforce and Patient Care

Predoctoral dental care provided by beginning learners is often limited to the care

of well elders. Clinical faculty have variable levels of experience and comfort in treating older adults with multiple comorbidities or managing complex needs in diverse clinical environments as part of an interdisciplinary team. Only 59% of U.S. dental schools have a geriatric program director — of whom only 46% received formal training in geriatric dentistry. Ale models and well-trained faculty are needed to prepare tomorrow's practitioners to appropriately treatment plan and manage complex older patients as part of an interprofessional team. Only some 210 dentists received formal geriatric training

Only 59% of U.S. dental schools have a geriatric program director – of whom only 46% received formal training in geriatric dentistry.

from 1981–2015 through Health Resources and Services Administration (HRSA) grants, which have since been discontinued. The number of dentists with formal training in geriatrics is far below the need, which was estimated to be 6,000 dentists by the year 2000 and 2,000 more dentists by 2010.46 A few limited independent programs remain, although they are not specifically geared toward training academicians. Some provide certificates, some offer limited residency type experiences and only two offer extended programs with an option for a master's degree, one of which is at the Herman Ostrow School of Dentistry of USC and the other at the Harvard School of Dental Medicine.

However, interest in formal advanced training in geriatrics has been limited. According to the American Dental

Education Association (ADEA), the average educational debt in 2019 for dental students was \$292,169 for public schools and \$321,184 for private schools, often making further study and a career in academics prohibitive in the absence of financial incentives and support. 47 Few subsidies or incentives support academic positions in geriatric dentistry. Even if the number of formally trained geriatric dentists were to increase dramatically in the near future, there would unlikely be enough to meet the needs of the aging population. More faculty are needed who can demonstrate confidence and competence caring for patients with complex needs and create clinical IPE training experiences in geriatrics.^{28,45} Importantly, many older adults across the state seek care in our academic centers making them an important part of the safety net for those with few financial resources for care. Faculty must be appropriately trained to meet the diverse and often complex needs of this population. Experience in clinical training has also been shown to influence graduates' future study and practice patterns as well as to counter any preconceived notions about caring for patients with complex or special needs. And IPE provides opportunities to develop a core of entrustable professional activities (EPAs) commonly used in other health professions. EPAs combined with common competencies in geriatrics statewide could strengthen dental educational programs and the future workforce.⁴⁸

The American Dental Association and the Special Care Dentistry Association (SCDA) are developing an application to submit to the Commission on Dental Education (CODA) to establish an accreditation process and accreditation standards for geriatric dentistry programs. If a specialty in geriatric dentistry becomes recognized, a coordinated effort across California dental schools and the CDPH toward execution of these programs could

APPENDIX

SWOT Analysis From Geriatrics Symposium October 2019 - Legislative Information Sheet

Who was there?

Dental academia, private dental practitioners, public health stakeholders: individuals and organizations, patient advocacy organizations, insurance companies and health plans, legislators and organized dentistry. Conspicuously missing were representatives from medicine, despite several invitations to individuals and organizations.

Strengths and opportunities to improve the oral health status of older Californians

- Increasing awareness, interest and expectations for oral health among older Californians.
- Strong advocacy for medicine and dentistry in California.
- Extensive Medi-Cal Dental benefits compared with other states and recent efforts to improve reimbursement and lessen administrative burden so more
 providers participate. Approximately 20% of older Californians are eligible for the Medi-Cal Dental Program.
- Seven dental schools contribute to workforce and innovation in oral health care across the state.
- High satisfaction among geriatricians in national studies could bode well for those who enter geriatric dentistry and general practitioners who care for this population.
- California has demonstrated innovation in delivery care models meeting older adults where they are, team approaches to care as evidenced by newer
 models of care and reimbursement opportunities including telehealth and services provided in collaboration with other services and health plans serving
 older adults.
- There are proven models for the value and potential of interprofessional practice federally qualified health centers, Veteran's Administration programs and Programs of All-Inclusive Care for the Elderly (PACE) to learn from and build upon.

Perceived weaknesses and threats

- Geriatrics: Who are we talking about when we use this term? Older adults are not a homogenous population. How will we define this or reidentify this broad group to meet the changing perceptions of aging and old age among patients and providers?
- · Lack of clarity and awareness about the value of oral health in general and in specific as a part of healthy aging.
- The need for better coordinated advocacy between medicine and dentistry to address whole-person needs, including oral health for older Californians.
- Limited models of integration of oral health care into mainstream primary care settings.
- · Limited models where oral health care takes place in nontraditional settings.
- · Limited options for value-based and medical financial reimbursement for oral health care provided to older adults.
- The financial burden on older patients due to diminished financial resources in retirement and limited access to dental insurance limits access to oral health care; ~65% have no dental insurance at all.
- · Significant financial burden on new and recent graduates impacts practice choices and patterns in favor of more lucrative opportunities.
- Limited opportunities for faculty training in geriatrics to train the next generation of providers.
- · Needed curricular reform in geriatric dental education and geriatric medicine to reflect the significance of oral health to the end of life.
- Improved technology and better utilization are needed to explore new models of care and reimbursement in order to improve patient care outcomes such as:
 shared electronic health records, comprehensive patient education and management and expanded reach to seniors with significant barriers in access to care.

Where does California have opportunity to lead the way?

- Advocate for oral health care as a meaningful element of the Master Plan for Aging.
- Dental schools collaborate to reform dental education with respect to the care of older adults.
- · Financial recognition of dental schools as part of the safety net and dental students as providers for all payers.
- · Increase resources and opportunities for faculty development in geriatrics to enhance education and innovation.
- Expansion of community-based systems to reach older adults with significant barriers to access to care.
- · Increased focus on value in advocacy efforts to create new models of reimbursement for oral health care.
- Better integration of oral health care into primary care, including examination of the scope of practice for dentists to enhance practice and improve outcomes in primary care and public health.

ensure the realization of education and workforce needs. Until such time, the dental schools should work together to determine their needs and capacity to support pre- and postdoctoral curricula in geriatrics as well as future needs for faculty development and the financial resources needed for the development of sustainable and advanced clinical training programs that address the specific needs of older adults and reflect the significance of oral health to the end of life.

Where Does California Have Opportunity To Lead the Way?

Several themes emerged from the symposium with the primary theme being continued and coordinated advocacy at state and local levels, in concert with the California Master Plan for Aging, to preserve and expand access to oral health care for older adults and better prepare our future workforce to meet their needs. Partnerships are needed with Californiabased technology companies that have long led innovation in the larger health care sector to drive innovations that improve access to care and enhance opportunities for telehealth, artificial intelligence, data management and dental technology to improve outcomes.

Recognition and adequate reimbursement for the safety net services and resources provided by all dental schools across the state are needed. Financial resources that create more opportunities for older adults to seek care in these settings improve access to care and also help prepare the future workforce. This includes dedicated funding to adequately recruit and train faculty with expertise in geriatrics who will drive and sustain the changes in dental education and IPE that are required to meet the needs of a diverse older population that is living longer with chronic diseases and increased awareness of the importance of maintaining their dentition for a lifetime.

Value-based reimbursement models within safety net systems and in private practice should be tested to better evaluate quality of care and outcomes. Models that are appropriate for private practitioners should be developed in concert with public health and other models developed for less traditional settings. Dental schools must also establish models for value-based care that reward not just procedure-based care toward graduation, but risk assessment and preventive care as a core component of dental education such that they are viewed by students, faculty and patients to be just as important as

Value-based reimbursement models within safety net systems and in private practice should be tested to better evaluate quality of care and outcomes.

surgical interventions. Such a multifaceted approach to implementing and evaluating value-based care can provide important and needed services and provide relevant information to inform future innovation in oral health care for older Californians.

Reexamination of the scope of practice for all levels of dental professionals as an integral part of a larger health care team holds opportunity to improve outcomes in both medicine and dentistry. ^{49,50} As witnessed during the pandemic, emergency expansion of the scope of practice and training for dentists to administer the COVID-19 vaccines demonstrated just one aspect of a previously untapped potential of our dental workforce to positively and broadly impact public health when included as an integral part of the health care system. ² Community-based systems

that bridge private practitioners with public health efforts can be expanded and better utilized. And a broader integration of oral health care with primary care in interdisciplinary teams across the state is needed to achieve a more comprehensive approach to health care statewide in order to arrest the perpetual neglect of oral health suffered by many older Californians.

The CDPH, organized dentistry and California's dental academic centers can leverage their resources and expertise to reform the delivery of oral health care, reimbursement models and dental education to ensure California is prepared to appropriately care for well and frail older adults into the future. A coordinated effort from key stakeholders across the state will be critical to bridge older Californians' challenges in accessing and affording oral health care and to achieve the best health and wellness outcomes over a lifetime.

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Recommendations vs. Requirements: Managing Unvaccinated Employees

TDIC Risk Management Staff

ith a COVID-19
vaccination rate
of 94% among
surveyed dentists as
of June, practicing
dentists in California are significantly
outpacing other adults' vaccination
rates for COVID-19. Many dentists are
serving as trained vaccinators as well.
While surveyed dentists also reported a
high level of confidence in encouraging
their dental teams to be vaccinated,
a level of vaccine hesitancy remains
that may cause practice challenges.

And now, California health care workers must show proof of COVID-19 vaccination or submit to weekly testing under a new statewide order. What are dentists' responsibilities as employers when it comes to unvaccinated staff? And what are their employees' rights?

The analysts at The Dentists Insurance Company continue to answer countless COVID-19-related calls from practice owners. While TDIC's Advice Line provides guidance across diverse risk management topics, vaccination requirement continues to be a high source of concern and confusion. The following is guidance that analysts have provided to other dentists.

Can employees and new hires be required to get vaccinated?

In California, the short answer is yes, as long as the employer does not violate the Fair Employment and Housing Act. The laws may vary in other states.

Under a new state order, health care workers must show proof of COVID-19 vaccination or be tested weekly. Because weekly testing is likely to be more burdensome on the practice, employers

should urge their employees to receive the COVID-19 vaccine by building vaccine confidence and facilitating vaccination. If employers choose to require employees be vaccinated, they must consider the following: potential vaccine complications or side effects, reasonable accommodation for medical conditions, including pregnancy, and sincerely held religious objections.

Exposure to legal risks, such as discrimination claims stemming from workplace disparities between vaccinated and unvaccinated employees.

Make an individualized assessment of each unvaccinated employee's ability to safely perform essential job functions, which may include certification from their health care provider. Even if your vaccination policy qualifies as a legitimate health and safety requirement, some employees may be exempt from complying under certain circumstances.

For potential new hires, employers should ask applicants vaccination questions that only pertain to the job. If you do not require employees to be vaccinated, the question of vaccine status should not enter the interview discussion.

Can I ask for proof of vaccination?

Yes. To slow the spread of the highly infectious COVID-19 delta variant, California on July 26 issued an order requiring employers of health care workers, including dental staff, to verify that their workers are fully vaccinated against COVID-19. Health care workers who are not fully vaccinated are subject to weekly COVID-19 testing and will be required to wear surgical masks, at minimum.

The order takes effect Aug. 9 with full compliance required by Aug. 23.

According to the Equal Employment Opportunity Commission, employers may ask for proof of vaccination as it is not considered a disability-related inquiry. However, employers should ask to see a vaccination record card but request no more information than is necessary. Simply asking an employee the reason why they aren't vaccinated may trigger disability-related protections under the Americans with Disabilities Act. Acceptable forms of proof of vaccination are listed in the state order.

More details about the order are forthcoming. CDA is engaging with policymakers on how testing staff will be enforced and how employers are expected to arrange it. See CDA's COVID-19 Laboratory Testing Toolkit for guidance.

Can I terminate an employee who refuses to get vaccinated?

While every situation is unique, there are options to accommodate unvaccinated employees, such as requiring weekly testing, wearing surgical masks or working modified shifts. California state regulations, in alignment with CDC guidance, require that all health care workers continue to wear face masks, regardless of their vaccination status.

If you still feel strongly about requiring employees to be vaccinated, TDIC recommends speaking with an employment law attorney before implementing a mandatory policy.

Under the Fair Employment and Housing Act, employers are required to reasonably accommodate employees with a known disability or sincerely held religious belief or practice that prevents them from being vaccinated against COVID-19. Employers are prohibited from retaliating against

anyone for engaging in activity protected by the Americans with Disabilities Act (AwDA). There is a strong likelihood that an employee who experiences negative employment consequences for refusing the COVID-19 vaccines could pursue a discrimination claim.

Should an employee's vaccine status be shared with patients?

State and federal privacy laws prohibit employers from sharing employees' private medical information. Additionally, you are required to maintain COVID-19 vaccine documentation or status confirmation, as well as other medical or accommodation documents, in a way that is confidential and stored separately from the employee's personnel files. Access must be limited only to those with a legitimate business need to know.

In a recent TDIC Advice Line call, a dental team member had been affirming to patients that she was vaccinated when in fact she was not. Pressure to make patients feel comfortable may have led to this misrepresentation of her status, but the situation created multiple ethical concerns. As with any confidential health or medical information, vaccine status should not be shared. Practice leadership should encourage staff members to be vaccinated and support their decisions, but never allow them to be pressured by other staff or patients to disclose confidential information.

Proactively establish and share office guidelines with staff on how they are expected to handle patients' inquiries about vaccination statuses so that messaging is consistent, prudent and respects staff privacy.

Should a patient's request to be seen only by vaccinated staff be accommodated?

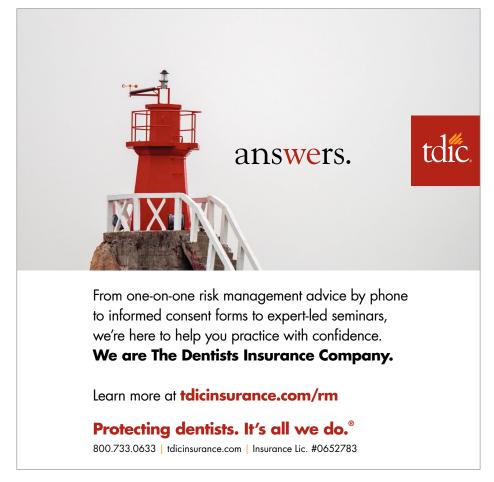
No. Disclosing vaccine statuses of individual staff members puts the practice

at risk. Reassure patients that your office adheres to the required infection control protocols and employs the appropriate practices to ensure their ongoing safety. Walk the patient through the protections put in place to mitigate exposure: PPE protocols, staggering appointments, adhering to Cal-OSHA and Centers for Disease Control and Prevention (CDC) guidelines and more.

Balancing legal and ethical obligations with staff emotions and patient expectations can be challenging, and protecting your patients, your team and your practice should guide your decision-making. Find more employer best practices and policies in CDA's

Vaccine Confidence Toolkit. And refer to the July issue of the CDA Journal for helpful tools to build vaccine confidence among staff and patients. Stay connected to your local dental society, CDA, the CDC and state occupational safety divisions for the latest infectious disease regulations specific to California.

The Dentists Insurance Company's Risk Management Advice Line is a benefit available at no cost to CDA members, as well as to policyholders protected by TDIC. To schedule a consultation, visit tdicinsurance.com/RMconsult or call 800.733.0633.



Observers, Interns and Job Applicants: Considerations for the Dental Practice

CDA Practice Support

ave you ever been asked to allow someone to observe or work at your dental practice because they are interested in entering the profession? Dentists may permit observers but should be careful in situations where a nonemployee is doing work for the practice. Performing work that benefits a for-profit entity can create an employer-employee relationship that triggers certain employer obligations.

If a dental practice owner is willing to allow it, an individual, such as a high school or college student, may observe practice operations. Best practices for this arrangement are:

- Determine when the practice is able to accommodate an observer and communicate your expectations of the observer during their time in the practice.
- To avoid disruption, limit the amount of time the observer is scheduled in the practice.
- Advise observer of potential risks and safety rules and have them or their legal guardian sign a release-of-liability form.
- Educate the observer on patient privacy and have them or their legal guardian sign a nondisclosure agreement. Ask for patient's permission prior to permitting the observer in the operatory.

A student in a regional occupational (also called career technical educational) program or dental-assisting education program may seek to complete their work experience hours or internship at your practice. In this situation, you

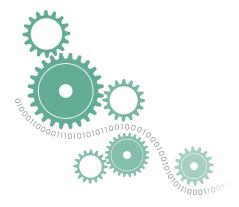
and the educational program typically would sign a document that addresses learning objectives, safety matters such as vaccinations and personal protective equipment, documentation of hours and more. Although not an employee, the student must still be trained in your dental practice's patient information privacy and security policies and procedures. Document the training and be certain to obtain a signed nondisclosure agreement. Provide minimum safety training to the student who is not covered by Cal/OSHA.

In a different type of situation, job applicants have been asked to do "working interviews." A working interview is when a dental practice has a job applicant work for a day to see how they interact with other staff and to assess skills and other factors. What many employers do not understand is that a working interview means the job applicant is employed and is thus eligible for wages, worker's compensation if injured during the workday and unemployment benefits after the working interview is complete.

An alternative to a working interview is to have a structured interview where the applicant observes and interacts with team members for 30 minutes or more and then sits down to be interviewed by two or three staff members. Staff can provide feedback to the dentist-employer who can interview the applicant separately on the same day or on a different day.

Private-practice owners also should avoid bringing on "volunteers" to work in the practice, even if it is a family member. If the family member is not an owner, they have to be paid if they are working for the practice. There is no such thing as volunteer work in a for-profit business. Volunteers may work at nonprofit clinics, health fairs and educational organizations.

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 benefit plans and regulatory compliance.



A look into the latest dental and general technology on the market

Headspace

(beginning at \$12.99 monthly, Headspace Inc.)

Mindfulness, the state of being aware of one's thoughts or feelings without judgement, can benefit mental health and wellness in individuals in an ever-constant connected world. Learning how to slow down, breathe and focus on oneself without distraction has shown to help individuals live healthier, happier and more well-rested. Headspace is an online content service that helps guide individuals through daily meditation exercises designed to take care of the mind and gain a fresh perspective.

Headspace can be accessed online through a desktop web browser or the mobile app available on iOS or Android devices and requires an account sign-up. There are many ways to interact with the content. Individuals can start on the Today tab that shows a recommended list of activities or meditations based on user feedback. Managing everyday anxiety and stress, sleeping soundly, being more active, trying something new and staying focused are among the topics that users can choose from. The content is a library of developed videos complete with pleasing visual scenery, animations, calming voices, inspirational and motivational messages from life coaches and mindful workout activities. Today's Meditation sessions are limited and only available for 24 hours until they are replaced by the next day's session. More content can be found in the other tabs: Meditate, Sleep, Move and Focus. While a limited selection of free content is available, unlocking the full library and the ability to download offline require a subscription. Users can keep track of their progress with total time meditated, sessions completed and average duration stats. Users can also add their buddies to share progress by sending a unique link to their friends. Notifications can be enabled on mobile devices to remind users to stay mindful throughout the day or to occasionally recommend content. Meditations are also available on connected smart assistants such as Siri, Alexa and Google. User progress can be synced to Apple Health or Google Fit.

Any wellness or self-care tools and resources require discipline and time in order to see the long-term benefits to overall health. Headspace provides the helpful content and ease of accessibility to guide individuals on the journey to being more mindful in a constantly busy and connected environment.

- Hubert Chan, DDS

NVIDIA Broadcast app (free, NVIDIA Corp.)

Improving camera and microphone quality for virtual meetings is not always a simple task. Lighting, backdrops, lenses and sound treatment are tips of this massive iceberg; the costs and complexity can skyrocket out of control. NVIDIA, one of the largest makers of graphics processing units, leveraged its considerable knowledge to craft an artificial intelligence (AI) based software solution that boasts the ability to "[transform] any room into a home studio." Targeted at those individuals who have some of their higher-end products, NVIDIA Broadcast aims to be a simple, all-in-one video and audio enhancement application. Users are expected to install the product, select the features they want and go. Broadcast was tested on a laptop with an i9 processor, 64GB of RAM and an NVIDIA Quadro RTX 5000.

Released in September 2020, NVIDIA Broadcast uses AI to allow users to access high-level noise removal, virtual backgrounds and auto-framing. Noise removal is the ability to remove background noise from a microphone feed, and Broadcast capably filters sounds like keyboard typing, dogs barking and breathing while enhancing human voices. The resulting audio is remarkable, with white noise completely silent and voices becoming crystal clear. Some minor audio clipping and skipping exist, but Broadcast serves as a significant audio upgrade over most out-of-box products. Virtual background removes the background and replaces it with game footage, an image or a subtle blur. While this is a feature prominent in many conferencing applications, Broadcast's capability is more accurate, smooths facial features and allows for granular adjustment of lighting dynamically. Finally, auto-framing zooms in and tracks head movement, keeping users within the center of the frame even as they shift side to side. It falls flat in object tracking, but otherwise functions as advertised. At best, Broadcast will immediately and drastically improve media recording quality; at worst, it will be a situationally useful tool that can be enabled/disabled with a click of a button.

- Alexander Lee, DMD

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