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DENTAL ECONOMICS®

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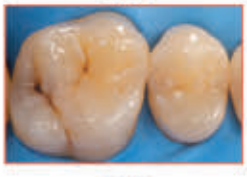

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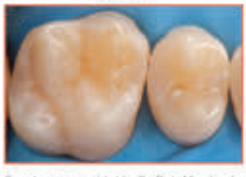

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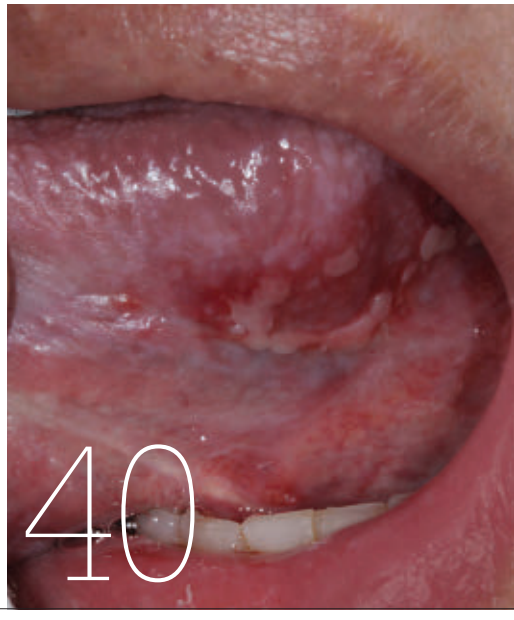

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Good digital marketers have green thumbs

I've often used a gardening analogy for digital marketing in my lectures. Hear me out . . .

The soil is like the digital platforms we choose. Most dentists these days have a website and a Facebook page. A growing number of dentists (especially those seeking to boost their new cosmetic cases) are venturing into Instagram. But there are other channels that warrant consideration, such as YouTube and TikTok, each with their own strengths.

Sunlight is like exposing your current and potential audience to your digital presence. You may have the most gorgeous website and Instagram page in town, but if no one ever sees them, they won't do you much good. We give our digital platforms sunlight by using search engine optimization (SEO), paying for ads, asking our patients to like and subscribe, and so on.

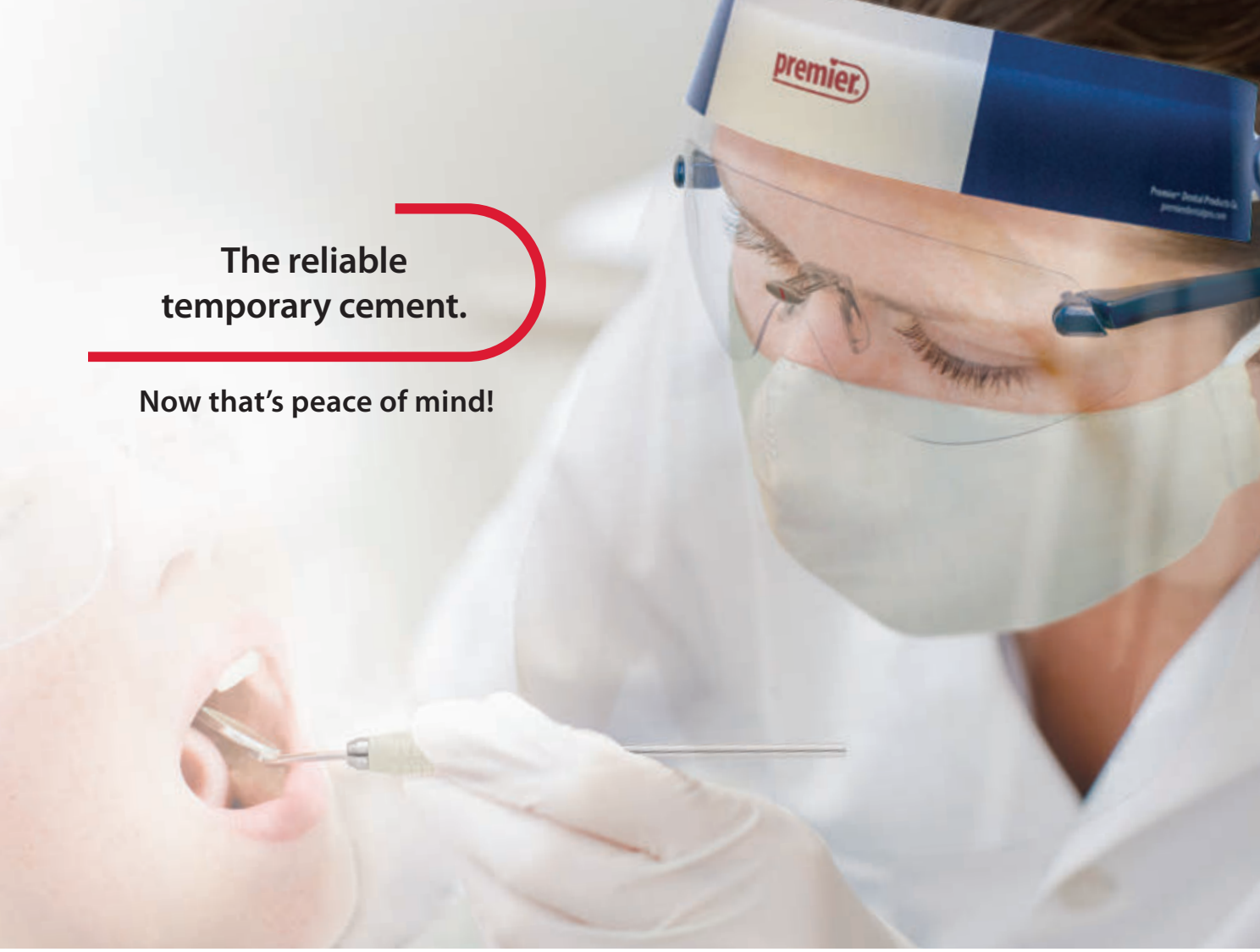
Water is like your content. Your content can tell inspiring stories, show your practice as a pillar of the community, and educate patients about their oral health. Conversely, it can also be generic sales collateral that no one reads.

So, savvy digital marketers are like gardeners with green thumbs. They understand how to balance the elements together and will watch the fruits of their labors grow and grow. In my experience, too many dentists just want to "set it and forget it" when it comes to their digital marketing efforts. There's no such thing in gardening.

In this issue, we've collected stories from such thought leaders as Dr. Edward Zuckerberg, Kristie Boltz, Dr. Amisha Singh, Jay Geier, and Dr. Louis Malcmacher. They'll lay the foundation for proper marketing campaigns and delve into the details of how to execute them on the digital landscape. Happy gardening!

Cheers,

Chris Salierno, DDS
csalierno@endeavorb2b.com



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WHAT PRODUCTS ARE YOU EXCITED ABOUT RIGHT NOW?
CAD/CAM technology and digital scanning! As a dental educator, I recognize the importance of integrating technology and education. At the University of Colorado, we pair the scanner with cutting-edge engineering discrepancy software and use it to help students understand how their wax-ups compare to ideal anatomy. Students are able to scan wax-ups themselves and overlay to the original dentiform arch to see where their tooth is overcontoured, undercontoured, or missing prominent anatomy. I love what I do, and this is a great example of how beautiful and nuanced today's dental education is! DE

Survey: COVID-19 compounds dental staffing challenges

Tonya Lanthier, RDH

DID YOU KNOW THAT 43% of dental hygienists were considering looking for a new job within the next year, and one third had actually applied for a new job in 2019?[1] Clinical team member dissatisfaction was at a tipping point. And then came COVID-19.

Editor's note: A version of this article with extended analysis by Tonya Lanthier of DentalPost is available at dentaleconomics.com. Search "COVID-19 staffing challenges."

These are surprising numbers for any industry's labor market, but it's particularly important to note for the dental industry. Aside from the pandemic itself, which is reducing patient volume, the number one concern in the industry currently, and in the future, is finding and retaining quality dental professionals.

SO WHAT CAN WE DO ABOUT IT?

There's much we can do to overcome challenges when it comes to transforming our approach to recruiting, hiring, managing, and retaining our dental teams, but we can start by understanding and listening. To better connect dental professionals to one another, provide perspective, and improve dental teams, DentalPost has been surveying its community of 900,000 dental professionals, tracking and sharing job trends and the pandemic's effect on dental hiring.

Together with *RDH* magazine, DentalPost conducted its annual salary survey of dental professionals nationwide. The industry's most comprehensive survey included 10,890 respondents from all 50 states and was conducted over a six-week time period from September 1, 2020, to October 15, 2020.

Dental professionals weighed in on everything from compensation and employment conditions to their general sentiments and outlook on the industry, including how they've been impacted professionally by COVID-19.

DENTAL HYGIENISTS

The majority of full-time hygienists earned between $51,000 and $70,000; however, more than 15% earned over $80,000 a year. These numbers are well above the median income for full-time working females in the US, which in 2019 was $47,299.[2]

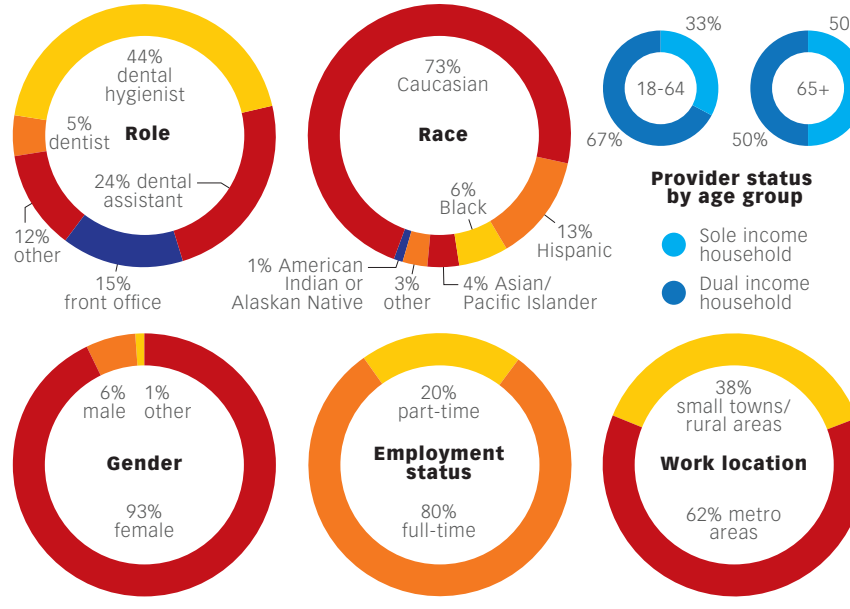
Thirty-two percent reported earning some type of bonus. In the free-form response section of the survey, many RDHs reported they were dismayed at the elimination of their bonuses this year due to the practice shutdown or slowdown.

By state, average compensation ranged from $42,000 to $91,000, with Alaska, California, Maryland, and Delaware being the highest. At the other end of the spectrum, Alabama, Mississippi, West Virginia, Michigan, and South Carolina had the lowest average income for RDHs. Fifty-nine percent reported receiving a pay raise in the past two years. Still, there was general dissatisfaction with both pay raises and how those raises were calculated. Less than 15% of respondents were satisfied with either.

Key takeaways

- The majority of RDHs (70%) were married, with 75% of respondents indicating they were in a joint income household. Of the 25% of RDHs who reported being the sole income provider, a large percentage (45%) were aged 65+.
- On average, dental service organizations (DSOs) were twice as likely to pay RDHs a percentage of production earnings compared with private practices.
- 65% of dental hygienists worked full

Figure 1: Respondent background



time. While most dental hygienists were satisfied with their current work schedules, 25% would prefer to work fewer hours. As they age past 50, the number of part-timers increased.

DENTAL ASSISTANTS

Most assistants made between $21,000 and $50,000, with the slight majority making between $31,000 and $40,000 annually. Twenty-eight percent earned less than $30,000 per year, and just over 10% earned $50,000 or more annually. Thirty-two percent indicated they received some type of bonus. Sixty-five percent received a pay raise in the past two years. Still, 52% were unhappy with their base compensation, and 60% were as dissatisfied with the process to determine the raises as they were with the raise itself.

Dental assistants claimed average salaries of more than $40,000 per year in fewer than half the states. The highest salaries were in Montana, North Dakota, Minnesota, Massachusetts, California, and Nevada, while the lowest paying states for dental assistants were West Virginia, Nebraska, Oklahoma, Louisiana, and Mississippi.

Key takeaways

- 10% of respondents were currently unemployed. This is a high number compared with just 4% of responding RDHs who were currently unemployed, indicating that during the pandemic, dental assistants were the category of employees laid off or furloughed most.
- This is the most dramatic turnover position in the industry. 67% had been working at their current practice for fewer than five years. And most surprising, almost half of the respondents had applied for at least one new job in the past year.
- Most worked between 36 and 40 hours a week and were paid hourly. Almost 30% of respondents worked 31 to 35 hours a week, and 28% worked fewer hours than they did before the pandemic. 18% were working more hours, and nearly 20% of respondents said they would prefer to work more hours. If their hours were reduced, they were much more likely to look for another job.

FRONT-OFFICE STAFF

Forty-eight percent made less than $40,000 per year, and another 38% made $41,000–$60,000. This went up, as one would expect, with the number of years of experience, but rarely did these team members make more than $70,000 a year.

Key takeaways

- Nearly a third were the sole income providers in their households.
- 82% were paid hourly. One-third received a pay increase in the past three years.
- 14% worked for a DSO or group practice.
- 57% had more than 15 years of experience in dentistry, and nearly 30% fulfilled some sort of clinical role as part of their job with direct daily contact with patients, including periodontal exams.

— *Continued on page 33*

Medical and dental data integration: How can this become a reality?

Shannon Sommers, MSHI, BTDH, RDH
Alicia Webb, MSHI, BTDH, RDH

GROWING EVIDENCE supports the need to integrate medical and dental patient care and data. However, very few organizations are positioned to address this issue as medical and dental practices continue to remain siloed in their health-care delivery.[1] In order to seamlessly share patient information across medical and dental providers, we must examine health informatics and information technology, and how their use can improve collaboration and communication between health-care providers.[1]

IMPROVING COLLABORATION AND COMMUNICATION

Informatics is a field focused on the acquisition, storage, and use of information.[2] Health informatics encompasses the integration of health-care science, computer and information science, and cognitive science to support and manage health-care information.[3] As a discipline, health informatics did not begin to fully develop in the United States until the mid-1970s.[4]

Enhancements in the quality of health-care delivery with improved health outcomes and advancements in patient education have significantly improved since then, and credit can partially be given to the evolution of informatics and information systems. The goals of informatics are to narrow the gap between data acquisition and data use in patient treatment, and to improve interoperability.

With the introduction of electronic health records, communication between health-care providers has vastly improved.[2]

The knowledge and understanding of data processes is the driving force behind the power of data, providing a strong balance between health-care information and health-care delivery. The use of health informatics provides the necessary knowledge and tools to best use this influx of information, and the result is to achieve the highest quality of health-care delivery with improved health-care access and lower health-care cost.[5]

APPLICATION IN DENTISTRY

Dental informatics is a specialization within health informatics and is centered around the foundations, fundamentals, and principles of the health informatics domain. Dental informatics is a multidisciplinary field that combines dentistry and information technology to help dental professionals make informed choices to improve practice and management processes in dental care.[6]

Organized dentistry plays a prominent role in defining dental informatics, and the American Dental Association ensures that the profession is engaged and involved in the evolution of informatics through its Center for Informatics and Standards and the Standards Committee on Dental Informatics (SCDI).[2] The main challenge of dental informatics involves an alignment of standards and having computer-savvy dental providers with dual qualifications in dentistry as well as informatics.[7]

With the advancements in technology and trends—especially the implementation of electronic-based health records and the push toward teledentistry—computer-based decision support has become a key factor in how dental care is provided.[7] Given that dentistry is an information-intensive field, the need for dental informaticists has never been greater.[2]

LINKING DENTAL AND MEDICAL DATA

The mission and goal of dental informatics is to bridge the gap between clinical care delivery in dental and medical settings.[8] While dentistry and medicine share common data elements, there is a gap linking unique dental health elements to clinical health data in both operational and research data management systems. Dentistry is slow to adopt electronic dental records (EDRs), there is a lack of data standardization in the dental domain, and there's a lack of awareness of the HITECH Act and incentives for adopting EDRs.[9]

The HITECH Act of 2009 created incentives related to health-care information technology, including incentives for the use of EHR systems among providers.[10] In addition, the Meaningful Use (MU) program under the Centers for Medicare and Medicaid Services (CMS) was formulated, and it incentivizes health-care providers to use their EHRs by financially rewarding them when they demonstrate their use.[5] Unbeknownst to many dental professionals, dentists fall under the CMS MU umbrella as well, as it states that dental providers can qualify for incentive programs if certain criteria are met.[11] Aside from these challenges, there seems to be a lot of conversation about medical and dental collaboration.

Here's where things get interesting: research has shown that more than 120 systemic diseases originate in the oral cavity.[12] The systemic disease most talked about in dentistry is diabetes and its link to periodontal disease. Research suggests that the relationship between diabetes and periodontal disease goes both ways—periodontal disease may make it more difficult for patients who have diabetes to control their blood sugar, and those with diabetes are at a higher risk of periodontal complications.[13] Also, complications of cardiovascular disease (CVD) are stroke and heart attack, which affect approximately 70% of the aging population.[14] Inflammation is the main cause of plaque formation in CVD patients.[14] The inflammatory states in periodontitis induce systemic inflammation, and uncontrolled systemic inflammation is a predictor of CVD events.[14]

For these reasons, collaboration with medical providers plays a vital role in how dental professionals proceed with dental treatment; likewise, it is important to inform a medical provider if a diabetic patient has uncontrolled periodontal disease. Instead of increasing a patient's diabetes medication, it might be wise to address the periodontal disease first, then have the patient's glucose and A1C reevaluated. In the same way, it is imperative to control periodontal disease in patients who have risk factors for CVD and inform the medical provider of this status. In sum, quality health-care delivery is addressing both systemic as well as oral health. But how are medical providers aware that a patient has uncontrolled periodontal disease? Medical and dental provider collaboration starts and ends with the sharing of patient data.

These diseases and risks are prime examples of why we need to collect a thorough medical history during a patient's dental appointment. The medical history contains essential characteristics and information collected for observation, information that can be transformed into data. This data can potentially be shared with a patient's medical provider.

Sharing patient data between medical and dental providers can become a reality, but not until all dental providers adopt EDRs and use them to the fullest capacity. Of course, interoperability obstacles will still exist, and informatics specialists will need to be employed to help achieve this kind of integration. Medical and dental data integration is an imperative process to

> The goal of **dental informatics** is to bridge the gap between clinical care delivery in dental and medical settings.

improve continuity of patient care, giving care providers the means to collaborate, as well as recognize how each patient is progressing with a systemic disease from an oral health standpoint, or vice versa. This process can allow for treatment interventions to be planned accordingly, and total health can be addressed in a synchronized manner.[15]

THE NEED FOR CHANGE

Health-care delivery now relies on EHRs, regulated medical devices, and other forms of real-world data that have impacted all aspects of health-care operations, systems, and management. Health informatics is foundational to each of these transformations and is a necessary discipline in today's health-care delivery world. Dental informatics is positioned to solve problems within the dental domain and can be beneficial in not only dental but health-care delivery settings.

For dental informatics to be deployed in the professional setting, dental providers should consider implementing EDRs in their dental practices and embracing information technology. Regardless of the lack of federal financial incentives to adopt EHR technologies, this does not mean that ineligible dentists will not need to eventually adapt to the ever-changing technology environment.[16] In fact, states may elect to impose their own EHR requirements, with direct impact for dentists in those states.[16]

The need to embrace information technology will rise exponentially, along with the adoption and implementation of EDRs.[3] Dental informatics will largely impact clinical and managerial operations as well as policy and regulations. However, these challenges must be overcome in order to successfully achieve health-care reform and patient safety initiatives, and to fulfill true collaboration between medical and dental providers, thereby demonstrating improved quality of care within both health care and dentistry. **DE**

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The content calendar: A game changer when building your practice's social media presence

Amisha Singh, DDS

THE WORLD OF SOCIAL MEDIA can feel unapproachable, especially when it comes to marketing your dental practice. But social media is a key component of robust and current marketing plans—predominantly because this is where our patients are living their lives.

According to the 2020 Global Digital Report, more than 3.8 billion people use social media in some capacity across the globe.[1] For reference, that is more than half of the world's population. This number has increased by 9% from the year before.[1] More people are using social media platforms and spending a lot more time on them every single day. Users worldwide spend an estimated average of six hours and 43 minutes online, which adds up to over 100 days online in one year.[1] The numbers are staggering. The International Telecommunications Union (ITU), a specialized United Nations agency, reported that "the world's internet users will spend a cumulative 1.25 billion years online in 2020, with more than one-third of that time spent using social

media."[1] No matter where our practices are located, social media impacts the information our patients have access to and the lives they live.

One of the most challenging components of incorporating social media into your existing marketing plan is the simple decision of where to begin. When I established my dental start-up, I remember hearing advice booming from around every corner I turned. I was inundated with opinions about ideal times to post, how to ensure content was platform specific and unique, ways to balance dental content with personal content … the list was never-ending. Even as a millennial, social media marketing felt intimidating and seemed to promise a million different ways to fail. After many lessons learned while actively pivoting the plan daily, I've been able to identify some tools that helped me significantly.

SQUARE ONE

When it comes to social media marketing, the best place to begin is with content creation. I recommend ironing out your "why" before ever opening an app or webpage. Many practices have multiple doctors or team members who help run their social media accounts, and because they are individual humans with unique interests, the messaging can quickly become inconsistent and muddy the brand. It is very important to iron out what you want your office to look like online and make sure the messaging is consistent.

A great way to get started is to dedicate your next team meeting to this endeavor. During the team meeting, brainstorm answers to the following questions:

- What do we want our patients to think about when they think of our practice?
- Who is our ideal patient? Who do we want to reach with our messaging?
- What are some specific ideas or content that we want to share?

Another great exercise for brand-consistent content generation, especially in a team meeting setting, is using the concept of *marketing personas*.[2] When preparing for the meeting, think of four or five different theoretical patients who would fit into your target audience. These are your marketing personas. Give them names, ages, and fill in the details of their lives. Where do they live? Who is in their family? What are their interests? Then, using these generated personas, the team can brainstorm things they would want to find on a practice's social media feed. For example, perhaps one of these personas is a mother, so the team could create a list of questions she may have about her child's oral health. The goal is to create content which is relevant and valuable to the people you're trying to reach. By giving these theoretical patients a name and a face via marketing personas, content creation begins to feel more accessible.

POSTING WITH A PLAN

Once you have generated some ideas for content, the real work begins. Ideas are just that unless they become actions, or in this case, posts. The daily work of thinking about what to post and when can quickly become overwhelming. This is where the secret weapon of social media marketing comes in: content calendars.

Content calendars are editorial calendars or plans which can be used to plan and schedule posts and track information. Such calendars are a great way to plan out content in an intentional way. They do require some effort up front, but they pay off in the long run. The format of your practice's content calendar should fit your needs. It can be something as simple as a printed out monthly view calendar, a dry-erase calendar posted in a communal space such as the break room, an Excel spreadsheet, or as complex as an advanced project management tool. My personal favorite was Trello because I liked the ability to copy and paste URLs and add deadlines. Use what works for you. Certain platforms can also batch social media campaign tasks such as scheduling posts and managing engagement and outcomes.[3] Start simple and build in complexity as your social media marketing strategies evolve.

My go-to system was to set a social media planning date with myself at the end of every month. I wanted my content calendar filled and ready by the first of the month. You can delegate this process or involve your team if that works better for the flow of your office. During this planning process I would consider the following information:

Upcoming holidays or dates of significance. Get creative! Apart from the big holidays, you can celebrate Pi Day (3/14), National Clean Your Desk Day (1/13), or even No Pants Day (5/7) (fair warning: *celebrate with caution*). A Google search will unlock infinite possibilities. Incorporate dates which hold personal meaning for your team, including birthdays and office anniversaries (e.g., join dates, dates you opened, etc.). Additionally, consider incorporating monthly themes, such as Oral Health Awareness month in June.

Events. These can include philanthropic or engagement events, events for local business partners, local community events, or even team meetings or team-building activities. Generate ideas by asking yourself, *What will we do this month that I want all of my patients to know about?*

Relevant and timely content. If there are questions or themes in your content arsenal that are important or timely, include them in the current month's rotation. For example, you might choose to post about mouth guards in September when students are going back to school and joining sports teams. It might make sense to post about the link between sweets and oral health in candy-heavy months such as February or October.

IMPORTANT CONSIDERATIONS

There are some important considerations when filling out the content calendar and choosing which content to incorporate. Below are some things to remember.

Platform. Facebook remains the most used social media platform in the world with Instagram a close second. Data from 2019 shows Facebook has a reported 2.38 billion users per month and Instagram 1 billion monthly active users.[4] These two platforms combined will likely give your practice the best ROI and are a great place to start, but some others to consider are YouTube, Snapchat, and even TikTok. Facebook tends to cater to an older

demographic (the average US Facebook user is 40.5 years old), whereas Instagram is predominantly popular among 18–24-year-olds.[5]

Media. Instagram is a video- and picture-driven platform, so these elements are pivotal for content there. But studies show that pictures (especially nonstock images and pictures of recognized people) and videos generate more engagement on all platforms, including Facebook.[6]

Mode. Both Instagram and Facebook have a "feed" section (where posts live forever) and a "story" section (where content disappears in 24 hours). Many people wonder what the point is of making the effort to post content on a platform that will disappear in a day. The benefit of using the story feature is that when users play a story, the app will automatically play the next user's story until all stories are played or the user exits the app. This is a great way to stay in front of the patient's eyes (and thereby top-of-mind). If a user has a habit of watching their stories on a daily basis, they will see your content daily. If you have a piece of particularly compelling content, you can save it in a "highlight" on Instagram or a "story archive" on Facebook to make it visible long-term on your page.

Content. Since Facebook bought Instagram in 2012, the two platforms have gotten increasingly better at syncing and working together. This means that you can simply pair your practice's Instagram profile with your business Facebook page to share the same content on both platforms simultaneously. Many social media experts are very vocal that to maximize the number of people your posts reach, it is ideal to have different content for each platform. Although this is the best practice, and it is a goal to create and plan content specific to each platform, I remember this causing me a significant amount of angst in my early days. It seemed like double the work at a time when there simply were not enough hours in a day. So, this is me giving you permission to duplicate content as needed, especially when you are first starting out. Do not let the guideline of unique content stop you from creating in the first place. My solution to this was to create unique content for each platform at least once a week and schedule this into my content calendar. This way, I was working toward unique content without killing myself. When creating content, try to follow the 80/20 rule: 80% content around you, your team, and the people, and 20% dental-specific content only.

Spontaneity. The content calendar may seem to stifle spontaneous posts—after all, haven't we all had the impulse to post the gorgeous rainbow we spotted on our way to work? However, in my experience, this is not the case at all. With a robust social media post plan created for the month, I felt like I had more bandwidth to spontaneously share when the random patient showed up with home-baked goods. Depending on the site you use for your content calendar, you can even integrate scheduling the posts so they will automatically post at a predetermined time. This allows you to get more creative with spontaneous posts that may emerge on a day-to-day basis.

Permission. Consider this your gentle reminder that we cannot post patient data (even their photos in the lobby) without their written consent. Please be conscious of HIPAA and media consent laws when posting.

As you can see, content calendars are a complete game changer for social media marketing, especially for small businesses. I use them regularly for all of my businesses. They have allowed me to plan ahead and batch the sometimes-arduous task of post-planning. They give me leeway to be as simple or as complex as my brand requires. They allow me to be intentional about the content I am posting, which helps me fine-tune my brand's message. Since the content is preplanned in a thoughtful way, I am able to easily delegate posts, allowing my team to participate more. Perhaps most importantly, content calendars have been a great way for me to track what is working and which posts get the most engagement, then recreate my success. With the help of my content calendar, I have been able to get closer to harnessing the power of social media to help spread my message and grow my practice. Give it a try! **DE**

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Top 5 reasons dental digital marketing fails

Louis Malcmacher, DDS, MAGD

MARKETING A DENTAL PRACTICE TODAY is both easier and harder than ever. The platforms and tools needed to create marketing and advertising campaigns are literally all on one device that most people carry in their pockets. While we had limited options in the past, today there are almost too many opportunities, which can make your marketing efforts ineffective.

Here are the top five reasons dental practice digital marketing can fail.

SPREAD TOO THIN

So many practices try to be everything to everyone. One article may tell you that Facebook is the place to advertise, while another consultant will tell you that Instagram is a must, and you may decide one day that you want to be on YouTube. There is no end! All this does is dilute your online presence, which will be unfocused and difficult for patients to relate to. It's important to know that different online platforms have significantly different audiences. The time to make content for each platform is often more than a full-time job. Don't get sucked into this trap! Decide on one platform that you can commit to for both marketing and paid advertising.

How do you decide which social media platform is best for you? This depends on you. You and your team members spend time on different social media platforms. Which do you think best fits the patients you want to attract? Get your team involved in this decision because most dentists will be delegating this responsibility to team members, so they must be able to manage it appropriately.

INCONSISTENT EFFORT

When you visit many dental practice Facebook and Instagram pages, this is what you see—a few occasional posts to get things started, then the page is forgotten about. The doctor reads an article on the importance of having a social media page, the office jumps on social media that day with four posts, and then forgets about it. That is, until they listen to a seminar about social media. The process then repeats, and often eventually the doctor concludes that social media doesn't work.

It's not the social media and digital marketing that doesn't work, it's you! Social media and digital marketing work only if you work with them. Establishing an online presence does not just happen. It's like your dental practice—you have to work on it for it to work for you!

NOT TELLING YOUR STORY

You have an amazing dental practice, the best team, and you offer the latest treatments for veneers, implants, Botox, and

Figure 1: Before and after photos, including dental and facial esthetics, are powerful drivers for attracting new patients.

Figure 2: Before and after photos showing Botox, fillers, porcelain veneers treatment courtesy of Dr. Jon Hendrickson @dollyvitaaesthetics.

Figure 3: Digital marketing should reflect the demographic you're trying to attract with services they want. Photo courtesy of Tier3media.

fillers. What's on your social media pages? Do they tell the story of the excellent esthetic services you provide? Do they display happy, smiling patients who love their new smiles? Are there any testimonials? Are there before and after photos, like those in Figures 1 and 2? What about training certificates to show that you and your team provide cutting-edge care? Will your social media show the kind of patients you want to attract?

There are so many things that happen in your office every day that tell the story of your practice. Choose one thing *every day* about your practice personality—an interesting treatment, a happy patient, an exemplary team member—and post about it. Posting needs to be consistent if you want to tell your story on social media.

Here are three American Academy of Facial Esthetics (AAFE) members who are amazing at telling their stories on Instagram, and they've built successful practices in their communities. Check out Dr. Amber Wiebe @destin_botox, Dr. Pauline Le @drpaulinele, and Dr. Jon Hendrickson @dollyvitaaesthetics. See how they tell their stories and how they are building their dream practices.

> Choose one thing *every day* about your practice personality—an interesting treatment, **a happy patient**, an exemplary team member—and post about it.

SET IT AND FORGET IT

This is the biggest mistake made with digital advertising. Whether you try to run your own Facebook or Google ads or hire a professional, most dentists want to set it and forget it. They assume the ad campaign is working, and perhaps they spent hundreds to thousands of dollars without having any idea if the practice received even one new patient from the marketing efforts. Everyone will tell you how many impressions and clicks your ads receive. Truthfully, the only real measurement is how many new patients come to your office as a result of digital advertising.

MARKETING SERVICES PEOPLE DON'T WANT

Part of the success of any marketing or digital ad campaign is giving people what they want. Too many dentists market services that are unattractive or not popular with patients. Botox can be a powerful service when it comes to attracting new patients. There is simply nothing else in dental practices that comes close to its popularity. Patients know Botox, they want Botox, it's affordable, and it helps patients look and feel great.

THE RIGHT WAY

Here's an example of a successful Facebook ad campaign done by an AAFE member who wanted to attract more facial esthetic patients (figure 3). Botox was chosen for the campaign because it is an extremely popular elective esthetic service and patients are familiar with it. The practice advertised unlimited units of Botox for $10 a unit (a 20% discount). When someone clicked on the ad, they were taken to a landing page that collected their information. Once the short form was filled out, the patient was taken to an online schedule where they could directly book an appointment and take advantage of the offer. Within the first 12 hours of this campaign, this AAFE member recorded 76 online scheduled appointments. This is not 76 leads; these are *actual* patient appointments.

So many digital marketing dollars are wasted by dental practices that make these five mistakes. The first step is to offer services that your patients know and want, such as Botox, dermal fillers, veneers, and implants. Then it is up to you to have the right plan to make sure your social media is on point and your paid digital marketing has a real plan to get patients into your chair. **DE**

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7 ways to make your dental practice marketing more effective in 2021

Kristie Boltz

THE WORLD OF MARKETING CHANGED drastically in 2020. Dental offices were at the forefront, innovating and adjusting to new ways of doing things while navigating the burgeoning need to reassure patients that their visits would be safe. The type of information being disseminated shifted, with consumers demanding specifics when it came to how their dentist was going to safeguard them from exposure.

It helped that the dental industry is, as a whole, already one of the most health-conscious fields. Many safety parameters were already in place as part of standard sterilization and disinfection protocols, and more were swiftly added. These behind-the-scenes realities were suddenly a focal point of marketing.

As 2021 moves forward, finding the correct balance in dental practice marketing is critical. If you haven't embraced the power of telehealth and communication through digital channels, it's time to make that leap. Here are seven ways you can make more from every dollar you allocate to your marketing budget.

1. STOP BEING REACTIONARY

Don't "buy" a marketing solution without doing your homework first. It can be tempting to see declines in both production and new patients and start throwing money at the problem. But if you haven't done your research, that could be money you'll never see again. Not all marketing plans are the same, and few meet the unique demands of a dental practice *or* the needs and desires of your patient base.

2. UNDERSTAND THE THREE MAIN MARKETING STYLES

There are only a few primary marketing styles, and each has a different cost of entry, a different conversion rate, and a different return on investment (ROI).

Advertising

Advertising is "interruption-based" marketing. It traditionally costs the most, works the fastest, and takes the least amount of time. However, it can also be a scattershot method with a low conversion rate (due to its impersonal nature) and marginal ROI (due to the prohibitive cost).

That's why traditional adspend is dropping fast and being replaced with budgets for online marketing and social media campaigns.[1] Does this mean traditional advertising is dead? No, but it does mean you need to go omni-channel sooner rather than later.

Digital

Digital marketing is "permission-based," and operates off of data you've collected from patients or potential patients or acquired from third parties who obtained permission for data to be used in marketing.

Digital has a lower cost than traditional advertising and higher conversion rates and ROI if campaigns are appropriately tracked and consistent A/B testing (a randomized experiment with two variants, A and B) is used to maximize gains. In 2020, digital adspend finally surpassed traditional, for more reasons than one.[2]

Marketing with meaning (MWM)

Word-of-mouth marketing has always been the most effective; referrals work in all industries and dentistry is no exception. However, word-of-mouth has modernized into "marketing with meaning," and your referrals are now more likely to come from both offline and online communities and be based on your practice's outreach and efforts to educate and inform.

It is reported that 90% of consumers believe recommendations from friends, and 70% believe consumer opinions; in contrast, 75% do not believe advertisements are truthful. Social media users are 71% more likely to trust a brand they are referred to by another user.[3] Learning how to leverage MWM may work the slowest and take more of your time to refine, but it delivers the best results—and the best patients!

3. BE REALISTIC ABOUT YOUR BUDGET

Your budget isn't just money; it's also time—your time, the time of your team members, and the time of your patients. How much time can you devote to marketing, campaign tracking, and analysis? Some of your marketing spend may need to be spent on a specialist who can handle the specifics. Let me be clear, the agency that sells you the marketing tactic is often *not* the best specialist for the creation, execution, and measurement of your unique budget.

It's not just how much you have in your budget, but where you spend it. Social media spend nearly doubled in the first half of 2020, jumping from 13.3% of marketing budgets to 23.2%, and predictions are that social media spend will account for around 23.4% of all marketing budgets within the first half of 2021.[4] If you haven't already, now is the time to diversify your marketing spend.

Consider reviewing both 2019 and 2020

marketing allocations and shifting dollars from the lowest-performing traditional channels to more effective permission and MWM strategies. You can research, build campaigns, test, analyze, tweak, and test again until your new marketing efforts surpass the old.

4. KNOW WHAT A NEW PATIENT IS WORTH

How many new patients (NP) did you attract in 2020? What portion of revenues can be attributed to new patient production (NPP)? It's simple math, but many practices fail to complete this simple step for insight into their practice earnings. Here's an easy formula: 100,000 in NPP / 100 NP = $1,000 per new patient.

Dig deeper. Which patients are worth more than the average? Which patients have been at your practice the longest? Their lifetime value (LTV) is something to replicate. Also, look at your referral patterns. Who brings in new business for you as an ambassador for your practice? Find ways to identify similar patients and incentivize referral activity.

5. COMPARE YOU TO YOU

Every dental practice is different, with its own target demographic, geographic reach, and potential profitability. If you run a small general dental practice in a rural community, you can't compare yourself to the multispecialty practice in the big city. This seems obvious, and yet dentists are often guilty of sharing stories with their friends without really understanding the true comparison metrics.

Focus on key metrics such as patient acquisition, retention, attrition, and both new-patient and existing-patient revenues. Prioritize turning your existing patient base into a funnel through which referrals can flow. Look at your month-over-month numbers and try to improve on them over and over again. The only practice to beat is your own.

6. TEST, TRACK, ADJUST

This is the key sticking point for many dental practices. They skip testing, they don't track effectively (or in a reasonable time frame), they fail to adjust, or all three. This leads to a massive waste of money and time, with no actionable results and a return to the same old "proven" marketing efforts.

Failure to measure ROI is one of the top causes of marketing spend waste.[5] How can you know whether something is working if you're not tracking and analyzing results, then adjusting to do better? Learning how to identify cause and effect and accurately measure ROI is key to making marketing efforts more effective.

7. MAKE MARKETING A TEAM EFFORT

Marketing will be part of everyone's job, but it needs to be presented correctly. Every member on your team needs to be aware of your marketing plan and the role they are expected to play in it, and this starts on their hire date. By making marketing a key point in everyone's job description, you keep it from feeling like something extra they are asked to do, and it simply becomes part of your practice culture.

When everyone is involved in marketing, your practice outreach takes on a life of its own. You can be proactive—anticipating needs and wants and delivering exceptional experiences to your patients—and reactive—responding to events and situations in your community (both physical and online)—in real time.

Being proactive is commonly seen as superior to being reactive, but there are times when a swift response can be both timely and effective. Just make sure that reactivity is carefully controlled by implementing a chain of accountability; it's better to err on the side of caution than spend weeks or months trying to recover from a costly faux pas on social media because a responsive post wasn't thought through completely.[6]

By implementing these marketing initiatives, you can increase your reach, enhance your relationships with existing and potential patients, and maximize your practice revenues in 2021. **DE**

As 2021 moves forward, finding the **correct balance** in dental practice marketing is critical.

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The best content to build a trustworthy and engaging Facebook Page for your dental office

Edward J. Zuckerberg, DDS, FAGD

FOUR YEARS AFTER FACEBOOK DEBUTED in 2004, Business Pages were rolled out in addition to existing personal profiles. In 2010, when I first started writing and speaking on the topic, the big question was whether or not a dental office needed a Facebook Page. Currently, virtually every dental practice has a Facebook Page, and many have pages on other social networks as well. The questions now are how to best encourage engagement and grow the number of users, with the ultimate goals of attracting new patients, getting existing patients to use basic dental services more frequently, and obtaining more comprehensive treatments.

To reach these goals, it is paramount that the content on social media paints the image of the dental office as trustworthy, valuable, and believable. Many dentists don't see the value of having an in-house, dedicated marketing professional for their practice. They either delegate the task of content creation to a third-party agency or to one or more staff members who often don't follow through with regularity or post content that meets the goals mentioned above.

Third-party agency content is typically canned and might appear simultaneously in other dental offices' promotions throughout the country, without creating a connection to your own office among your fans. This type of content is rarely personalized and does little more than get some News Feed penetration to your fans, keeping your name in front of them periodically.

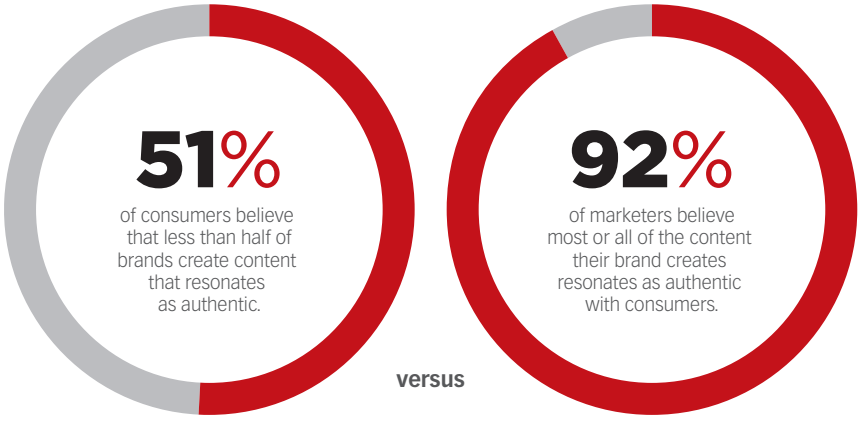
For the purpose of this article, I will refer to two main types of content: brand-generated content (BGC) and user-generated content (UGC). A third type, which is a hybrid of the two, will also be discussed.

BGC refers to just about any content posted by the dental office on its office page. It can be an image, video, link to an article, link to the office's website, or text produced by a staff member. BGC can also be created by a third-party agency and posted in the name of the practice to appear that it was created in-house.

UGC refers to content typically created by an existing patient of the practice and can be shared either to the practice's page or on the user's personal profile. These will usually be in the form of a check-in, a review, or a recommendation of the practice.

A survey conducted by Stackla (figure 1), a smart visual content engine, concludes that consumers are 2.4 times more likely to believe that UGC is more authentic than BGC, representing a disconnect in what brands think.[1,2] The value of a customer testimonial resonates as a very powerful resource when prospective new patients choose a health-care provider, and there are a number of ways to encourage this. I believe the check-in, a feature that has been around since the early days of social media, represents the single most underutilized

Figure 1: Comparison of consumer and marketing perceptions of content



Content from Stackla survey published in its report, "Bridging the Gap: Consumer & Marketing Perspectives on Content in the Digital Age." Based on a graphic from Stackla and Business Wire.

Figure 2: An example of "food porn" that many people are quick to share on social media along with the location where the image was taken

Figure 3: An example of a check-in promotion

feature in a small-business owner's arsenal. We have all seen photos of "food porn" on social media, and many people are quick to share these incredible images along with the location where they were taken (figure 2).

These become a recommendation of the business that gets posted on the individual's personal profile, allowing a marketing reach that the company would otherwise not get. Organically (the term used for content posted by a page that is not boosted), a post will reach between 5% and 10% of the page's fans, depending on how much engagement the post gets. The reach ends there unless the content is so interesting that fans share it to their own profiles, an unusual occurrence.

Business owners can pay to boost their content and choose to target friends of the fans of their page, which is a great tool to reach potential word-of-mouth referrals. The audience reached by this method will also see the name of their friend who is a fan of the page. This is a passive word-of-mouth referral, but credibility is achieved through the implied recommendation of the business's services from their trusted friend.

Still, the content is BGC, and as such there is a better and arguably less expensive way to do this. If you consider that the typical dental office has about 500 fans on Facebook and the average user has 350 friends in their network, the typical office has a potential reach of 175,000 word-of-mouth referrals by tapping into the networks of their fans. The challenge, then, is to encourage our patients to check in at our offices. This is not a simple task, but the goal can be successful with some creativity and incentivization.

Many offices already give away lots of free swag in the form of engraved toothbrushes, water bottles, shopping bags, toothpaste wringers, pens, etc. Additionally, I have seen giveaways that include stickers, movie passes, toothpaste, hourglass timers, key chains, letter openers, hats . . . you name it!

The stuff practices are giving out with the hope of spreading their name around is incredible, and yet they get nothing in return other than a small amount of goodwill. Why not package it all into a reusable shopping bag and offer it in exchange for a check-in? Now, each bag given away (total estimated cost under $25) results in up to 350 people finding out that their trusted friend thinks enough of your dental practice to tell all of their friends that they were at your office. Their friends won't know you incentivized them for the check-in; they will simply perceive their friend as shouting: "My dentist is great, and you should be going to him/her."

Sometimes, opportunities fall in your lap that just scream for a check-in promotion. Years ago, my office took advantage of a shipping snafu when our usual, monthly case of 36 one-ounce tubes of toothpaste turned into 100 cases! Normally, our hygienists would package one tube into each patient's goody bag along with a toothbrush and some floss. Each month, the first 36 patients got a bonus, but what could we do with 100 cases of 36 tubes? One idea was to give them to local churches and synagogues to distribute to the homeless, which is what we did with half of the cases. We also tried a check-in promotion, offering a free case in

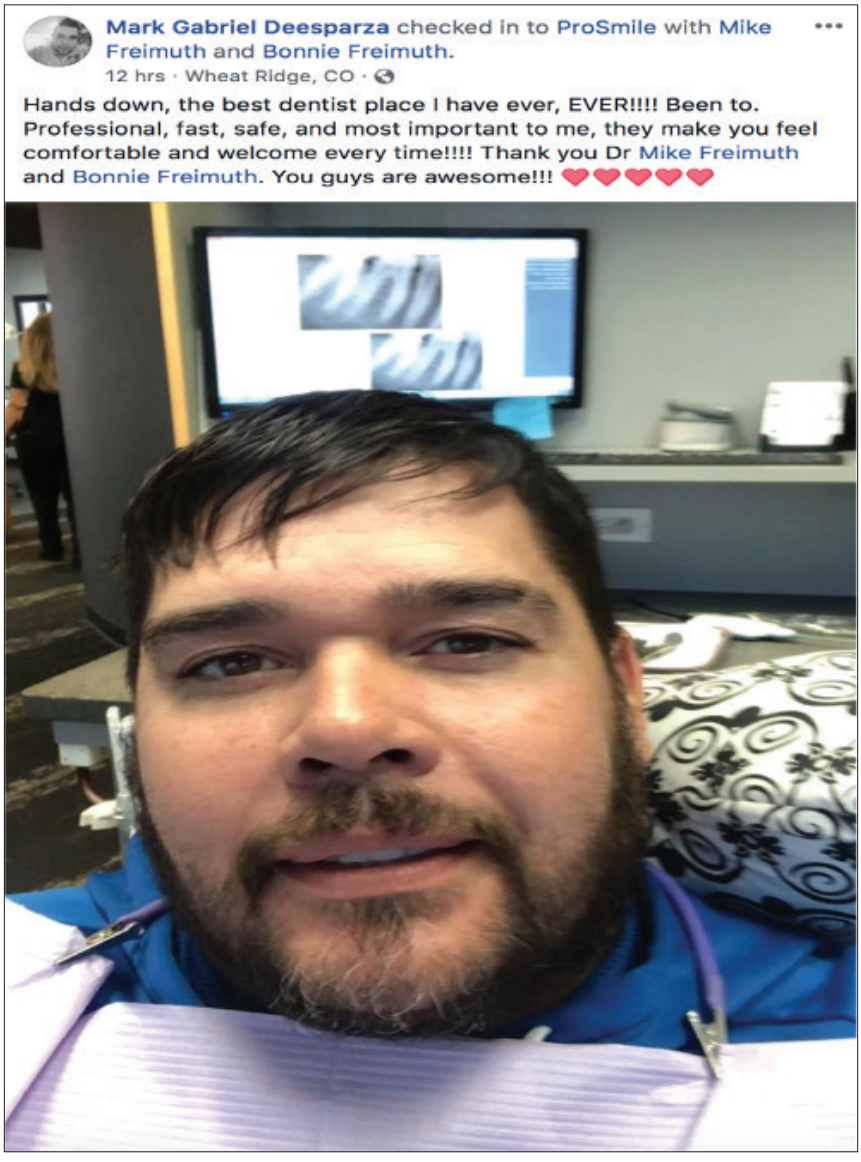


Figure 4: An example of a review posted directly on the user's profile

exchange for a check-in with our practice (figure 3).

In no time, 42 of those cases were grabbed up by folks more than willing to check in at our office and show proof to our receptionist of their check-in on their phones. We were on our way to handling phone calls and emails from several new patients obtained via this promotion. In one case, a woman who had accompanied her friend to the office to drive her home after a surgical procedure inquired if she was eligible to get a case of toothpaste even though she was not a patient. Of course, we gave it to her in exchange for a check-in, and we were potentially able to get 350 new referrals from someone who was not even a patient in our practice!

User-posted reviews are another source of UGC that are perceived as highly authentic. The best ones come when your happy patient posts a review on his/her own profile page, thus sharing it directly with 350 friends. If you can identify the patients in your practice who are more tech-savvy, know that they probably have more than 1,000 friends in their networks, so a review from them carries even more bang. Only a few people are likely to review directly on their profile (figure 4), but when they do, it can be very powerful.

Others will engage with threads on your page posting recommendations, five-star reviews on Google, Healthgrades, Yelp, etc., all of which you can ultimately share on your practice's Facebook Page. I consider this to be hybrid UGC-BGC content, since the post will appear only on the office page. However, the content originates from a satisfied customer, so it carries with it the authenticity of UGC; it just doesn't have the organic penetration to the customer's network. This is where establishing a budget for boosting content to the friends of fans of your page comes in.

In summary, one change you can make to increase engagement and perceived authenticity of the content on your Facebook Page or other social media is to use UGC effectively. Do this and you will see your new-patient numbers and case acceptance rates grow through efficient use of your existing and highly satisfied customers. **DE**

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PART THREE

Learning from the best: Takeaways from dental practices performing in the top 10%

Roger P. Levin, DDS

THE FIRST TWO ARTICLES IN THIS SERIES looked at key principles that allowed practices to move into the top 10%. In this third and final installment, we will explore some softer, less numbers-based ideas. These "softer" principles are harder to quantify; however, they are based on 30 years of interviews, analysis, and observation focused on how maximizing practice production allows practices to move into the top 10%.

MISSION

There's extensive content available on the subject of leadership in dental literature. Unfortunately, it's all over the place. Leadership has become a hypercomplex topic that's almost impossible for anyone to master. When we examined this topic in our ongoing analysis of top 10% practices, we found that the leaders in these practices had a wide range of personalities. Some were extreme extroverts and others were introverts. Some were more charismatic while others were more matter-of-fact. We did not find one personality type that defined the leadership style of dentists who were able to move their practices into the top 10%.

What we did consistently find was that the leaders of top 10% practices built a strong and recognizable culture by following basic leadership principles. First, these leaders established a practice mission and mission statement early on, which they truly believed in and lived out each day. These doctors didn't view their mission statement as just a public relations blurb that looked nice on the practice website. Instead, it became the DNA of the practice, woven into all procedures and communicated to the team regularly. The mission statement was prominently displayed in the office, the team had a firm understanding of it, and it was discussed in numerous settings ranging from morning meetings to monthly staff meetings.

A solid mission statement gave dental teams a sense of purpose for coming to work each day beyond just collecting a paycheck and created an environment where people felt they belonged to something bigger than themselves. This may be one of the key reasons that teamwork was so powerful in these practices. It wasn't due to a lucky hire or two, but a deliberate act of shaping the practice culture day after day.

Editor's note: This article is the final part of a three-part series. Parts one and two can be found in previous issues or at dentaleconomics.com.

VALUES

The second commonality we found among the leaders of top 10% performing practices was a strong commitment to a set of core values. Most of these practices had a highly visible list of nonnegotiable core values that governed daily operations. Many top practices had core values prominently listed in the staff room and often discussed them in meetings or other communication. Practices were proud to adhere to the core values as part of their day-to-day belief systems.

COMMUNICATION

The third powerful leadership factor we found that these practices had in common was excellent communication. Because they made communication a priority, these practices didn't suffer from communication breakdowns, gossip, or inefficiency caused by misunderstanding. Communication within top practices was very clear, and the doctors tended to be transparent with the team, providing realistic information about the practice at any given time. Most importantly, practice systems were designed to ensure that the flow of communication was not only efficient, but accurate. This allowed practices to function optimally with few mistakes and minimal need to correct inaccurate information provided to team members or patients. Increased efficiency increases available time, decreases stress and frustration, makes it easier for all team members to do their jobs, and helps create a better customer service environment.

OPERATIONS

Like most dentists, those currently in the top 10% started out either by opening a practice as a start-up or by purchasing an established practice. This means that in addition to treating patients, the dentist also assumes the role of managing everything in the practice. However, there comes a point in every practice when the dentist can no longer be both the clinician and chief operations officer. When two dentists are partners, there's typically one person who focuses more on practice operations, but as the practice grows, either that doc-

tor must decrease clinical hours to focus on operations or operations will begin to stagnate. Most practices that reach this point and don't hire an office manager to accept operational delegation will begin to plateau.

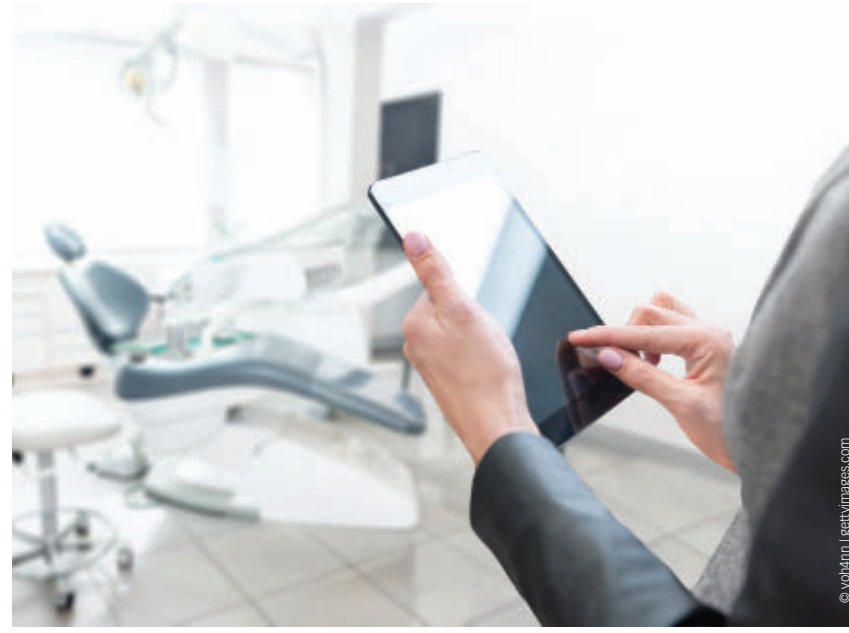
Conversely, top 10% practices run on a high level of delegation, and usually, at the right time, they hire an office manager. However, they don't make the mistake of simply promoting a long-term team member into the position regardless of qualifications. Although many of the office managers in top practices were promoted from within, they were given increased responsibility over time as they mastered different tasks and skills.

Effective office managers operate like a chief operating officer with responsibility for administration, management, finances, staffing, and more. They also become the buffer between the doctor and the staff, so they must be skilled at managing up and down. Team members in top practices gradually learn that the office manager has full authority and that they should bring their thoughts, ideas, or complaints to the office manager, not the doctor. The office manager is then responsible for either solving the issue or bringing it to the doctor's attention. The presence of a skilled office manager is consistent across the majority of top 10% performing practices.

It's worth mentioning that in most top 10% performing practices, the doctor still stays very involved in the practice. Most are very knowledgeable about the performance levels of their practice and have an excellent understanding of the key metrics or targets that need to be monitored daily, weekly, and monthly.

STRATEGIC PLANNING

Another important characteristic of top 10% performing practice leaders is that they tend to be planners. One doctor we met reached into his desk and pulled out a binder showing his five-year plan year-by-year. It was detailed down to the steps needed to enact each level of the plan, who was responsible, and the deadline. It's not a coincidence that this is how excellent businesses are built. Top 10% performing practices focus on their goals. Some doctors we spoke with even had long-term plans for 20 years into the future or more, including a potential exit strategy.



Many of these practices undertake a formal strategic planning process. In fact, we have had the opportunity to work with several of them in strategic planning meetings and experienced a high level of engagement among doctors, office managers, and other key individuals. In one case, a three-doctor practice even invited their attorney and accountant to participate in the strategic planning process based on what they felt they could contribute.

A key part of how the top 10% approach planning is that they update their strategic plan annually. We believe, as does the business world, that this is one of the most powerful ways to ensure an excellent future. We noticed that many of these successful practices recovered very quickly from the COVID-19 shutdown because they had appropriate systems, competent team members, and well-organized plans already in place. They might not have been specifically prepared for a pandemic, but their focus on moving forward toward a well-planned future helped them to weather the crisis.

This aspect is what we would call "having a living plan." There's a joke in the business world about how businesses spend a fortune on strategic planning only to end up with a set of binders that sits on the shelf never to be looked at again. However, we found that these doctors have a sense of where they want to go, they document it, and then move forward. They periodically review their plans to determine if they're on track or if modifications are needed.

SERIES SUMMARY

In this three-part series based on a 30-year study of top 10% performing practices, there were several principles that became evident, including:

Top 10% performing practices did not get there overnight. They average approximately seven years to enter the top 10% with some taking 15 years or more.

Once top 10% practices enter the top 10%, they tend to stay there.

Top 10% practices have higher staff longevity, which contributes to higher levels of efficiency, teamwork, and camaraderie.

Top 10% performing practices have an established set of key performance indicators that they are fanatical about tracking. When a key performance indicator is missed, they make the necessary changes or modifications to improve performance.

Top 10% performing practices deliver high-quality customer service, regardless of whether the practice is heavily insurance-based or fee-for-service.

Continued on page 51

Predictive analytics for group practices

Michael Kesner, DDS

SMALL GROUP PRACTICES are the fastest growing segment of the dental industry. Entrepreneurial dentists are seeing the attractive economic opportunities of building a small group practice business, which can then affiliate with a large dental service organization (DSO). This is the route that I took by growing from one to 14 dental offices in seven years.

When building a group of dental practices, you soon become aware that the more offices you have, the harder it becomes to scale the business. A perplexing and misunderstood challenge is getting accurate real-time analytics that are diagnostic, actionable, and *predictive*.

What if you had the ability to predict a revenue downturn before it happened? You could then be proactive instead of reactive. How much more successful would your business be with that kind of "crystal ball"?

EVOLUTION OF DENTAL ANALYTICS

Let's look at how analytics in dentistry have evolved over time. Early analytics were composed of a number of individual reports that measured key data, such as production, collections, new patients, and recall visits. Each report was only a small piece of the entire puzzle. These measures are also "lag measures" (after the event), so it is difficult to understand how to connect them to current financial results.

The next evolution of analytics was dashboards. They allowed us to look at multiple reports in one view to try to determine their effects on the business. While this allows us to see a better view of our KPIs (key performance indicators), it is still a lag measure and hard to understand the full impact of each data point on financial success.

PREDICTIVE DENTAL ANALYTICS

There are ways to use predictive analytics in dentistry. One such solution is with QL Analytics, a dashboard that allows business owners to predict future results using historical data. This dashboard was developed by my company, Quantum Leap Dental Partners, in conjunction with the Dental Care Alliance's analytics team, with the goal of helping practices identify one or two key behaviors that will drive their growth. The key to training and accountability is to focus change on only one or two behaviors at a time. If we try to focus on more behaviors at one time, then it is highly likely that none will become permanent.

This dashboard, called the Revenue Cycle, looks at revenue growth as being composed of two main components: number of visits (capacity) and dollars generated per visit (revenue). These components are further broken down into 11 critical KPIs that ultimately lead to 21 MITs (most important tasks) or behaviors that influence the KPIs. What we have done at Quantum Leap is pair up our training modules to the specific MITs/behaviors that will ultimately grow revenue.

Let's look at the KPI "patient visits per provider day" and take it through the Revenue Cycle. Patient visits are composed of two KPIs: new patients and returning patients. New patients can be internally referred or externally referred. Returning patients can return to hygiene or the doctor's schedule.

If we are looking to drive new-patient visits, then phone answering training may be the behavior we need to improve. That training would be customer service based and address both call answer and call conversion rates. We use historic data to identify the opportunity, the amount of lift needed, and the value of the change (the size of the prize).

For returning patients, the most predictable behavior to train is making the next appointment before the patient leaves the office. We measure this KPI in walkout stats. To drive the walkout appointments, we would use our training modules for that specific behavior.

Predictive analytics are a decisive advantage in the operation of one practice and are absolutely critical in the operation of a group practice. Solutions such as QL Analytics allow us to identify our biggest opportunities for growth and then match training to those opportunities. This helps us focus on the one or two things that will have the biggest impact on the business. This limited focus allows us to create accountability to turn the behaviors we are training into habits that are part of the office culture. DE

MICHAEL KESNER, DDS, built a group of 14 practices that ranked five years in a row on the Inc. 5000 List of America's Fastest Growing Companies. He is the author of the book *Multi-Million Dollar Dental Practice* and president/founder of Quantum Leap Consulting, which partners with dental practices for faster growth. Contact Dr. Kesner at drkesner@qlsuccess.com.

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Featured Speaker

Michael Kesner, DDS
Founder Quantum Leap Consulting

Dr. Mike Kesner is the owner of Made Ya Smile Dental, a fourteen-practice group in Houston that he built in only 7 years. Also the founder and president of Quantum Leap Consulting, he built a successful group practice which has allowed him and his wife Debbie to realize both their financial and personal goals. For over a decade, Quantum Leap has been helping practice owners realize their potential through analytics-driven consulting, training, and marketing.

Guest Speaker

Don Gallo, DDS
Chief Clinical Officer, Dental Care Alliance

Dr. Don Gallo brings over 20 years of consulting experience in the DSO space, and is currently the Chief Clinical Officer for Dental Care Alliance. Dr. Gallo will talk about building structure and leadership for growth. He will cover the steps to create a principal based culture and the key metrics doctors should be looking at in order to lead a group practice.

Event Dates

February 16th
Salt Lake City, UT
Hilton Salt Lake City
6:00 - 8:30 pm

February 17th
Denver, CO
Westin Denver Downtown
6:00 - 8:30 pm

February 18th
Phoenix, AZ
Hilton Phoenix Resort At Peak
6:00 - 8:30 pm

February 23rd
San Antonio, TX
The Westin Riverwalk San Antonio
6:00-8:30 pm

February 24th
Dallas, TX
Westin Dallas Downtown
6:00 - 8:30 pm

February 25th
Houston, TX
Houston Marriot Sugar Land Town Square
6:00 - 8:30 pm

March 9th
Atlanta, GA
Coming Soon!

March 10th
Orlando, FL
Coming Soon!

March 11th
Tampa, FL
Coming Soon!

March 23rd
Indianapolis, IN
Coming Soon!

March 24th
Chicago, IL
Coming Soon!

March 25th
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PART FOUR

Designing the dental practice of the future: Operatory design for air quality and aerosol containment

Melissa Sprau, NCIDQ

IT SEEMS LIKE A SIMPLE CHOICE: walls or no walls. Open and closed operatories each come with their own set of pros and cons, but COVID-19 has created new concerns about air quality and aerosol containment that add additional considerations for approaching operatory design. Deciding which one might yield the healthiest environment for *your* patients and team members means adopting an all-encompassing view of quality of life at work.

Editor's note: This is the fourth article in a five-part series. Parts one through three can be found at dentaleconomics.com; look for part five in March.

OPEN VERSUS CLOSED

When it comes to infection control, air quality and office design should work hand-in-hand to create a safe environment. Recognizing the link between the two begins with understanding some key concepts of dental operatory layouts, including the history, benefits, and shortcomings. Defining what is meant by an "open" or "closed" operatory is a good place to start.

Operatories confined by four walls are considered "closed;" some have a single entry for patients and practitioners, and others have dual entry. This dual entry concept, pioneered by the late dental innovator Dr. James Pride,[1] allows assistants to enter and exit the room at their ideal position near the patient's shoulder, without having to squeeze behind the head of the chair or walk down and around the toe. Some closed operatories, whether dual or single entry, use doors for complete privacy, while others contain simple openings for easy in-and-out.

"Open" operatories use cabinetry instead of walls to define each space, and are often sought for a lighter, more casual feel. Introduced in the 1970s, this style grew in popularity over the next two decades as more manufacturers moved into the cabinetry business, integrating equipment into furniture. Open operatory cabinetry has evolved to become modern and airy with sophisticated center islands featuring pass-through cabinets, shared sinks, and a space-saving footprint. Some might argue that the creation of this sleek open concept makes closed operatories seem dated and claustrophobic.

THE PROBLEM WITH OPEN OPS

Even before the first airborne infectious disease pandemic plagued the dental industry, open operatories began to present challenges. As a designer, it reminds me of the evolution of the American workplace: The hard-wall office once reigned supreme, but it was replaced by the cubicle upon its invention in the 1960s, and within the last decade, the cubicle gave way to hip, low-slung open workstations. Open office designs that first seemed like a novel way to introduce more natural light, conserve space, promote collaboration, and save on traditional construction were dubbed a "disaster" by the *Chicago Tribune* in 2018, with American workers feeling distracted, unproductive, and imposed upon.[2]

The lesson? To do our best work, we

need spaces that properly support our needs and activities, including deep thinking, focus, and concentration. These needs may evolve over time, and design should evolve along with them. In health-care design, this concept should be applied and then taken one step further to consider patients' needs as well. What do they need to feel comfortable, safe, and supported?

The biggest problem that arose from the invention of open operatories stems from acoustics. Open spaces tend to be louder, which affects concentration and communication. Team-to-team conversations aside, noise can make it difficult for patients to hear and understand their treatment plan and aftercare instructions. An open environment can also leave patients feeling vulnerable and exposed, especially when uncomfortable or in pain. Very few health-care disciplines outside of dentistry utilize open designs for these reasons. Now, with the nation experiencing heightened concern about airborne infection transmission, open treatment spaces may create further unease.

CONTAINING CONTAMINATED AIR

Airborne considerations add another layer of complication to open operatory design. Currently, there is no evidence that links SARS-CoV-2 outbreaks more to open versus closed dental office designs.[3] However, the Centers for Disease Control and Prevention still recommend that patients with known or suspected SARS-CoV-2 be treated in an individual patient room with a closed door.[4] In the field of health-care design, we know that closed spaces make it easier to contain and treat contaminated air, whether through negative pressure isolation (where air is contained and exhausted safely out of the building) or filtration and recirculation (where air passes through medical-grade HEPA filters, sometimes in combination with UV lights, before being redistributed). Airborne infection isolation rooms (AIIRs), used in hospitals to treat airborne infectious patients, are well sealed to prevent air leakage. Applying these principles to the dental environment makes a compelling case for closed operatories. And, adding doors can actually be a design-booster, not a deterrent. In dual-entry scenarios, barn doors on the doctor's side and pocket doors on the assistant's side look great and take up minimal floor space.

INTEGRATING AIR PURIFICATION TECHNIQUES

Whether open or closed, there are air quality techniques that can be integrated into a practice's operatory design for infection control and safety. While AIIRs may be overkill—*and* cost-prohibitive in dentistry—HVAC enhancements, air purification systems, and extraoral suction devices can help control the spread of contaminants.

Air purification systems can be grouped into two categories: those that integrate with the building's existing HVAC system or infrastructure, and those that are freestanding or wall-mounted. HVAC-integrated systems, such as the LifeAire Aire~BioLite System, are beneficial in that they don't take up valuable operatory real estate, are quiet, and require little to no maintenance. The VidaShield UV24, another unobtrusive solution, is an overhead ceiling light with integrated air purification. Freestanding systems, such as the EnviroKlenz Mobile Air System, plug into the wall as easily as a toaster and get to work immediately, filtering infectious particles and odors alike.

When it comes to extraoral suction, the most exciting system I've seen comes from Nederman, a longtime player in the industrial air filtration space. They applied proven industrial-strength technology to the dental industry, creating a powerful extraoral suction arm that mounts to the ceiling to free-up floor space and articulate with ease.

THE CASE FOR AIR QUALITY

We're all tired of hearing, talking, and reading about the pandemic, so thinking about air quality in your office may seem eye-roll worthy. I get it. COVID-19 aside, air quality is an important design consideration for overall health and well-being. The dental environment is especially prone to indoor chemical pollutants—methanol, propanol, and formaldehyde, to name a few—that are biproducts of the materials and substances used for dental procedures, the cleaning agents used for disinfection, and the particles released during grinding and polishing. These impurities, called volatile organic compounds (VOCs), settle into our bodies when we breathe them in, and can create both temporary and long-term adverse health effects. Eye, nose, and throat irritation, headaches, fatigue, dizziness, visual disorders, and memory impairment are just a few VOC-induced symptoms cited by the Environmental Protection Agency.[5] Integrating air purification into your office design can address indoor pollutants and unpleasant odors just as they can infectious diseases. While your aim is to create healthy smiles, as a health-care interior designer, I aim to create healthy buildings, and I hope that by joining these concepts together, we can create a better dental environment for you, your staff, and your patients. **DE**

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Benco director of design **MELISSA SPRAU, NCIDQ,** brings over a decade of commercial and hospital design experience to the dental industry. As a licensed interior designer with a background in health-care facilities planning and design, her approach combines best practices for health and safety with the details required to support positive patient and caregiver experiences. Sprau coaches practitioners to discover their brand and infuse it into the built environment, aligning quality of space with quality of care.

PRIVATE PRACTICE PLAYBOOK

Jay Geier

Crushing it: How to plan and execute an effective marketing campaign

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THERE'S MARKETING, and then there are marketing campaigns. This article will focus on the latter, but first, it's important to understand the difference.

JAY GEIER is a world authority on growing independent practices, which can be kept for a lifetime of revenue or sold for maximum value. He is the founder and CEO of Scheduling Institute, a firm that specializes in team training, doctor coaching, and helping people live up to their full potential.

Marketing, or your overall marketing plan, is the ongoing process of creating awareness around your practice, the services you provide, and the image you stand for, such as exceptional patient experience and community involvement. It's the umbrella under which all of your individual marketing pieces and campaigns fall. It is (or should be) a continuous process with no end date that includes a wide array of media to reach different target audiences in different ways.

Marketing campaigns are smaller segments within your marketing plan. Each campaign is its own organized, strategic effort designed to achieve a specific goal (e.g., increase new patients by 20% in 90 days). A campaign has a start and end date, a defined goal, a set budget, a target audience, and entails a series of elements and actions in a planned sequence that typically follows a consistent theme.

Campaigns are more than just a single piece of advertising; they involve a multistep, multimedia process. Think of a marketing campaign as a puzzle comprised of multiple well-crafted, intricate pieces that, when properly combined, form an impressive result. In today's high-tech world, "pieces" include all sorts of compelling, eye- and ear-catching multimedia elements, not just traditional print materials (though print is still a high-performing option).

In the October issue of *Dental Economics*, I laid out the six proven fundamentals of marketing that will help you create killer marketing pieces.[1] These six fundamentals will drive new patients to your practice, which equates to profitability and growth: target audience, test, track, tweak, scale, and capture.

PROVEN PRINCIPLES FOR EFFECTIVE MARKETING CAMPAIGNS

Once you have something that's working, build a comprehensive marketing campaign around it. That takes planning, but it's not as complicated as you might think. Follow these proven principles to run profitable, business-building campaigns.

Set goals and parameters. Define what you want the campaign to accomplish by when (e.g., increase hygiene production by 15% in 60 days). Identify a target audience (e.g., moms with young kids). Clearly articulate any offer to be included (e.g., free whitening for life if scheduled this month). Determine the messaging you will use to tie all campaign pieces together (e.g., look better and improve overall health).

Determine metrics for success. Decide on the metric you will use to measure success, ensure you have the right tools in place to track that metric, and establish a baseline for where you stand before you start the campaign. Track and monitor progress along the way so you can make a fact-based decision to adjust or discontinue the campaign if it's not proving to be worth the cost.

Set a budget. Marketing is an important and necessary investment in the growth of your business. Budget for campaigns with the expectation that you will generate more revenue than you spend, resulting in a positive ROI. Investing next to nothing will give you exactly that much in return, so set your campaigns up for success with realistic budgets.

Map out a media plan. Decide which communication media will best reach and resonate with the target audience. Today's array of print, digital, video, audio, and social media choices make it easy and affordable to reach everyone in one way or another. A very simple campaign could include a direct mail piece, followed by a reminder piece, and then a final notice and follow-up phone call. Get creative and don't be

afraid to get out of your comfort zone and see what happens. The more marketing you do, the more facts you'll gather about what works well for you, what doesn't, and what you need to tweak and retry.

Maintain a marketing calendar of campaign action plans. Ideally you would plan out the entire year, but at a minimum lay out the campaigns planned for the next three months. For each campaign, create a timeline and detailed action plan for each element. Map everything out on the calendar so it's visually compelling and will help keep you on track. This also gives you a record of what you did and when.

Execute each element. Write your copy and have it proofed, confirm dates, have pieces designed, etc. Check off items on your action plan calendar as they are completed to stay organized and motivated.

Measure results. While the campaign is running, it's critical that you measure its success. At the end, finalize the data so that you know what happened as a result. Did you achieve your goal? What were actual costs for all pieces of the campaign? What was your ultimate ROI? Many sophisticated marketing software programs exist to help you plan and measure your efforts, but you can do it yourself with a simple Excel spreadsheet.

Continuously improve your marketing strategies. Learn from what works and what doesn't for your specific practice, based on campaign results. Repeat or broaden a really successful campaign; tweak a promising one, one element at a time, then test again; and discontinue a campaign that didn't work so well. In all cases, apply learnings to future campaign plans.

Test and retest all response methods. Whether it's a landing page, website, QR code, phone number, etc., make sure it is working before you send the piece. Also make sure it's working when it's received. When it comes to phone calls, make sure they are scripted perfectly to get the result you desire: a new patient on the books.

Prepare your team to welcome new business. According to our research, 97% of offices are missing this one essential element of marketing.[1] We find that the team is not prepared to capture new patients quickly and efficiently. When that's the case, even those marketing efforts that generate a slew of additional phone calls, website visits, and walk-ins are wasted. Marketing dollars are an investment that is intended to provide a return as measured by new patients and, in turn, collections. Make sure your team is trained on how to turn those calls into actual new patient appointments. **DE**

Author's note: For a limited time, SI is offering *DE* readers a custom Blind Spot Analysis to shed light on a practice's blind spot, its cost to your business, and what can be done. Visit schedulinginstitute.com/de to receive your custom analysis today.

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COVID-19 AND STAFFING CHALLENGES — *Continued from page 12*

- 42% had been with their current employer less than three years.

Income varied considerably by state, which makes sense given the cost of living and the range of insurance reimbursement rates throughout the country. New Mexico came in at the very bottom of the pay scale, with Idaho, Louisiana, and Nevada close behind.

The younger they were, the more likely respondents were to be considering applying for jobs somewhere else within the next year. Overall, more than one-third of those under age 54 had this on their minds. And of those who did intend to apply for a new job, 27% planned to do so within the next 30 days.

DENTISTS (ASSOCIATES/ EMPLOYEES)

The majority (60%) of dentist respondents reported having 20-plus years of experience. Forty percent estimated their annual income for 2020 as being more than $200,000, suggesting that many of the respondents were possibly also practice owners. Fourteen percent of respondents' salaries ranged between $126,000 and $150,000, 11% between $151,000 and $175,000 and 8% between $176,000 and $200,000.

Key takeaways

Thirty-six percent of dentists surveyed said they had taken a pay cut this year. Though this group represented the smallest number of survey participants (5%), there were interesting takeaways for dentists (associates/employees).

- 40% were female.
- Two-thirds worked in metropolitan areas.
- 25% of dentists between 25 and 34 years old were planning on seeking a different employment situation within the next six months, indicating that they were associates who had joined either a private practice or a DSO.
- Highest paying states were Colorado, Maine, Montana, and Kansas.
- Lowest paying states were Alaska, New Mexico, Washington DC, Hawaii, and Connecticut. **DE**

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You can't hide behind the drill anymore

Eric J. Forte, DMD

THIS IS THE STORY about how I stepped away from clinical duties and became the CEO of Lakeview Dental Care's six locations. This was always part of the bigger plan, but when it finally happened in the middle of the pandemic, I was terrified.

When I received my DMD from Temple University, School of Dentistry in 2002, I was well trained in the clinical aspects of dentistry and I went right to work in private practice. I worked in a few different offices to fill my days with as much clinical dentistry as I could. But I also paid attention to the business side of practice, especially leases and property ownership. My goal was always two-fold: to own patient-centric, highly productive dental practices, and to own the real estate they occupy.

In 2005, I purchased a three-operatory practice from a retiring doctor in my hometown. We were busy from day one. Within two years I brought my first associate onboard and we moved to a brand new six-operatory facility. My associate and I developed a great working relationship and very strong bond. Because of the strength of our relationship, in 2011 Jonathan Hill, DMD, and I decided to become partners and form Lakeview Dental Care (LVDC).

I knew we were ready for the next step in our journey together when we committed to something bigger than ourselves. By 2013 we had three thriving dental practices and a few pieces of real estate located in southern New Jersey. Acquiring financing is always challenging, so the strong relationship we had with our bank was important to getting these deals completed.

Our partnership works because we share the same vision—to be a group dental organization with multiple locations and real estate. We know we have to use our unique talents as partners to keep moving forward. I focus my time as the entrepreneurial partner seeking growth opportunities, and I make the acquisitions of practices and real estate happen. Dr. Hill focuses on leading all clinical aspects of LVDC. This has worked well because of our mutual respect for each other and the great team of people we have around us.

We formed a leadership team and defined our core values and how to achieve our vision around the principles of offering the best possible dentistry. We provided mentorship for associates, a strong culture modeling our core values, standardization across locations, and the goal of building the LVDC brand.

Achieving our vision was not easy. As I was cutting back on clinical hours, I struggled with the impact this was having on our patients and our bottom line. I struggled to be effective while wearing the entrepreneur and dentist hats at the same time. I struggled, and still do, with the reality of no longer practicing clinical dentistry, something that was a huge part of my life for so many years. However, I have the support of my partner and our leadership team, and we have the right people in the right seats.

After a real estate acquisition deal went south in early 2019, we decided to venture into the start-up world. That gave us the confidence to add *de novo* to our portfolio.

Lakeview Dental Care of Cherry Hill, New Jersey

LIFE TOOK A TURN

Life happens and situations arise that are out of our control. But it's important to keep going when you're scared and to look for opportunities when times are uncertain. Just when 2020 was getting off to a great start, COVID-19 hit just one month after we opened our first *de novo* practice. It was LVDC's sixth location, and like the rest of the world, we found ourselves in a tight spot.

The pandemic created an even greater need for leadership throughout our organization in both keeping the practices and real estate financially healthy and keeping patients and team members safe and productive. However, it also gave us time to plan our next steps. I leaned on collaboration

with our leadership team, as I have many times in the past, to accomplish this.

Together, we crafted the future vision of LVDC with precision and clarity. Me doing clinical dentistry was not part of that vision. The pandemic accelerated my move to CEO. Clinical excellence in dentistry takes a lot of energy and focus to do it the "Lakeview Dental Care way," and my heart had not been 100% in it for a while. I had stopped taking new patients a couple of years earlier and had decreased my clinical hours to 10 a week.

The opportunity to be a true CEO and take LVDC to new levels is exciting and is something I am very grateful for. As our practices reopened after the government shutdown, I finished treatment plans with long-term patients and said my final goodbye to the chair.

LVDC'S FUTURE

At LVDC we play to win, and we share our success. We are coming out of the pandemic stronger than ever with our teams and business intact. One of our long-standing goals is for all of our practices to be in visible, modern, and well-matched facilities. I've been searching for the right real estate opportunity to make this happen for some time in Cherry Hill. LVDC of Cherry Hill will relocate and open this month on a main highway in a state-of-the-art, standardized facility that we own.

Dentistry has been a very rewarding career for me, and I know this will continue. I have enjoyed overcoming the challenges it has presented. With our team at LVDC, we will stay true to our core values and culture and build our brand. We will seize opportunities and continue to create smiles and improve lives every day.

If you are thinking about taking the leap out of the chair, I suggest that you define your vision, build the culture, get the right people in the right seats, and go for it! DE

Lakeview Dental Care of Washington Township

ERIC J. FORTE, DMD, graduated from Temple University School of Dentistry in 2002 and acquired his first practice in 2005. He's since grown his dental group considerably. After partnering with the cofounder of Lakeview Dental Care, Dr. Jonathan Hill, in 2011, Dr. Forte split his time as a productive dentist and the partner seeking growth opportunities through practice and real estate acquisitions. Dr. Forte's vision, enthusiasm, and professionalism show in his dedication to the patients and team members and the success of Lakeview Dental Care.

Class V resins be damned (no pun intended)! I've got your back

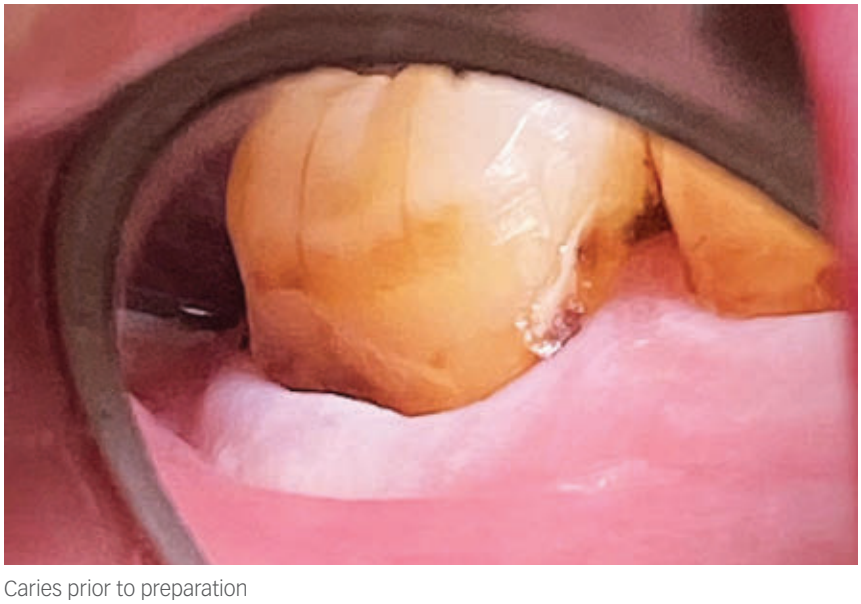
Stacey L. Gividen, DDS

WE ALL HAVE PROCEDURES WE LOVE and those we love to hate; class V resins fall into the latter category for me, so when I posted a video asking you all for help, you came through with fantastic tips, tricks, and suggestions to make my life (and my patients' experiences) much better.

I'm going to share some of the information I received. *So much good stuff here!* Take a look, glean what you will, and apply accordingly. Furthermore, keep in mind that what works for one provider may not work for another. There are even a few product suggestions to mull over. It doesn't get better than this—real-world dentistry without the pomp and circumstance of a lecture hall and a cold cup of coffee.

PROVIDER SUGGESTIONS

- Don't use resin; use glass ionomer. Pros: versatile in hard-to-isolate areas, bonds to dentin, fluoride release. Try Fuji II LC capsules (GC America). For a smoother shine after polishing, place bond and a thin layer of resin/flow over the top.
- Use AlCh solution on the tissue; if it's a good bleeder, apply Expasyl (Safco Dental) paste and let it sit for a bit; this dries up the area for placement of the filling.
- Contrary to what many are taught, some dentists don't bevel the margin as the flexural properties of the tooth cause the resin to break at the thinner margin areas, subsequently causing a defect.
- Always place retraction cord; place prior to prepping and don't forget to take it out!
- Place an undercut in the tooth at the root and crown margin of the prep.
- Use incremental placement of the resin to reduce shrinkage, even if the prep isn't that deep.
  - — For the last increment, put a touch of resin on your finger and work the resin toward the gingiva to encourage the bond toward the root. Yes, the finger is a great instrument and tends not to pull the material away from the location where the bond is most wanted.
  - — Trim well with ET burs (Brasseler); they cut nicely and are thin. Be careful not to ditch the root, and always make sure to go around the line angle where visibility can be an issue (especially the distobuccal).
- Try G-aenial Universal Flo (GC America). Numerous properties make it easy to use and an excellent restorative material:
  - — Position the patient's head so that the restoration is parallel to the flow (very important).
  - — Place the tip (of the resin applicator) in the middle of the restoration and on the pulpal wall; fill slowly so it spreads evenly into the corners.
  - — Wait 30–40 seconds. The material will level out by itself, and the face will be parallel with the floor. A slight overfill is recommended for an ideal finish.
  - — Apply your light. Finish with a fluted

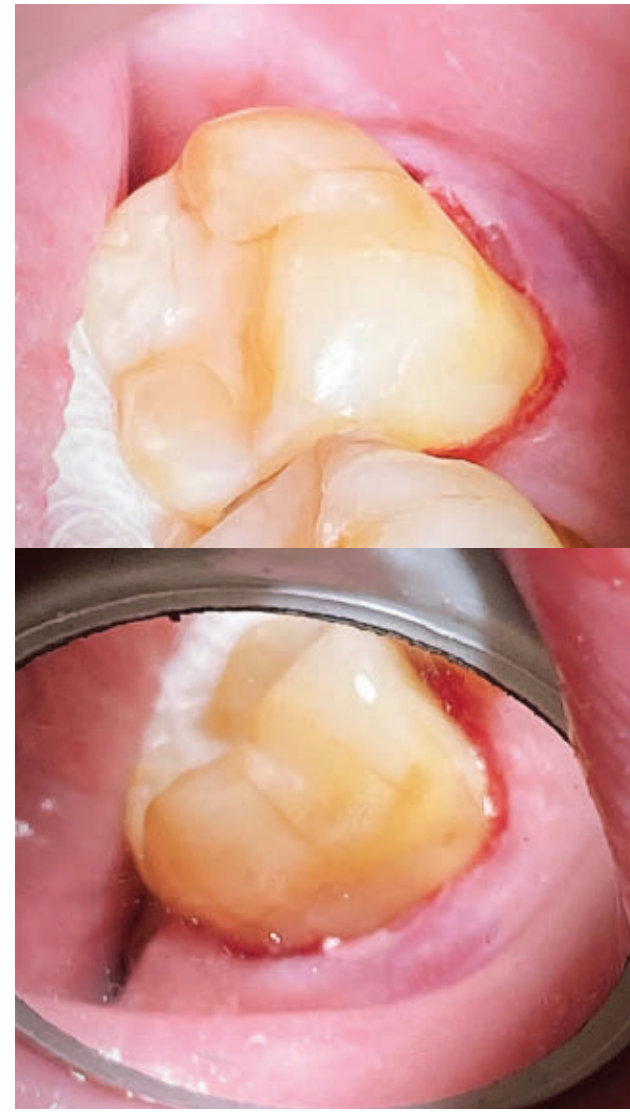


Caries prior to preparation

Editor's note: This article first appeared in *Through the Loupes* newsletter, a publication of the Endeavor Business Media Dental Group. Read more articles at dentistryiq.com/dentistry.

blade bur or a white stone on an electric handpiece.

- Cut a prep without touching the tissue. If bleeding occurs, touch it for three seconds with Superoxol, a 35% hydrogen peroxide bleaching agent that can be used to stop minor bleeding; working time is about five minutes before it starts bleeding again:
  - — Use a ½ round bur for mechanical retention as you cannot rely solely on bond strength.
  - — If the margin is sub-g and retraction is needed, use a Greater Curve (GC) Band pinched with your fingers. No need for a retainer.
  - — Etch, wash, and apply Glutaraldehyde Desensitizer B (MicroPrime). Dry and apply three consecutive coats of Brush & Bond (Parkell) and cure between each.
  - — Fill with Beautifil Flow shade A-2, which blends well, is hard, and rarely bubbles.
  - — Because of the GC band, there will be some excess resin, but it trims easily supragingival and your sub-g margin is sealed without any ledges. Polish with your go-to burs.
- Use a FlipMirror to access those hard-to-see areas.
- Remove decay, if any, and use a long bur to bevel the enamel (not always necessary):
  - — Place retraction cord, especially if tissue is overgrowing the gingival portion of the class V.
  - — Use microabrasion of class V lesion, up onto the enamel until visibly clean—there should be *no* plaque (make sure to get into the MB and DB line angles to avoid potential future staining). Rinse thoroughly.
  - — Etch enamel, rinse, and isolate.
  - — Apply Brush & Bond adhesive, dry, and cure.
  - — Mix a small amount of Geristore to thinly cover the root/dentin surface and cure.
  - — Place composite of choice to match shade (suggestion: Filtek Supreme Body shade) and cure (on low power).
  - — Trim off excess composite at gingival (suggestion: ET3 because the tip has a rounded end and is not cutting) as close as possible to retraction cord.
  - — Pull out the retraction cord and use ET3 again until there is no overhang.
  - — Polish and do a final cure.
  - — Note: The biggest problem with class V lesions is that there is little to no enamel to bond to. Also, the use of a microabrasion unit, while messy, will clean out any deep crevices that a rubber cup can't access. Adhesives will not stick to plaque, so this is a vital component to making this composite work for a long time.
- Consider the differences between nanocomposite and microfill products.
- OptraSculpt (Ivoclar Vivadent) is great for class V restorations because it allows you to model/sculpt the composite without pull-back and leaves the surface about 95% finished and polished. It's also atraumatic to soft tissue, which is ideal when at the gingival or slightly subgingival level. There are also wedge-shaped tips and wedge-shaped discs (4 mm or 6 mm) to create a quick and easy class V restoration.



Final restoration, filled with G-aenial flowable by GC America

I'd love to hear your feedback. For me personally, the "cringe factor" for class V resins has lessened significantly, and that's a really, really satisfying feeling!

What are other clinical topics you would like insight or help with? Shoot me an email—I'll make it happen. Cheers! **DE**

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A guide to teledentistry in the time of COVID-19

Michelle Strange, MSDH, RDH

THE COVID-19 PANDEMIC swept across the globe with ease, hitting every continent in no time at all. As the cases rose, government officials began implementing tactics to slow the spread of the virus. Those tactics included social distancing, staying home unless absolutely necessary, and widespread lockdowns in the most hard-hit areas. When lockdowns were in effect, only essential services remained open to serve the public. One sector deemed nonessential and forced to close was dentistry, but as dental professionals know, oral health is just as important as any other form of health.[1]

Despite the new vaccines and hopes to lower overall virus case numbers, much of the dental industry is waiting in limbo for another potential shutdown. But there is a light at the end of this tunnel, and that is teledentistry.

Teledentistry can operate even in the event of a total shutdown, because it does not require chair time or face-to-face interactions. This could mean everything to patients who need oral care. In fact, there is so much that teledentistry can do for both patients and practitioners, that even if all dental offices are closed, care is still accessible for those in need.

Many of you may have the initial thought: how is this possible when the dental industry is so hands-on? This is true, for many situations, but there are also many areas of dental care and patient interaction that can be substituted with teledentistry.

TOTAL SHUTDOWN DOES NOT MEAN PUTTING ORAL HEALTH ON HOLD

With the possible threat of a total shutdown looming due to rising cases in many areas, some dental offices will be relegated to urgent care only. We know that dental professionals are well-versed in best infection prevention practices. In fact, when the pandemic took hold, they were even more diligent with new disinfection methods, enhanced standard operating procedures, and screening protocols.

This attention to the needs of both the population at large and the patients we see daily has made dental offices one of the safest health-care facilities during the pandemic. If a shutdown were to occur, though, it is likely that dental offices would return to the nonessential list yet again. This is where teledentistry can come into its own.

THE BENEFITS OF TELEDENTISTRY DURING COVID-19

Teledentistry has made the lives of patients easier by reducing the time spent getting

to and from the dentist and time spent in the chair. It has also saved them money on visits for issues that a virtual appointment could deal with just as efficiently. That is not the only benefit of using this technology, however.

Since the onset of COVID-19, personal protective equipment (PPE) conservation has been of the utmost importance.[2] Health-care workers are on the frontlines of the battle against the spread of the virus, and they need all the protective wear they can get. That said, dental offices require just as much PPE as medical offices, because they are up close and personal with their patients. Dental practices may need to continue seeing some patients face-to-face for more serious treatments or procedures, but by using teledentistry, there is a significant reduction in overall chair time. Teledentistry also lowers costs, so more patients may decide to book a virtual appointment if it suits their budget, especially for those who have lost their jobs due to the viral outbreak.[3] This makes dental care more accessible to everyone, allowing dental offices to take in more revenue from those who otherwise could not afford to make an appointment.

In the specific case of an aerosol-generating procedure (AGP), PPE is vital in limiting transmission. By offering teledentistry to patients who do not need to come into the office, the practice is protecting them from being exposed to those AGPs and can conserve PPE supplies that would have been needed for in-office appointments.

Other aspects of dental care possible through virtual appointments include:

- Reviewing insurance claims
- Treatment consultations
- Reviewing treatment plans
- Pre- and post-op instructions
- Hygiene checks
- Patient follow-ups to check on healing, postoperative pain, etc.

THE PRACTICE CAN BENEFIT JUST AS MUCH AS THE PATIENT

For dental professionals worried about transmitting the virus themselves, teledentistry can solve that issue without having to shut down the office or miss appointments. For example, if a treatment coordinator needs to self-quarantine, but still has work to do on insurance claims and reviews with patients, the team member can complete that work from the comfort of home.

Also, if patients with COVID-19 have oral health issues that require follow-up appointments, they do not need to risk missing a reevaluation of their progress following their dental procedure just because they are COVID-19–positive. With the use of a video call and a HIPAA-compliant program, it is still possible to meet these patients' clinical needs and determine if an in-office visit is vital or could wait until they are no longer infectious.

Continued on page 51

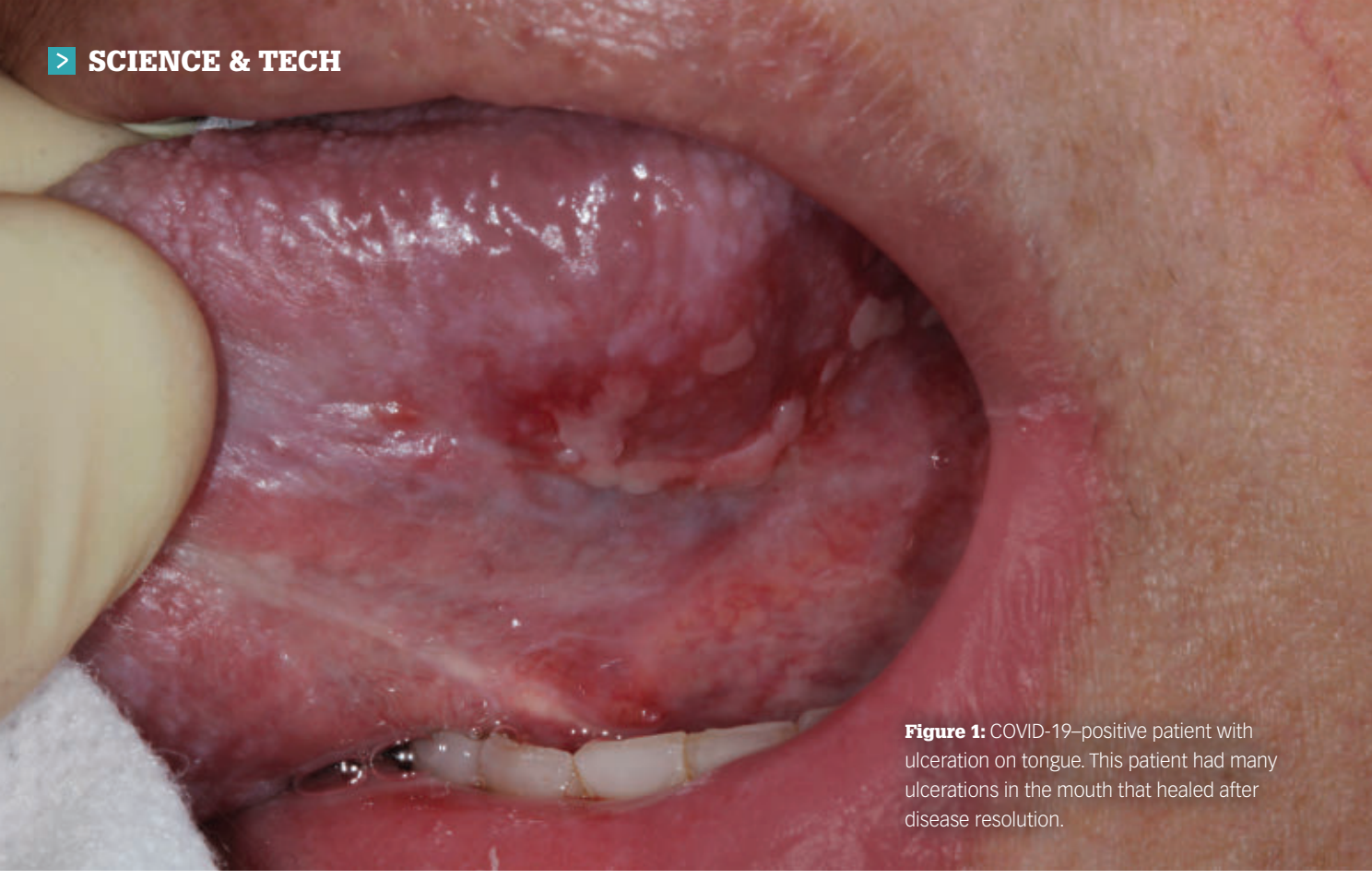

Figure 1: COVID-19–positive patient with ulceration on tongue. This patient had many ulcerations in the mouth that healed after disease resolution.

Top 5 oral manifestations of COVID-19

Scott Froum, DDS

IN A RECENT *NEW YORK TIMES* ARTICLE, survivors of COVID-19 who have had the disease for weeks to months—termed "long haulers"—describe oral problems they're experiencing such as "teeth falling out, sensitive gums, teeth turning grey, and teeth cracking."[1] Although many physicians continue to question the direct link between SARS-CoV-2 and oral disease, studies suggest that the mouth might be the most vulnerable area to this virus due to the abundance of the ACE2 (angiotensin converting enzyme) receptor in oral tissue.

The ACE2 receptor has been well-documented to be the target receptor of the SARS-CoV-2 virus and the portal of entry into the human cell.[2] A new preprint study found that, compared with other oral tissues, cells of the salivary glands, tongue, and tonsils carry the most RNA linked to proteins that the SARS-CoV-2 virus needs to infect cells.[3] Namely, these include the ACE2 receptor and an enzyme called TMPRSS (transmembrane protease, serine 2), which allows the virus to fuse its membrane with that of the host cell and slip inside. This article will briefly review the top five oral manifestations associated with COVID-19.

NO. 1: GINGIVAL INFLAMMATION

Bleeding and inflammation in oral tissue have been suggested to be a result of a generalized increase in inflammation due to elevated levels of cytokines and interleukins initiated by the SARS CoV-2 virus. COVID-19 disease severity has been linked to an immune dysregulation, leading to a cytokine storm. Periodontal disease can increase levels of circulating cytokines, particularly interleukin-6 (IL-6), which has been implicated as one of the major interleukins leading to the cytokine storm.[4]

Periodontal disease is currently being examined as a possible contributing disease toward COVID-19 severity.

NO. 2: XEROSTOMIA (DRY MOUTH)

COVID-19 has been suggested to cause dry mouth for a variety of reasons. The most common is mouth breathing by an individual due to mask use. Mouth breathing can desiccate oral tissue, especially without frequent hydration.

Studies suggest that another biologic mechanism involves viral entry into the salivary glands, which are known to be abundant in the ACE2 receptor.[5]

Kevin Byrd, DDS, PhD, manager of oral and craniofacial research at the American Dental Association Science and Research Institute, states that novel coronavirus infection of the salivary glands can influence both the quantity and quality of saliva being produced.[6]

Additional research is needed to identify causal effect, but in the meantime, clinicians should note that xerostomia has been linked to an increase in both caries and *candida* infections.

NO. 3: ORAL ULCERATIONS AND GINGIVAL TISSUE BREAKDOWN

COVID-19 has been associated with vascularity anomalies due to viral damage of blood vessels. William Li, MD, president and medical director of the Angiogenesis Foundation, describes a process whereby the virus gains entry into the endothelial cells that line blood vessels via the ACE2 receptor and damages them, leading to situations of oxygen deprivation. Tissue necrosis, including oral ulcerations, can be the result of vessel damage (figure 1). Ulceration and tissue damage can be further exacerbated by increased inflammation and upregulation in inflammatory markers due to the SARS-CoV-2 virus.[7]

Case reports have been cited in the literature that show confirmed COVID-19–positive patients having oral ulcerations that were suspected to be caused by the SARS-CoV-2 virus.[8]

NO. 4: CRACKED TEETH

An article published in September 2020 in the *New York Times* discussed the phenomena of dentists seeing a tremendous increase in patients presenting to their practices with fractured teeth during the coronavirus pandemic.[9] The article cited an increase in bruxism (teeth grinding and clenching) as the mostly likely culprit.

The article specifically examined three COVID-19 pandemic-related factors that could cause an increase in tooth facture from bruxism. First, psychological stress from the pandemic could have a major role in stress-related tooth fracture. Second, poor orthopedic posture from makeshift at-home workstations could lead to bruxism. Finally, sleep deprivation and/or obstructive sleep apnea could result in bruxism and cracked teeth.

NO. 5: LOSS OF TASTE AND SMELL

A sudden onset in loss of taste (ageusia) and smell (anosmia) are two symptoms that can be the earliest indicators of COVID-19. An average of 47% (up to 80%) of individuals who test positive for COVID-19 can have subjective complaints of taste and smell loss, particularly in cases of asymptomatic or mild disease.[10]

The mechanism behind this loss is suspected to be viral disruption of cranial nerves 1, 7, 9, and 10, as well as the supporting cells of neural transmission.[11] In addition, because the tongue has an abundance of ACE2 receptors, direct viral entry into tongue cells is possible. **DE**

Editor's note: This article originally appeared in *Perio-Implant Advisory*, a newsletter for dentists and hygienists that focuses on periodontal- and implant-related issues. *Perio-Implant Advisory* is part of the *Dental Economics* and *DentistryIQ* network. To read more articles, visit perioimplantadvisory.com.

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Ask Dr. Christensen

Q+A

In this monthly feature,
Dr. Gordon Christensen addresses the most frequently asked questions from *Dental Economics* readers. If you would like to submit a question to Dr. Christensen, please send an email to info@pccdental.com.

The best pediatric dental restorations

Q Recently, I was talking to some of my dentist-friends and our conversation turned to the ongoing dental caries activity observed in our pediatric patients. We discussed potential preventive/restorative alternatives and disagreed on the kind of restorative material to use, since amalgam has been criticized and composites dominate restorative dentistry. The majority of my peers are using resin-based composites for their pediatric patients. I am pondering the question and would like to hear your comments about how to best restore the teeth of pediatric patients.

A

GORDON J. CHRISTENSEN, DDS, PhD, MSD, is a practicing prosthodontist in Provo, Utah. He is the founder and CEO of Practical Clinical Courses, an international continuing education organization founded in 1981 for dental professionals. Dr. Christensen is cofounder (with his wife, Rella Christensen, PhD, RDH) and CEO of *Clinicians Report*.

There are several alternatives for the restoration of pediatric teeth, some of which are well proven and others that still need long-term research. This discussion relates to restoration of both primary and permanent teeth in children and teenagers. In this column, I recently discussed the use of the new-generation glass ionomer restorative materials. Please refer to that article in the January 2021 issue of *Dental Economics*. Even just a few years ago, glass ionomer materials *would not* have been included in my suggestions due to the difficulty in working with them and their physical properties. But that has changed. The new glass ionomer restorative materials will be strongly recommended in my answer.

The wide diversity of restorative challenges and needs among pediatric patients should be part of our discussion. Those needs are directly related to the dental education parents provide to their children and the level of parental supervision of oral hygiene. It is unlikely that children will have good oral hygiene habits if their parents are not knowledgeable about caries and how to prevent this most commonly occurring childhood disease (figure 1).

Levels of dental needs among children are similar to those of adults. The condition of a child's mouth on the initial exam is highly predictive of what to expect in the future and the type of restorative material that will be needed. The following discussion will describe several categories of currently available restorative materials in addition to the types of patients those materials would be appropriate for as preventive measures.

Figure 1: This is one of my grandchildren. I have followed her oral care since her birth. She has had systemic and topical fluoride, sealants, and good home care. She has lived in an area with a nonfluoridated water supply all of her life and is now a 30-year-old registered nurse. Unlike many children, she has had only one minor class I lesion. Such a situation is possible but not probable without the use of fluoride-containing procedures, a reasonably healthy diet, and good oral hygiene.

RESTORATIVE MATERIAL ALTERNATIVES FOR PATIENTS

My personal preferences will be reflected in the following prioritized list of restorative alternatives and may not match the order you prefer. Note that the older conventional materials are listed near the bottom.

1. ***New* conventional glass ionomers** (GI) have easier working characteristics, greater strength, and faster set than previous GI restoratives. Examples: Equia Forte or Equia Forte HT (GC America), Ionostar Plus (Voco), Ketac Universal (3M).
2. **Resin-modified glass ionomers** (RMGI). Examples:

GORDON J. CHRISTENSEN

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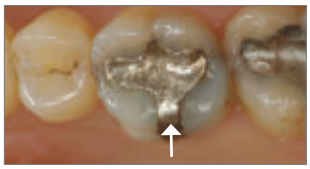
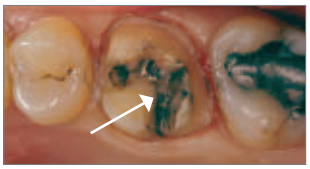


Painful Tooth with Need to Remove Old Silver Filling and Determine Nature of the Crack



Apparently Deep Crack into Internal Dentin

What is more difficult to treatment plan than a painless or painful cracked tooth? Is the crack superficial in the enamel only, into the dentin, ending subgingival or supragingival, into the pulp, or splitting the tooth? Most dentists treat cracked teeth on a routine basis, but proper diagnosis and treatment planning are difficult. Based on his many years of prosthodontic practice, Gordon answers the following: how to prevent cracked teeth, when to let a painless cracked tooth go without restoration, when and how to restore a cracked tooth, when to do endodontics on a cracked tooth, what are the best and most predictable restorations for cracked teeth, when to extract a cracked tooth, expectations for patients when restoring cracked teeth, and more. You, your staff, and your patients will benefit from the logical, practical, proven information provided in this video.

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Gordon J. Christensen, DDS, MSD, PhD
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Thirty percent of a typical general practice's gross revenue is from crowns, and 90% of those crowns are single units. After doing tens of thousands of crowns himself, Gordon has developed a conventional technique that is fast and nearly foolproof for this "bread and butter" part of dentistry. Shown on a live patient, viewers see close-up clinical techniques, including: shade selection; anesthetic; tooth preparation; tissue management; digital and conventional impressions; cementation; and more. After viewing this video, you will be able to predictably and rapidly accomplish the single crown procedure. You need a foolproof conventional procedure for many of your crowns! This video will help!

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Fuji Automix LC (GC America), Ketac Nano (3M), Riva LC HV (Southern Dental Industries).

3. **Options 1 or 2 above with a layer of resin-based composite** of your choice on the occlusal surface.
4. **Resin-based composite** of your choice.
5. **Compomer**. Example: Dyract Extra (Dentsply Sirona).
6. **Amalgam** of your choice.
7. **Zirconia-prefabricated crown**. Example: NuSmile ZR Zirconia (NuSmile).
8. **Stainless steel crowns**. Examples: 3M, 3S Stainless Steel Kit (Acero Crowns).

Let's discuss how to select the best type of restorative material based on the patient's age and degree of caries activity.

MINIMAL CARIES ACTIVITY AND SMALL TOOTH PREPARATIONS

New GI materials (no. 1) have been recommended by the respective companies for *small* class I and II situations as well as class III and V situations. These materials are far easier to use than previous generations of conventional GIs. They attain a putty consistency soon after being mixed, and they lack the sticky characteristics of the older products. Their major advantages are extremely high fluoride release and actual seal of the cavity preparation margins. These desirable characteristics have been proven by sophisticated chemical analysis of fluoride release and electron microscope evaluation of in vivo specimens of restorations up to three years in service (Clinicians Report Foundation, TRAC division). This is the first category of restorative materials to receive such achievements in the long history of research by Clinicians Report Foundation.

The undesirable characteristics of these materials are more wear, less strength, and less adequate esthetic characteristics than the current generation of resin-based composites. These material characteristics limit their use in moderate-to-large restorations, but *do not* limit their use on the internal portions of moderate-to-large restorations.

RMGI (no. 2) is also a good alternative for these patients. However, the current materials are somewhat sticky and do not have the same seal of the prep or high fluoride release as the conventional GIs. An advantage of these materials is the light-cure capability of the approximately 20% resin component of the RMGI material, facilitating somewhat easier finishing.

Resin-based composite (no. 4) is a choice if you estimate the caries activity is minimal. However, composite has *no cariostatic activity* and the margins of *all* composite restorations have been shown by scanning electron microscope to be wide open, despite being undetectable to the naked eye.

Compomer (no. 5) is used in some countries for pediatric patients. It is a puttylike hydrophilic resin with easy light-curing characteristics and slight fluoride release. It has the similar negative characteristics of resin-based composites.

Amalgam (no. 6) is still used by many dentists worldwide, but numerous public health organizations have suggested not using it in children or pregnant women, and some countries have even banned it. After decades of personal research, my personal opinion is that the allegations about problems with amalgam are exaggerated. The choice of whether to use amalgam is up to you, but it will probably eventually be banned by most countries.

MODERATE CARIES ACTIVITY AND MODERATE-TO-LARGE TOOTH PREPARATIONS

I suggest no. 3. Restoring this category of patient requires careful prediction of the apparent expected caries activity, observable oral hygiene, and parent supervision. Preventive materials are highly encouraged. I suggest the following procedure.

Disinfect the prep with 5% glutaraldehyde 35% HEMA (Gluma or MicroPrime) in two one-minute applications. Place **GI** (no. 1) in the prep nearly to the margin areas, letting the material set somewhat. Acid-etch it and the enamel, wash, place a bonding agent of your choice, and follow with placement of the composite of your choice.

This alternative offers seal of the internal area of the prep, high fluoride release for prevention, composite wear resistance, color, and strength on the occlusal surface. It satisfies most of the restorative needs for these types of patients.

RMGI (no. 2) can be substituted for the GI, but with fewer desirable or preventive characteristics.

HIGH CARIES ACTIVITY AND LARGE TOOTH PREPARATIONS

Two crown choices are available: stainless steel or zirconia. Stainless steel crowns are the easiest to use, but many parents prefer zirconia crowns for esthetics.

RMGI cement is highly advised for either type of crown. Examples: RelyX Luting (3M), FujiCem Evolve (GC America).

SUMMARY

Unfortunately, the most commonly occurring childhood disease—dental caries—is still present. This self-inflicted disease is almost totally preventable, but it is highly unlikely that it will ever happen with the current preventive techniques available and the lack of patient compliance. Improved preventive materials are now available, primarily the *new* generation of glass ionomer cements. These materials are changing restorative procedures for children and should be considered over previously used concepts. **DE**

Author's note: The following educational materials from Practical Clinical Courses offer further resources on this topic for you and your staff.

One-hour videos:

- The NEW Glass Ionomers Really Work (Item V3514)
- Treating the Aging Population—A Frustrating Challenge (Item V4777)

Two-day hands-on courses:

- Restorative Dentistry 1—Restorative/Esthetic/Preventive with Dr. Gordon Christensen
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Joshua Austin, DDS, MAGD

EnviroKlenz Air System Plus

The COVID-19 pandemic has made me think about a lot of things that were never on my mind before—such as how many times I touch my face every day, even when trying not to, or what things get touched around the office that then need to be disinfected. Something else I am now forced to think about is the cleanliness of the air in my operatories. So-called "experts" in the field of infection control have suggested that all dental operatories should have negative pressure installed. This is not a feasible solution. The cost to do so would be immense and even impossible in many situations. The answer to the problem of dental operatory air cleanliness will have to come in a reasonable package. EnviroKlenz Air System Plus is just that.

Image courtesy of EnviroKlenz

The Air System Plus is a small, self-contained, wheeled unit designed to go into dental operatories to capture and destroy toxic gasses, particulates, allergens, bacteria, and viruses. One EnviroKlenz Air System Plus can cover 1,000 square feet. That's around the size of the average dental operatory. The system runs pretty quietly too . . . between 55 and 60 decibels, depending on the mode. Since this is around the level of a quiet conversation at home, it certainly will not sound like an industrial fan running in every room.

The key to the EnviroKlenz Air System Plus is how fast it turns over the air in an operatory. When used in conjunction with an HVAC system, the operatory air will be turned over around 17 times an hour. In other words, that is once every 3 minutes and 52 seconds. In just under 18 minutes, all the air in a 1,000-cubic-foot operatory can be 99.9% disinfected. Those are impressive numbers for a portable machine that doesn't cost an arm and a leg!

Inside the EnviroKlenz Air System Plus, you will find a HEPA filter that will trap bacteria, viruses, and additional larger particulates larger than .3 microns. Fortunately, SARS-CoV-2 falls in that range. Once filtered, the Air System Plus' germicidal irradiation chamber neutralizes all that stuff it filters out. In addition, the EnviroKlenz air cartridge filters out particulates and odors, giving us benefits beyond COVID-19 safety.

Practicality and performance set apart the EnviroKlenz Air System Plus. We can simply and efficiently make our offices safe for us, our team, and our patients and do so without investing thousands of dollars in ridiculous tasks such as negative pressure operatories. Simply put an Air System Plus in every operatory and breathe easy! Base hit up the middle for EnviroKlenz.

Image courtesy of Ultradent

Jiffy Natural Universal Composite System by Ultradent

On a veneer case or a full-arch preparation day, things are always wild in my office. I always get there earlier than I would normally. There are a lot of supplies and instruments we use on those cases that we don't use every day, so I like to make sure that we are set up for success.

Involved, complicated cases mean involved, complicated armamentarium. That's not what I want for routine everyday procedures. For those, I want simple and effective. That's what Jiffy Natural Universal Composite System by Ultradent can provide.

Jiffy Natural Universal Composite System is a finishing and polishing kit for resin composites. Resin composites are the most frequently performed restorative dentistry procedure in our industry. Most of us are placing resin composite every day, multiple times a day. I want my assistants to be able to grab one kit that has everything I need to finish and polish a composite, and that's what Jiffy Natural does.

The Jiffy Natural Universal Composite System comes in two different varieties. One has red-stripe fine diamond finishing burs. The other has 12 fluted carbide finishing burs. The choice here will be personal preference. I prefer 12 fluted carbide finishing burs for posterior restorations and red-stripe fine diamond finishing burs for anteriors. Because of this, we stock both kits. You might prefer one over the other, eliminating the need to stock both. Individual mileage may vary!

Each kit comes with four different shaped finishing burs and a two-step polishing system. The Jiffy Universal Kit with the diamond option comes with a 6088 egg-shaped finishing bur, a 6099 fine-needle bur, a 6087 fine-flame bur, and a 4248 bur for interproximal adjusting. The carbide option comes with a 4246 egg-shaped bur, a 6098 needle bur, and a 7901 flame-shaped bur. The carbide kit also comes with a 4248 bur for interproximal adjusting.

For polishing, each kit comes with the same two-step system, yellow and white Jiffy Natural polishers. Each kit also comes with yellow and white Jiffy Natural wheels and cups. These should be used around 5000 and 8000 rpm in a latch-type handpiece. I find the wheels to be very useful on many surfaces, especially around class II restorations. The wheels do a great job of polishing around a resin composite marginal ridge without flattening it and squaring it off. The cups work great on cusps, flat surfaces, and cervical areas near the gingiva. Together, this two-step system can put a glass-like polish on a resin restoration in less than two minutes. That is exactly what I need and want on a restoration like this.

Jiffy Natural Universal Composite System makes finishing and polishing resin composite fast and easy. Opposite field base hit to right field for Jiffy Natural!

Image courtesy of Vista Apex

Seamfree wetting resin and lubricant by Vista Apex

Last week, I got an email from my dental school saying that my favorite instructor and one of my mentors is retiring. Just like everything else during the pandemic, retiring during COVID sucks. It means no retirement party. No chance to tell the great Dr. James Summitt in person what he meant to me and my career. Instead, there is some virtual scrapbook where all of his former students and colleagues can give him their well wishes.

For some reason, this has been one of the things that has made me most melancholy during the pandemic. Dr. Jim Summitt changed my career for the better. With no ego or overinflated self-importance, he gave all of himself for more than 30 years in an effort to teach operative dentistry to the highest level possible. Along with Drs. Black, Vernetti, and Sturdevent, Summitt is one of the greatest operative dentists of all time. I will forever cherish the things he taught me.

Two of the principles I learned from Dr. Summitt are things I, embarrassingly, do not do anymore. One of those is rebonding, or marginal sealing with unfilled resin after a composite is finished. The other is use of a wetting resin. I can't explain why I don't do those anymore, other than laziness. But it shouldn't be an excuse anymore because of Seamfree.

Seamfree is a Vista Apex product that can help you sculpt composite all while being a built-in rebond resin. Simply put, Seamfree is a wetting resin that has been designed to make the delivery of composite materials easier and more consistent. It eliminates the tackiness that makes placing these restorations more difficult. It does not build any film thickness or cause a visible layer between composite layers. It can be used during any type of restoration and is compatible with all methacrylate materials, making it almost universally usable.

Simply express a little Seamfree onto your glove or the patient napkin. Dip your instrument in it and then manipulate the composite as you normally would. The Seamfree will allow your instrument to work and sculpt the material effortlessly. Seamfree co-cures with your composite, ostensibly rebonding as you work.

Seamfree saves me time. I get better and more accurate anatomy sculpting when I use Seamfree. That saves me time on finishing and occlusal adjusting. Seamfree saves me some frustration as well. I use a lot of a fairly waxy bulk-fill resin composite in the posterior. With Seamfree, the composite handles so much better. Seamfree makes my restorations better, and I feel like I am making Dr. Summitt happy every time I use it. Double to deep left field for Seamfree! DE

Howard S. Glazer, DDS, FAGD

I HAVE IT— YOU WANT IT!

Images courtesy of Voco

Profluorid Varnish and CleanJoy

Is 2 = 1 a valid equation? It is if we are talking about Voco's Profluorid Varnish that provides fluoride release and acts to desensitize the teeth. Profluorid Varnish is ideal for treating hypersensitive teeth and, in particular, sensitive root surfaces.

As a big fan of single-dose applications, I find that their dispensing system is easy to use and the varnish does not drip when being applied. Additionally, it sets in seconds upon contact with saliva. I also appreciate the fact that it is relatively transparent when placed on the dentition—there is no white or yellow appearance to the varnish. Patients also like that it contains xylitol and is available in six flavors to combat any aftertaste: melon, caramel, cherry, mint, bubblegum, and cola lime. Profluorid Varnish contains 50 mg of NaF (the equivalent of approximately 22,600 ppm) and the manufacturer's data seems to show that there is significant fluoride release after 40 minutes over other leading brands. As with all varnishes, patients should be advised to avoid brushing, flossing, eating hard foods, and drinking hot beverages and/or alcohol for four hours following application. With nut allergies increasingly prevalent, it is comforting to know that this material is manufactured in a nut-free facility.

Prior to application, I use Voco's CleanJoy, a prophy paste that is available in coarse, medium, or fine grits. The coarse and medium grits easily remove plaque and stains, and patients like the pleasant taste. CleanJoy contains fluoride and xylitol, and is paraben, nut, and gluten free. It is available in single-use "ring" cups in the following flavors: cherry, caramel, and mint.

I HAVE IT— YOU WANT IT!

Image courtesy of Strauss Diamond Instruments

Occlusinator Sculpting Burs

Demand from patients for posterior composites is on the rise, and resin manufacturers have been busy releasing new and/or improved posterior composite resin materials. These new materials on the whole are quite durable and highly esthetic. The beauty of these restorations lies in the details, which pertain not only to the composition and characteristics of the material, but to the esthetic effect created by the level of detail in the occlusal anatomy.

Occlusinator Sculpting Burs, developed by Patrick L. Roetzer, DDS, will allow you to quickly and safely create natural-looking anatomy on the occlusal surface of all your posterior restorations. These burs have been designed with a safe edge that allows for maximum control; you can't overcarve due to a built-in limit stop. Simply drop and drag the acorn bur to create natural-looking pits and fissures. The five-bur kit comes with three acorn-shaped sculpting burs (50 micron diamonds), and two Christmas tree-shaped finishing burs (15 microns). I was amazed at how fast I could complete the occlusal anatomy and move on to finishing by simply placing the safe zone of the finishing bur on enamel inclines. The entire bur block is autoclavable and a must for posterior composite resin tray setups. DE

GUIDE TO TELEDENTISTRY — *Continued from page 39*

If a dental professional has to stay home to quarantine after a spouse or family member becomes ill, dental appointments can still continue with the use of teledentistry. Hygienists can gather all of the necessary information required for dentists to review from their home offices. They can then relay results to patients during virtual appointments. Dentists can even be in the room virtually in real-time with the patient and hygienist if any exams require it.

PROTECTING PATIENTS' HEALTH

Government officials may have deemed dentistry a nonessential service during previous COVID-19 shutdowns, but this was an oversight regarding the importance of dental health and its effect on overall health. However, should further waves of the virus occur, a total shutdown is not necessary if dental practices have the correct teledentistry tools and protocols in place.

Reducing chair time and maintaining social distancing can be easier said than done in a profession that requires close personal contact. But with the advancements in technology, this should not create an immovable barrier between dental care and the pandemic. Teledentistry can be the saving grace for oral health everywhere. Since it's going to be awhile until things return to "normal," teledentistry can put safe oral care at the forefront of patients' minds so that any issues can be prevented or assessed with ease. The tools are there; they just need to be used. **DE**

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LEARNING FROM THE BEST — *Continued from page 27*

Top 10% performing practices have a patient base two-to-three times larger than most other practices. This higher level of patient longevity is due to an attrition rate that amounts to approximately half that of most other practices.

Top 10% performing practices do not spend a lot on marketing programs. They typically focus on internal marketing and customer service to maintain a steady stream of referrals.

Top 10% dentists do not typically have superstar capabilities. There are exceptions, but most top dentists simply use trial and error, education, and advisors to help them move in the desired direction.

The principles examined in this series can help any practice improve performance and production; it is merely a matter of learning from what the best are doing. Hopefully you're leaving these articles with a few takeaways to help build your own top 10% dental practice. **DE**

ROGER P. LEVIN, DDS, is the CEO and founder of Levin Group, a leading practice management consulting firm that has worked with over 30,000 practices to increase production. A recognized expert on dental practice management and marketing, he has written 67 books and over 4,000 articles and regularly presents seminars in the US and around the world. To contact Dr. Levin or to join the 40,000 dental professionals who receive his *Practice Production Tip of the Day*, visit levingroup.com or email rlevin@levingroup.com.

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Dental handpieces: Maintenance, repair, and infection control, 3rd edition

A peer-reviewed course by Tija Hunter, CDA, EFDA

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EXPIRATION DATE:	JANUARY 2024

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Dental handpieces: Maintenance, repair, and infection control, 3rd edition

ABSTRACT

Dental handpieces have evolved significantly through the years.[1] While traditional air-driven handpieces are still preferred by many practitioners, electric handpieces are preferred by many due to the constant torque, reduced noise, and improvements in smoothness of final preparations.[2] Regardless of which handpiece is used in practice, proper maintenance and care will elongate the lifespan of the equipment and promote improved functionality. Understanding how to clean and maintain these handpieces and their components properly will help the clinician achieve optimal results. Moreover, it is essential for quality and turnaround times to know when to replace or rebuild handpiece turbines and who to send the handpiece to for repairs. The purpose of this article is to describe protocols for handpiece maintenance, including disinfection, sterilization, and repair.

EDUCATIONAL OBJECTIVES

Upon completion of this educational activity, the participant will be able to:

1. Implement proper cleaning and sterilization techniques
2. Provide proper lubrication of each handpiece and its components
3. Avoid common mistakes
4. Provide proper care for a fiber-optic or LED lens
5. Demonstrate proper sterilization techniques for various handpieces
6. Discuss handpiece turbines and the factors to consider when repair or replacement is necessary

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ENDEAVOR BUSINESS MEDIA

THE EVOLUTION OF DENTAL HANDPIECES

We have evidence that dentistry was practiced as early as 7000 BC. A tooth dated to be 9,000 years old shows signs that a dental "drill" was used. The history of dental handpieces has evolved over the last 150 years. In 1871, James B. Morrison developed and patented a pedal-powered drill, revolutionizing the dental handpiece world. Also in 1871, an American, George F. Green, received a patent for the first electric "dental engine" with a self-contained motor and handpiece.[3]

Early dental drills were heavy and very slow, typically 3,000 revolutions per minute (rpm). Procedures took a long time to complete and were uncomfortable for the patient. They were also straight, making them cumbersome to use. In the 1940s, an air-driven handpiece, which used air to rotate a cutting bur, was developed by John Patrick Walsh of New Zealand. This handpiece incorporated a contra-angle design, making it easier to position in the mouth.

By the 1950s, air-turbine handpieces were introduced in America by Dr. John Borden, who improved on Walsh's design. This high-speed, air-driven, contra-angle handpiece—called the Airotor—could reach speeds up to 300,000 rpm and launched a new era in high-speed dentistry. Although they have evolved, air-driven turbine handpieces are still most commonly used today. These modern-day marvels can produce speeds unthought of 100 years ago. Today, a slow-speed handpiece can typically operate from 20,000 to 40,000 rpm; high-speed electric handpieces typically at 200,000 rpm; and air-turbine handpieces at more than 400,000 rpm (~6,600 revolutions per second). The average preferred range is 180,000 to 330,000 rpm. Handpieces now reduce the time it takes to perform a procedure, cause less stress and trauma to the tooth, and provide greater comfort to the patient and better ergonomics for the clinician.[4]

AIR-DRIVEN, HIGH-SPEED HANDPIECE MAINTENANCE

High-speed handpieces are an essential part of any dental practice. The use, care, and proper maintenance are crucial to preserving their lifespan. Proper cleaning and sterilization will keep handpieces running longer and prevent the spread of infectious diseases. To prevent voiding warrantees, adhere to the recommendations from the manufacturer regarding disinfection and sterilization protocols. The purpose of internal handpiece maintenance is to dissolve and remove dirt, debris, and contaminated oils, leaving clean oil behind for lubrication. The lubrication of any handpiece is essential to its function. When these procedures are done correctly and consistently, the lifespan of a handpiece can be extended.[5]

CONSIDERATIONS WHEN SELECTING HANDPIECES

When selecting handpieces, the design of the handpiece can facilitate improved efficacy of disinfection. Design and maintenance variations exist between handpieces. Some factors to consider include:

1. Is it autoclavable?
2. Does it have a sleek, smooth design? Less detail on the shell of the handpiece will help prevent the buildup of debris.
3. Can the finish on the shell hold up under long-term sterilization? Titanium withstands chemicals and the sterilization process better than chrome plate.

CLEANING AND LUBRICATING

According to the American National Standards Institute (ANSI), ISO 7494-2 requires dental units to include an antiretraction valve on water lines. The Centers for Disease Control and Prevention (CDC) guidelines call for flushing water through the handpiece in the operatory for two minutes in the morning, and 20-30 seconds between patients, to remove potential contaminants from the internal waterline after each use.[6] Antiretraction valves may become compromised by bioburden accumulation, and this is a critical step in properly maintaining waterlines.[7]

Once in the sterilization area, remove the bur and scrub the handpiece under running water with a sponge to remove external debris. Lubrication of dental handpieces prevents clogging of internal debris and increases the functional lifespan.[8] While following the recommendations of the manufacturer is suggested, lubrication can be successfully achieved using handpiece maintenance stations. Handpiece maintenance stations have become widely used and have gained popularity. They allow the handpiece to be housed in a unit with a cover while running the handpiece to prevent lubricant from expelling on the operator's hands.

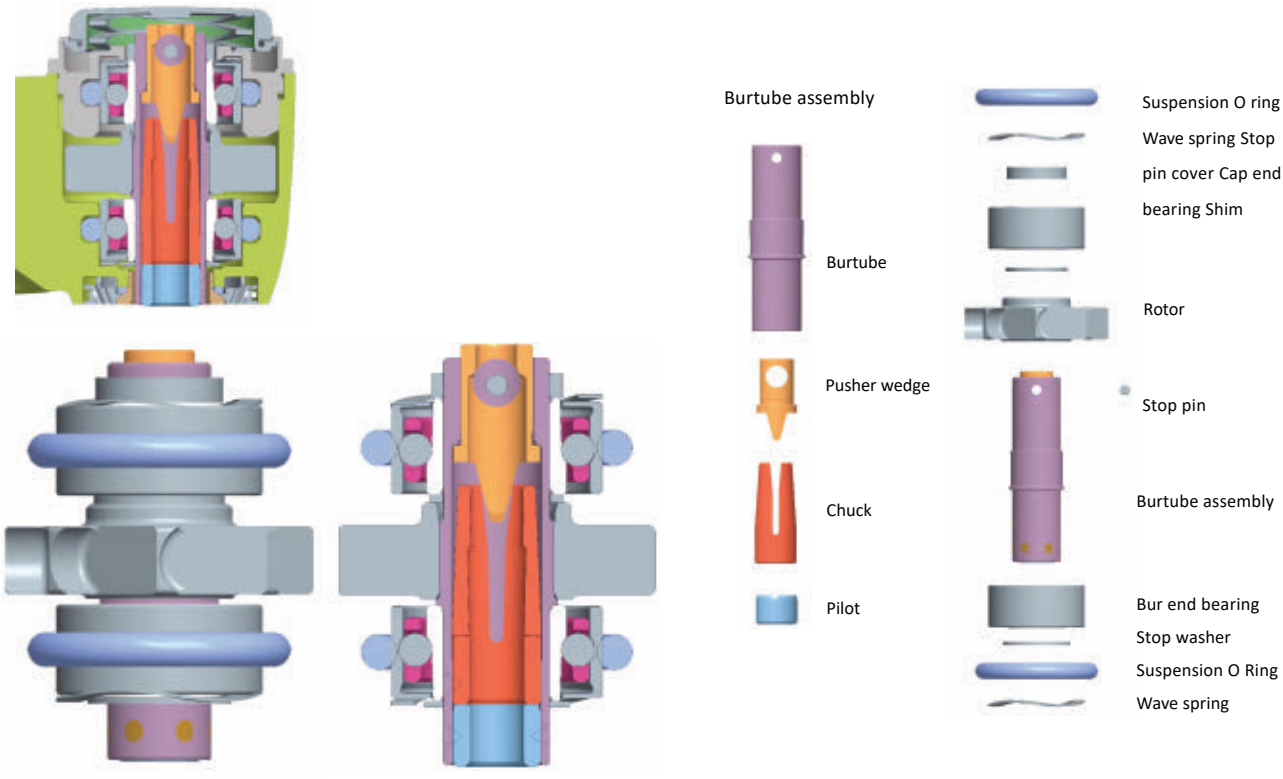
There are two types of handpiece stations. The first system calls for the operator to clean and lubricate the handpiece with the manufacturer's recommended aerosol maintenance spray for one second. If a large amount of debris is expelled from the handpiece, the aerosol spray is repeated. The second type of system doesn't require lubrication before being placed on the station. When ready, the handpiece will be placed onto the station and turned on. The station applies cleaner and lubricant. It then runs the handpiece for at least 20 seconds to purge all excess debris and oil. Running the handpiece is an important part of the process as it clears all debris before being autoclaved. Removal of excess lubricant is important, as residual lubricant can impede sterilization[9]. Excess lubricant is removed from the outside of the handpiece with a clean towel. There are many commercially available lubricants; some are synthetic, some indicate they are a cleaner and lubricant in one, and some use a separate cleaner and oil.

An overlooked but easily performed maintenance procedure is the cleaning of the chuck. Once a week, a few drops of handpiece lubricant or maintenance spray are placed into the chuck opening on the high-speed handpiece. An interproximal brush or microbrush can be placed into the handpiece chuck opening to remove debris. This will dislodge any residue, ensuring proper retention of the dental bur. Following these steps will help extend the life of your handpiece and save on repair costs. Expressing all the lubricant from the handpiece is imperative. If this step isn't followed, oils can be introduced onto the tooth prep and may reduce bond strength of resin-based composite.[10]

STERILIZATION

Once the handpiece is cleaned and lubricated, sterilization must follow. Failing to

FIGURE 1: Stylus ATC STD turbine



Cross-sectional view of turbine

sterilize the handpiece can result in a significant source of cross contamination. In 2008, the CDC, in its Guidelines for Disinfection and Sterilization in Healthcare Facilities, indicated that "handpieces can be contaminated internally with patient material and should be heat sterilized after each patient. Handpieces that cannot be heat sterilized should not be used."

Proper steps in sterilization must be performed after every patient. Use of a steam heat autoclave or chemical vapor sterilizer is required, at a maximum temperature of 135 degrees C or 275 degrees F per sterilizer manufacturer's recommendations. When using a chemical sterilizer, the handpiece must be completely dry. Handpieces must be sterilized to the validated time and temperature parameters per the instructions for use. Make sure the handpiece is dry before pouching so only deionized water enters the autoclave. Make sure the drying cycle is complete as excess water will cause oxidation of the handpiece in the pouch, resulting in corrosion. If using a plastic/paper bag, be sure to follow the sterilizer's instructions for proper placement in the chamber to ensure complete sterilization.

Steam heat autoclave is the most widely recommended form of sterilization.[11] Autoclaves should be tested weekly with a biologic indicator to ensure that proper sterilization is achieved with each cycle. A properly working autoclave will ensure all of your instruments are free of infectious and contaminated material. The autoclave should always run through the complete cycle, including dry cycle. Never use a handpiece that has not cooled off. Running a handpiece under cool water can cause the housing and internal parts to crack or warp. It is important to check the handpiece coupler on the dental hose as well, at least once a week. O-rings should all be present and in good condition. O-rings can be obtained from the manufacturer and replaced as needed. Couplers need to be lubricated and cleaned using the lubricant and a towel or gauze pad. The towel or gauze should be moistened with the lubricant/cleaner and then wiped in a circular motion to clean debris and rehydrate the O-rings, making sure the bulb cap stays snug.

12 TIPS TO EXTEND THE LIFE OF YOUR HANDPIECE AND THE MOST COMMON MISTAKES

Handpiece life varies on a number of factors, including maintenance. Here are ways to extend the life of a handpiece through proper maintenance, as well as common mistakes.

1. A handpiece should never be wiped down with a chemical disinfectant or alcohol. When heated, the chemicals may react with the metals, causing a buildup of rust and corrosion. If left unattended, they will shorten the lifespan of the instrument. Use only a chloride-free surfactant when cleaning the handpiece.
2. Apply a sufficient amount of cleaner/lubricant. The cleaner/lubricant should come out of the head of the handpiece to ensure all bearings have been thoroughly covered.
3. Make sure you are lubricating the drive

air line of fixed-back handpieces. Only the drive air hole goes to the turbine. Lubricating the wrong hole will result in improper turbine lubrication.

4. Use the correct cleaner/lubricant. Always use the manufacturer's recommended lubricant with their respective nozzles and expelling maintenance couplers/adapters.
5. Properly clean the chuck to remove any excess debris at least once a week to maintain the mechanism that holds the bur. This helps ensure the bur does not come out during a procedure.
6. Never place the handpiece in the ultrasonic cleaner, unless the manufacturer has a recommended product. The handpiece should never be immersed in any liquid as damage may occur.
7. Properly clean the fiber-optic/LED lens. After use, it is important to run the lens under water and gently wipe with a sponge to remove all outer debris. Failure to do this will result in a buildup on the lens and poor light quality.
8. Unless the handpiece utilizes a wrench-activated chuck, remove the bur when cleaning, lubricating, and expelling. Leaving the bur in the chuck while lubricating prevents the lubricant from flowing where it needs to go to ensure proper coverage of the bearings. Always remove all burs prior to sterilization. In the autoclave, the springs in the chuck are compressed. The heat will cause these compressed springs to weaken under tension. Debris can also accumulate around the chuck, causing it to corrode and shorten the life of the instrument.
9. Expel excess lubricant and debris by running the handpiece after lubricating and before autoclaving. This is important. If the handpiece isn't run to expel the excess debris and lubricant, it can cause a gumming effect around the turbine and the debris will be essentially baked in. Many times, this will cause the expulsion of excess lubricant when used for the first time after autoclaving.
10. Let the handpiece cool down. Never run the handpiece under cold water to quickly cool it off. This damages the turbine.
11. It is important to follow the manufacturer's guidelines on air pressure. Excessive air pressure could cause damage to the turbine bearings unless the handpiece is designed to be run at higher air pressures.
12. Always maintain a properly working autoclave.

ELECTRIC HANDPIECES

Electric handpieces have gained popularity for their quiet presence and can be used at the chair or in the lab. Maintenance of electric motors is limited, and brushed motors are not autoclavable and should not be used according to the FDA. The newest electric motors on the market are brushless. Their design is a contactless magnet system, which keeps the motor quiet and smooth. They have very low vibration and, in most cases, there is no maintenance. In many models, lubricating the electric handpiece attachments is done the same as the traditional air-driven style. Sterilization for each handpiece varies.

It is important to research the different handpieces before purchase to make sure you are acquiring the handpiece that best fits your needs. Make sure to follow proper manufacturer's maintenance procedures to the letter so as to not void the warranty.

When an electric handpiece begins to show signs that the mechanics are slowing down, stop using it immediately. Continued use of the handpiece can result in more costly repairs. The FDA has received reports of severe burns caused by pneumatic and electric handpieces.[12] In most of these cases, burns were caused by overheating of various handpiece components. After research, it was found that overheating was due to failure to service and maintain the handpieces in accordance with the manufacturer's recommendations. When electric handpiece systems aren't well maintained, the handpiece head can overheat very rapidly. As a safety precaution, it is necessary to maintain the handpiece properly. Failure to properly clean and maintain the electric handpiece will also void its warranty.

SLOW- OR LOW-SPEED MOTOR MAINTENANCE

Slow-speed motors must be sterilized between patients. Maintenance of the low-speed motor is similar to maintenance of other fixed-back handpieces. A spray or a couple of drops of liquid oil in the drive air line are necessary. Additionally, oil can be applied as a preventive measure to forward/reverse valves, shift rings, and sheath attachment points. Run the motor to distribute the oil. Wipe away the excess oil with a paper towel. Periodically disassembling the motor and removing buildup and debris will ensure longer life. Straight attachments do not require lubrication. Once external debris is removed from a straight handpiece, it can be placed in a bag and prepared for sterilization. Latch type or right-angle attachments can be maintained similarly; place a few drops of lubricant and run for at least 20 seconds to distribute the oils before autoclaving.

HANDPIECE REPAIR[13]

Fiber-optic light—The fiber-optic light requires very little attention. A gentle scrubbing with a sponge will keep the lens free of debris. Replacement of the light is easily accomplished. Replacement bulbs are commonly sold in sets of two and some require a dental explorer to remove. A bulb is located in the coupler itself while some are in the tubing. Place the explorer in the tiny hole located just under the bulb and gently lift up; the bulb should easily slide out of the socket. Simply place a new bulb back in the socket the same way, securing it with an explorer.

Turbines—One of the most common repairs in the high-speed handpiece is the replacement of the turbine. A turbine is the only moving part and operates at speeds beyond 400,000 rpm. Due to this high speed and the effects of sterilization, a turbine can show signs of wearing and eventually need replacement. Proper cleaning and lubrication will extend the life, but it's inevitable that the turbine itself will eventually require replacement. If the turbine is described as the brain of the handpiece, the bearings are the heart. When bearings wear out, the turbine will no longer rotate, causing it to stall when placed on a tooth. It may emit a loud, high-pitched sound or vibration. Studies show it is usually the bearing retainer that fails. It is said

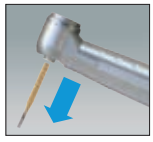
FIGURE 2: Maintenance guide

Dentsply Sirona

Midwest® Maintenance Guide

Air-Driven and Electric Handpieces/Attachments/Motors

Step 1



Flush handpiece water/air lines by running handpiece on unit with water for 20 to 30 seconds. Then remove bur using safe methods.

Step 2

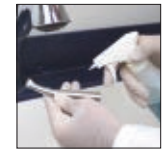
Remove air-driven handpiece, attachment and/or motor from the coupler or hose.

Or...

Remove the electric attachment from the electric motor.

Deliver to central sterilization via approved transport methods.

Step 3



Clean exterior of handpiece/attachment/motor with Midwest® Plus Cleaner (380140*) and scrub under running water using a soft sponge to remove external debris and bioburden. Pay close attention to remove debris from the fiber optic lens to prevent obstruction.

*Midwest® Plus Cleaner is a water-based, handpiece-safe surfactant.

DO NOT spray, wipe, or soak the handpiece in disinfectants or alcohol! Use only water and handpiece-safe surfactant, like Midwest® Plus handpiece cleaner. DO NOT expose handpieces to hand or dish soaps which contain chloride.

Manual Maintenance

Step 4

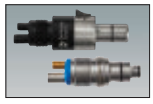
Place appropriate nozzle on Midwest® Plus Aerosol Spray (380080M). While holding can upright, insert nozzle fully into the handpiece/attachment/motor.

For fixed backend handpieces or motors, place the tip of the nozzle into drive air tube.

Cover head with paper/lint-free towel and spray for 2 full seconds. If a large amount of debris appears on the towel, repeat 2-second spray.

Step 5

Connect the handpiece/attachment/motor (without bur) to the appropriate maintenance adapter. Cover head with paper/lint-free towel and expel with air for a minimum of 30 seconds or until no more oil appears on towel.



Maintenance Adapters

A full selection of manual and Automate® maintenance adapters is available. Handpiece should fit snugly on adapter as it would a coupler to ensure best delivery of cleaner and lubricant.

Step 6

Wipe off excess lubricant with a clean paper/lint-free towel. Place the instrument in a sterilization pouch and sterilize in a steam sterilizer (both gravity and dynamic air removal sterilizers are acceptable). Refer to respective Instructions for Use for item-specific sterilization parameters.

Midwest® Automate® Maintenance

Automated Steps 4 & 5

Position handpiece/attachment/motor onto the appropriate maintenance adapter.

Close the door.

Press Start.

Proceed to Step 6 when cycle is complete.

Weekly Chuck Maintenance

Manual

Automate

Use oil dropper (380130) or Midwest Plus Aerosol spray to lubricate the handpiece/attachment chuck and the operatory coupler O-rings once per week. Automate has a dedicated port for chuck maintenance.

Perform chuck maintenance prior to lubrication process (Step 4) to ensure excess oil is expelled.

Warning!

Electric Dental Micromotors generate significantly more power than traditional air turbines and air motors. Due to this increased power and torque —worn, poorly maintained, misused, abused, or damaged handpieces can potentially generate friction-induced heat capable of causing serious burns to patients and staff. The following guidelines should be followed to ensure safe operation of electric attachment:

- Carefully follow Midwest maintenance instructions
- Use only Midwest® maintenance products
- Examine the handpiece for damage before each use
- **NEVER** use chemicals/disinfectants on handpieces
- **NEVER** cool a hot handpiece with water
- **NEVER** apply pressure to the chuck release button or attachments while the handpiece is rotating
- **NEVER** use the handpiece as a cheek or tongue retractor
- Service should only be carried out by an **AUTHORIZED** repair center using genuine Midwest® repair parts **ONLY**
- Direct all questions regarding maintenance and repair to Midwest Air Repair at 1-800-800-7202 or airrepair@dentsplysirona.com

that the "handpiece itself is just a handle to provide a means of controlling the turbine as well as serving as a conduit for air to drive the turbine and air and water to cool the surface being cut."

There are a number of ways to replace the turbine, including purchasing a new or after-market turbine and installing it in-house; sending it back to the manufacturer to be replaced; or use of a qualified repair service. Sending it back to the manufacturer will ensure the same consistency as the original. Keeping it in-house will save on turnaround time. There are several qualified repair services either locally or nationally that can get your turbine replaced and back to you in just days. Failure to have service provided by a qualified technician has a number of pitfalls, including potential use of parts made of inferior materials and lack of training of the technician, among others, which can lead to a damaged or improperly functioning handpiece. Either way, your warranty will vary from three months to two years. Be sure you follow proper procedures so as to not void the new warranty.

In-house repair—You can choose to purchase a new turbine from the handpiece manufacturer and have one of the dental team install it. There is help available from a couple of different sources. This method ensures compliance with the FDA medical device rules. The handpiece manufacturer sales representative is very knowledgeable and can train a team member on proper installation. Dealer service repairmen are also willing to show the team how to install a turbine. If choosing this option, it is important to recognize if the dental team isn't comfortable performing the replacement; then the handpiece should be sent out. Some of the more sophisticated turbines may be harder to replace, and you may risk damaging the handpiece, resulting in more costly repairs and, of course, longer downtime with the handpiece.

Sending your handpiece out for repairs—Two options exist for this choice. Sending it back to the manufacturer to have a new turbine installed will guarantee the quality and the same consistency you had when the handpiece was new. The warranty is usually best with this option and ensures efficacy and safety as these parts are FDA approved. One drawback is downtime since this option usually takes a little longer to return to the office.

With handpiece maintenance costs rising due to routine sterilization and/or improper lubrication, dental professionals have turned to independent repair technicians to extend the life of the handpiece by rebuilding instead of replacing the turbine. Although there is no industry standard for certification of handpiece repair, there are technicians who have been certified by manufacturers in the repair of their particular handpieces. It is advisable to request the credentials of a certified technician. It is worth noting that none of the manufacturers certify rebuilt handpieces, and it may violate the handpiece's instructions for use as an FDA-regulated medical device. When seeking out a repair technician, ask if they have attended any manufacturer courses and how long they have been repairing handpieces. The big disadvantage with this option is that if you do not have a qualified technician, turnaround time could be longer and quality of repair may vary. This option usually produces fast turnaround time, reduced cost, and a shorter warranty than the manufacturer provides.

An after-market turbine is one that is not produced by the manufacturer and can cost less and may not be FDA approved. Sometimes the cliché "You get what you pay for" applies to this option as these turbines can be inconsistent in quality and have a much shorter warranty, if any at all. A poor quality aftermarket product can result in costlier and more frequent repairs. It is important to know your source and use a trusted technician. It is not only important to trust your source; you must also be aware of what goes into the handpiece.[13]

RESEARCH YOUR OPTIONS

Research your options, and evaluate the impact of the decision on how the handpiece performs during the procedure in a patient's mouth. A satisfied patient refers and returns. The repair decision must be evaluated in the context of impact on the teeth and safety of the patient. Sometimes it is not necessary to replace the entire turbine, but to rebuild it by replacing only certain components such as the bearings and O-rings. It is important to ensure that the manufacturer's tolerance standards are met. A properly trained technician can evaluate the components to determine what needs to be replaced. Rebuilding a turbine consists of removing the broken bearings, making sure not to damage the rest of the assembly. New bearings are then pressed onto the spindle chuck assembly. The suspension O-rings are essential to handpiece performance and are replaced as well. The handpiece should be properly sterilized before it is sent.

There is much debate surrounding rebuilding a handpiece versus replacing it. The "teeth" on the impeller wear down from use and sterilization. If the turbine is rebuilt, only replacing the bearings and O-rings, the lifespan of the impeller may be questionable. In addition, the handpiece chuck has a finite life. A turbine that has been rebuilt might not be able to retain the bur with the same force as a replacement turbine with all new components. This would result in bur walk-out or bur ejection during handpiece operation. Again, a qualified technician will be able to assess and recommend what is best for the life of the turbine. [14]

CONCLUSION

Various types of handpieces have revolutionized dentistry during the last 100 years. They are an essential part of any dental practice, and dentists and expanded function dental assistants rely on them daily for optimal performance. Although they are used in every procedure, little is known about them from the standpoint of the dental team. Understanding how they work and how to properly clean and lubricate them will extend their life and keep repair costs down. When it does come time to repair your handpiece, be sure to be aware of what is best and safest for the patient.

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NOTES

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QUESTIONS

1. Evidence indicates that dentistry was practiced as early as what year?
A. 6000 BC
B. 6200 BC
C. 7000 BC
D. 7200 BC

2. A tooth demonstrating signs of a dental "drill" being used on it was how many years old?
A. 6000
B. 7000
C. 8000
D. 9000

3. Which of the following inventors received a patent for the first electric "dental engine" in 1871?
A. James B. Morrison
B. John Patrick Walsh
C. George F. Green
D. Dr. John Borden

4. In what year did James B. Morrison develop and patent the first pedal powered "drill"?
A. 1861
B. 1871
C. 1800
D. 1950

5. In the 1940s a handpiece that used air to rotate a cutting bur was developed by:
A. John Patrick Walsh
B. Dr. John Borden
C. Dr. C. Edmund Kells
D. Henry Patrick Walsh

6. Although an air-driven high-speed handpiece can run beyond 400,000 rpm's, typically it is runs at:
A. 200,000 rpm
B. 400,000 rpm
C. Under 100,000 rpm
D. Between 180,000 and 330,000 rpm

7. Electric handpieces are typically designed to run at what speed?
A. 200,000 rpm
B. 250,000 rpm
C. 300,000 rpm
D. 350,000 rpm

8. Which of the following is not true regarding slow-speed handpieces?
A. The viscosity of the oil is different
B. Requires less maintenance
C. Does not need be sterilized
D. Straight attachments do not require lubrication

9. Proper cleaning and sterilization will help prevent which of the following?
A. Cracks in turbine
B. Infectious diseases
C. Loss of lubricant
D. Broken burs

10. After each use it is important to:
A. Autoclave the handpiece before lubricating
B. Place a clean bur in the handpiece before lubricating
C. Remove the bur, scrub the handpiece under running water
D. Wipe handpiece off with a disinfectant before lubricating

11. Which one of the following is not true regarding proper handpiece lubrication?
A. Remove bur from handpiece
B. Use manufacturer's recommended lubricant
C. Run handpiece to express excess oils
D. Replace bur in handpiece while it is being sterilized

12. Wiping down the handpiece with a chemical disinfectant is not recommended due to which of the following?
A. It is redundant if you are rinsing and autoclaving
B. The chemicals can cause a reaction when heated, resulting in corrosion
C. Disinfectants can cause a buildup
D. Chemical disinfectants should never be mixed

13. Which of the following is the most widely recommended form of sterilization?
A. Chemical vapor
B. Submersion in a cold sterile solution
C. Autoclave
D. Ethylene oxide gas

14. Which of the following must be implemented to avoid a manufacturers' warranty violation?
A. Use the manufacturer's recommended burs
B. Use the manufacturer's recommended sterilization methods
C. Use the manufacturer's recommended cleaner
D. Use the manufacturer's recommended lubricant

15. Electric handpieces have gained popularity due to which of the following?
A. Lower cost
B. Quiet presence
C. Portability
D. No sterilization required

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QUESTIONS

16. In what year did the CDC recommend that handpieces should be heat sterilized after each patient?

A. 2000
B. 2003
C. 2007
D. 2008

17. A what temperature should a handpiece be sterilized in a steam heat or chemical vapor sterilizer?

A. 123 F
B. 210 F
C. 257 F
D. 275 F

18. Why is it necessary to run biologic indicators on your autoclave weekly?

A. It is required by the CDC
B. To ensure proper sterilization is achieved with each cycle
C. Patients will want to view the results
D. It is required by OSHA

19. When using a chemical sterilizer, which of the following statements is true?

A. Excess water will allow oxidation in the chamber, resulting in corrosion
B. Excess water will trap debris in the chamber
C. Excess water will trap bacteria, making it impossible to properly sterilize
D. Excess water will dilute the chemicals used, resulting in improper sterilization

20. Which statement is true if using the handpiece while still warm?

A. It causes it to overheat
B. It will cause it to lock up
C. It will cause stress to the turbine
D. It will cause stress to the ball bearings

21. Which of the following statements is not true when caring for a handpiece?

A. Properly clean the chuck
B. Use the correct lubricant
C. Run the handpiece after lubricating and before autoclaving
D. Use the manufacturer's recommended burs

22. Which of the following is not true regarding brushed electric handpieces?

A. Must be taken apart and lubricated weekly
B. Produce a carbon dust that can build up in the motor
C. Carbon brushes can wear down and need to be replaced over time
D. Oil from the motor can mix with the dust, producing black grease

23. The FDA has received reports that burns have been caused by?

A. Slow-speed handpieces
B. High-speed handpieces
C. Hygiene handpieces
D. Electric handpieces

24. The only moving part of a high-speed handpiece is the:

A. Sheath
B. O-rings
C. Turbine
D. End cap

25. Which of the following components are not found in a turbine?

A. Impeller
B. Chuck
C. Bearings
D. Coupler

26. What repeated function shortens the life of a turbine?

A. Running higher than normal rpm's
B. Failure to use manufacturer's recommended burs
C. Sterilization
D. Multiple uses

27. Which of the following is the most common repair encountered in a high-speed handpiece?

A. Replacement of the coupler
B. Replacement of the fiber optic light
C. Replacement of the end cap
D. Replacement of the turbine

28. Which of these is not true in an aftermarket turbine?

A. Shorter warranty
B. Inconsistent quality
C. Guaranteed work
D. Lower cost

29. What is the most important consideration when rebuilding or replacing a turbine?

A. Lowest cost
B. Best warranty
C. Fastest turnaround time
D. A qualified technician

30. When caring for your handpiece, which of the following is true?

A. Always use manufacturer's recommended lubricants
B. Always ensure a properly working autoclave
C. Always use a trusted technician to service your handpiece
D. All of the above

PUBLICATION DATE:	FEBRUARY 2021
EXPIRATION DATE:	JANUARY 2024

ANSWER SHEET

Dental handpieces: Maintenance, repair, and infection control, 3rd edition

Name: Title: Specialty:

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EDUCATIONAL OBJECTIVES

1. Implement proper cleaning and sterilization techniques
2. Provide proper lubrication of each handpiece and its components
3. Avoid common mistakes
4. Provide proper care for a fiber-optic or LED lens
5. Demonstrate proper sterilization techniques for various handpieces
6. Discuss handpiece turbines and the factors to consider when repair or replacement is necessary

COURSE EVALUATION

1. Were the individual course objectives met?

Objective #1: Yes No Objective #2: Yes No

Objective #3: Yes No Objective #4: Yes No

Please evaluate this course by responding to the following statements, using a scale of Excellent = 5 to Poor = 0.

2. To what extent were the course objectives accomplished overall?	5	4	3	2	1	0
3. Please rate your personal mastery of the course objectives.	5	4	3	2	1	0
4. How would you rate the objectives and educational methods?	5	4	3	2	1	0
5. How do you rate the author's grasp of the topic?	5	4	3	2	1	0
6. Please rate the instructor's effectiveness.	5	4	3	2	1	0
7. Was the overall administration of the course effective?	5	4	3	2	1	0
8. Please rate the usefulness and clinical applicability of this course.	5	4	3	2	1	0
9. Please rate the usefulness of the supplemental webliography.	5	4	3	2	1	0

10. Do you feel that the references were adequate? Yes No

11. Would you participate in a similar program on a different topic? Yes No

12. If any of the continuing education questions were unclear or ambiguous, please list them.

_____

13. Was there any subject matter you found confusing? Please describe.

_____

14. How long did it take you to complete this course?

_____

15. What additional continuing dental education topics would you like to see?

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8.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	23.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
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10.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	25.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
11.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	26.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
12.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	27.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
13.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	28.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
14.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	29.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
15.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	30.	Ⓐ	Ⓑ	Ⓒ	Ⓓ

AGD Code 250

PLEASE PHOTOCOPY ANSWER SHEET FOR ADDITIONAL PARTICIPANTS.

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All questions have only one answer. If mailed or faxed, grading of this examination is done manually. Participants will receive confirmation of passing by receipt of a Verification of Participation form. The form will be mailed within two weeks after receipt of an examination.

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DOLLARS AND SENSE
John K. McGill, JD, MBA, CPA

How will President Biden's tax plan affect you?

PRESIDENT BIDEN has proposed a package of incentives aimed at cutting taxes for low-income taxpayers, including refundable credits for everything from childcare costs to home purchases. However, he also plans to raise taxes by nearly $3.5 trillion during the next 10 years on corporations and individuals who earn more than $400,000 annually.

JOHN K. McGILL, JD, MBA, CPA publishes *The McGill Advisory* newsletter through John K. McGill & Company Inc., a member of The McGill & Hill Group LLC. It's your one-stop resource for tax and business planning, practice transition, legal, retirement plan administration, CPA, and investment advisory services. For more information visit mcgillhillgroup.com.

Here are the most significant proposed changes for dentists.

It will raise the top marginal tax rate on incomes above $400,000 from 37% to 39.6%. This and other targeted tax hikes will place a premium on keeping your income below $400,000 through deferring income, increasing deductions, and shifting income.

It will increase the tax rate on capital gains and dividends from a maximum of 20% now to 39.6% (in addition to the 3.8% Affordable Care Act tax) to the extent your taxable income exceeds $1 million. You'll most likely be affected when you sell your practice or real estate. You can minimize this impact by closing these sales on January 1 of the new year, harvesting losses from stocks and other investments that have declined in value, and using an installment sale to the extent necessary to keep your taxable income below the $1 million threshold.

It will increase payroll taxes by imposing the 12.4% Social Security tax (6.2% on both the employer and employee) on all earned income (salary) exceeding $400,000 annually. The combined impact on raising the tax rate on earned income and applying the additional Social Security payroll taxes could result in some doctors paying a marginal tax rate of 60% or higher after considering state income taxes. You can dodge this higher Social Security payroll tax by operating as an S corporation and withdrawing no more than $400,000 as salary, with your remaining practice profits taken as a dividend distribution free of payroll taxes.

It will reduce the tax benefit from itemized deductions. Currently, you're entitled to deduct the standard amount ($12,400 if single, $24,800 if married), or the sum of your itemized deductions (mortgage interest, state and local income and property taxes, charitable contributions, and medical expenses) if greater, at your current tax rate. President Biden's plan would reduce your total itemized deductions by 3% for every dollar that your income exceeds $400,000 and would cap the tax savings from itemized deductions at a 28% tax rate. Bunching charitable contributions in alternate years and using the standard deduction in the other years can maximize your income tax savings.

It will reduce tax savings from 401(k) salary deferrals by replacing the tax deduction with a tax credit, likely equal to 26% of the deferral amount. This change would increase the tax savings for those below the 26% tax bracket but reduce it for doctors in higher tax brackets.

It will repeal the Section 199A 20% deduction for practice and real estate profits if taxable income exceeds $400,000.

It will slash the estate tax exemption from $11,580,000 now to only $5 million and increase the estate tax rate on amounts left to your children from 40% to 45%. You should consider taking advantage of your annual gift tax exclusions ($15,000 per donee), split gift election, and valuation discounts.

It will repeal stepped-up basis at death. Currently, your children can inherit your assets with a "stepped-up basis" equal to their fair market value at your date of death. Thus, while the value of your assets may be subject to an estate tax, any predeath appreciation in the assets (stocks, real estate, etc.) will not be subject to income taxes when your children later sell them. Under President Biden's plan, your death would be financially painful, suddenly creating a taxable event with all appreciation in your stocks and real estate being immediately taxed. DE

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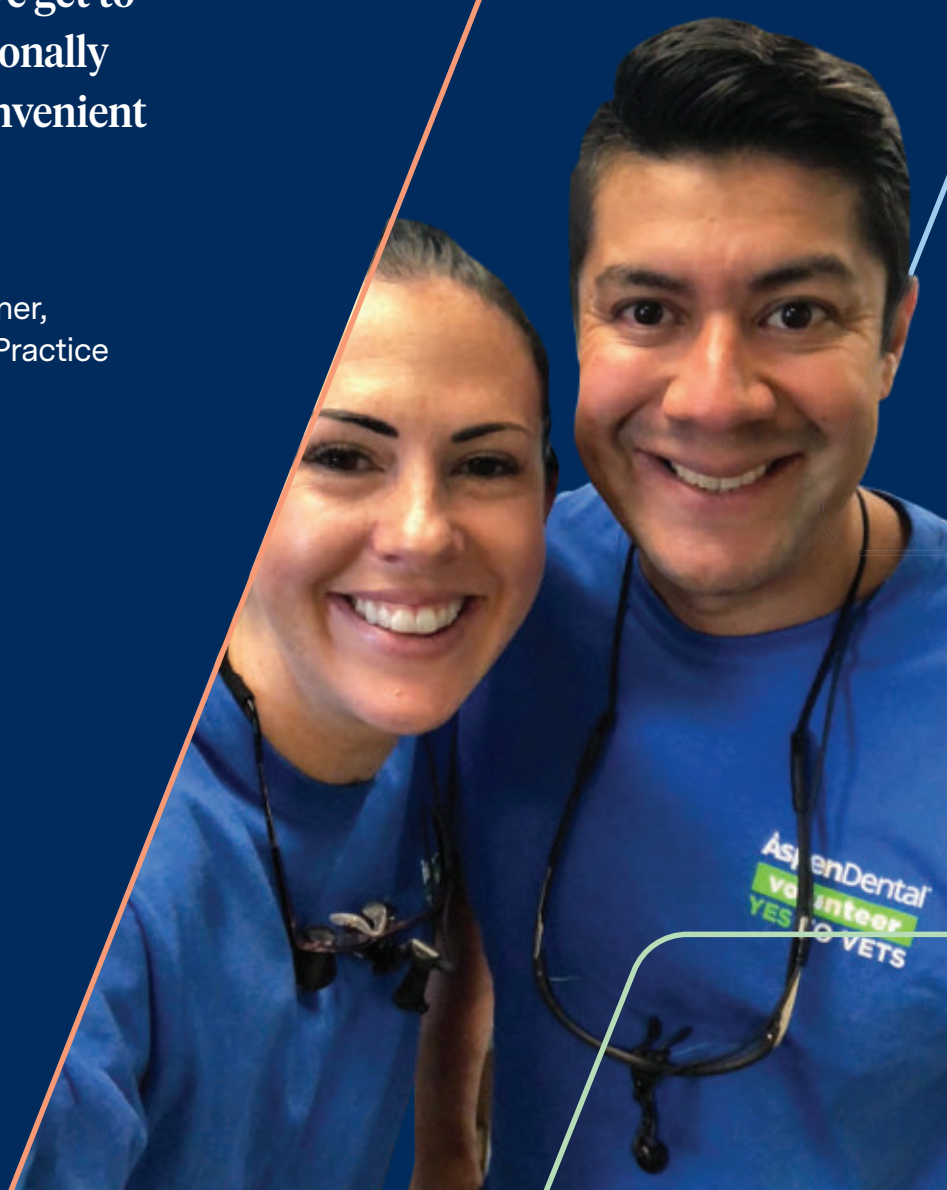

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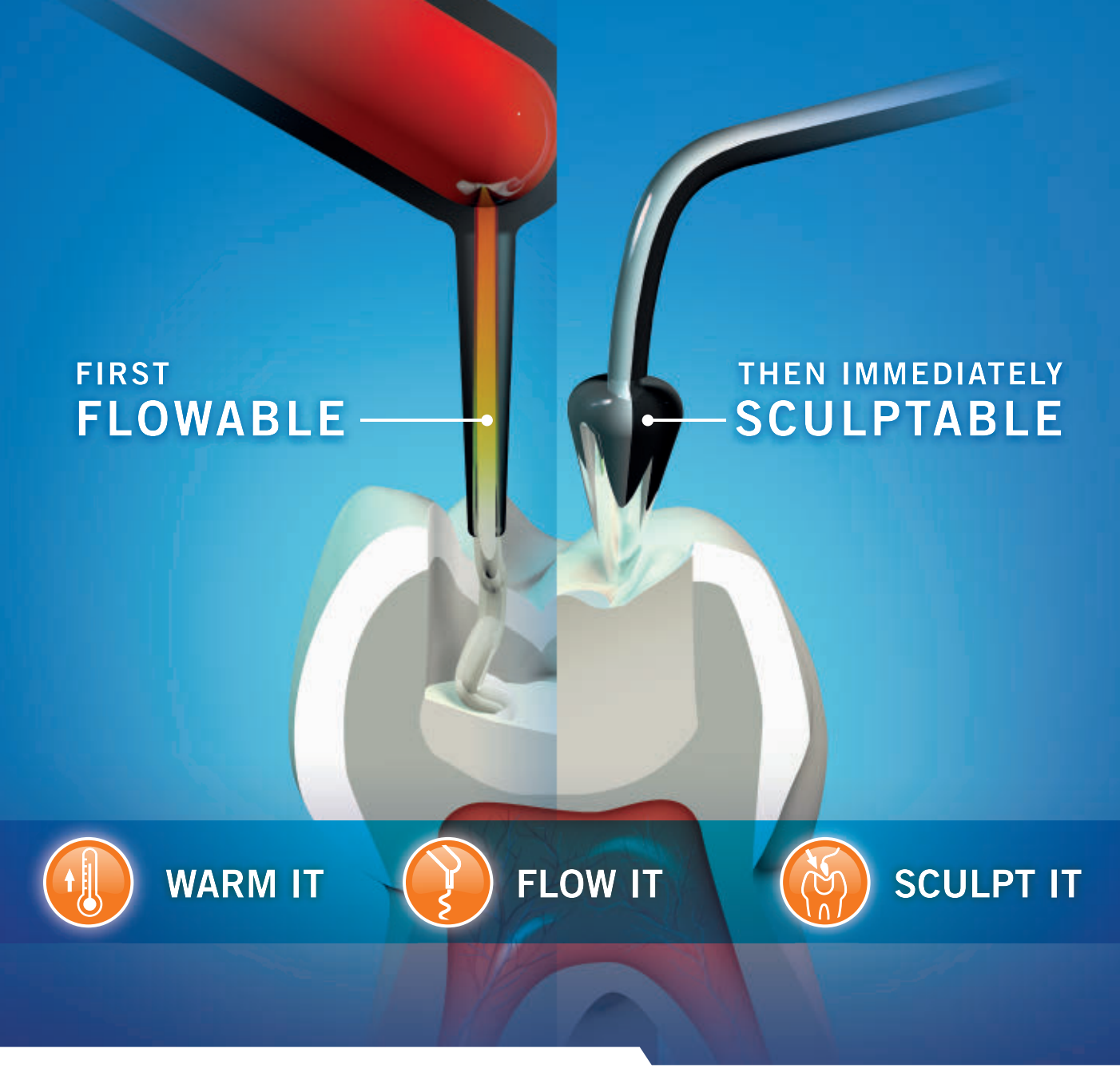

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