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- Boston, MA • May 7–8, 2020
- Boston, MA • Oct. 29–30, 2020

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[ DENTSPLY SIRONA ]
Primemill
A chairside mill capable of milling single crowns in less than 5 minutes could change the way chairside CAD/CAM practices operate.

[ CONVERGENT DENTAL ]
Solea Sleep
The industry’s most versatile all-tissue laser adds another indication with this 5-minute snoring solution.

[ CLON3D ]
WOW
A software-based intraoral scanner designed for easy upgrades and open approaches to digital dentistry.

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CEREC Primemill
Capable of both wet grinding and dry milling, the CEREC Primemill is a chairside CAD/CAM mill capable of producing single crowns from a variety of materials including zirconia in less than 5 minutes. Featuring two spindles and four motors, the Primemill does not sacrifice accuracy in the name of speed. Beyond its fast milling capabilities, the mill features other innovations designed to aid practice efficiency including a 7-inch touchscreen interface with guided workflows, a camera capable of identifying material blocks, and an RFID reader that scans tools to identify them and track their lifespan. The mill alerts users when tools need to be changed, guides users through routine maintenance steps, and an LED strip displays progress of the current job.

Why this mill is a big achievement:
The CEREC Primemill is not only fast, but it is also versatile and ready for expanded uses in the future. The Primemill is capable of producing restorations from a range of materials including zirconias, glass ceramics, and resin composites. However, it is also ready for materials not currently in use chairside such as titanium. While the fast milling mode is eye catching, the mill also features an Extra Fine milling mode and new 0.5 mm tools designed for producing highly detailed occlusal fissures and interdental areas on bridges.

Solea Sleep
Designed as a solution for the more than 90 million U.S. adults who snore, Solea Sleep is a new protocol for using the Solea Dental Laser to help patients achieve better sleep. The laser application reportedly is a simple, 5-minute procedure that can tighten the tissue of the patient's soft palate in order to reduce vibrations which can cause snoring and disrupt sleep. To achieve these same results using other laser technologies such as erbium, it would reportedly require three or four 30-minute treatments. Solea Sleep is currently in limited market release and will be widely available in May 2020.

Why this laser solution is innovative:
Already among the most versatile dental technologies currently available, this new sleep application continues to expand what can be done with Solea Dental Laser. The system’s proprietary 9.3 μm CO₂ wavelength is already proven to be capable of handling a wide range of soft tissue procedures as well as crown preparations and other bone and hard tissue applications. This expansion to provide a new soft palate treatment option keeps the Solea laser in a unique place in the dental industry and continues to bring new patient-facing solutions to practices employing the technology.

Convergent Dental
3245 Tech Ridge Dr.
Goleta, CA 93117
www.convergentdental.com

Why this laser solution is innovative:
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WOW
Designed to connect orthodontics, oral surgery, and prosthetics, the WOW intraoral scanner captures both 2D and 3D images and can work with standard open-architecture file formats to export scans to any open CAD platform. The scanner captures color images, and features a small, comfortable handpiece said to be easy to grip like a pen. The accurate intraoral images and 3D models captured by the scanner reportedly aid in diagnostics and communication between clinicians and patients. The WOW scanner is offered at an economical price and comes bundled with an MSI GS65 laptop.

Why this scanner stands out:
The WOW intraoral scanner is described as a software-based scanner, and it is reportedly updateable without replacing any hardware. The company plans to provide software updates free of charge to WOW scanner users, making this already affordable scanner a potential long-term investment. As intraoral scanning is a growing area of many dental practices, finding a piece of technology capable of growing as a practice grows can be game changing.

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March 2020
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## RESTORATIVE DENTISTRY

### A look at dental materials designed to be used together and why using certain product systems is the best way to unlock each material’s full potential.

### WE’VE GOT CHEMISTRY

### NEW DENTAL PRODUCTS

#### New Products

10. The newest launches from the industry

14. Product lift-offs Midwinter Dental

Rounding up some of the new products on display at the 2020 Chicago Dental Society Midwinter Meeting.

### TECHNIQUE

#### How to power up your posterior composites

With the current technology available, dentists have to demand more from restorations. By John Nosti, DMD, FAGD, FACE, FICO

#### Alchemy exists, but you may not recognize it

In order to grasp all situations, it’s important to know why we work with certain products, as well as knowing what we can offer to our increasing number of older patients. By Dr. John Flucke

### DENTAL TECHNOLOGY

#### Technology Evangelist

36. Alchemy exists, but you may not recognize it

In order to grasp all situations, it’s important to know why we work with certain products, as well as knowing what we can offer to our increasing number of older patients. By Dr. John Flucke

#### This next-gen curing light enhances polymerization

The PinkWave Curing Light increases composite hardness and decreases shrinkage.

#### How virtual reality is changing the dental patient experience

One patient consistently became so anxious, she passed out in the chair. That all changed when she experienced OperaVR™.

### DENTAL SPECIALTIES

#### SOLVE MY PROBLEM

46. A smart implant detector

The Spotter Smart Implant Detector from Forum Technologies is an advanced electronic device that accurately locates dental implants covered by gum tissue.

47. Confidence and comfort with a powered injector for anesthesia

Dentapen from Septodont is designed to enable clinicians to deliver effortless and painless injections all day long, which is a big plus for both you and your patients.

#### A breakthrough approach to salivary screening

SillHa Oral Wellness System technology allows easy testing of patient’s saliva, providing a quick clinical measurement of tooth health, gum health, and oral cleanliness.

#### How to do more with less in clear aligner therapy

These two cases demonstrate the power of MOPs® and HFV technology to maximize efficiency and predictability in clear aligner cases while drastically reducing the number of total office visits. By Dr. Geoffrey Jackson

### DENTAL EQUIPMENT & SUPPLIES

#### SOLVE MY PROBLEM

54. A non-prescription option for dry mouth sufferers

The GUM® Hydral™ Dry Mouth Relief line provides all-day, all-night relief for xerostomia.

56. Simplify and accelerate denture and retainer cleaning

The Sonic DS310 ultrasonic cleaner is ideally suited for cleaning dentures and is designed to prevent cross contamination.

#### Sweeping up prophylaxis efficiency

The Ultrают 1x Sweep disposable prophylaxis angles from Ultradent feature an innovative brush guard that reduces splatter and keeps prophylaxis paste where you want it.
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MAKING ROOM FOR THE BEST FIT

There are advantages to both approaches. A collection of materials designed to work together for a specific workflow can certainly provide reassurance that they have been tested for compatibility, and material properties that can work in sync. However, sometimes there’s a preferred material that is not a part of a full kit, and finding the complements for that solution can factor in some personal preferences along with chemistry.

It wasn’t a clinical challenge that we recently faced here, but as we’ve taken a look at how we’ve covered the products and services for the dental laboratory industry over the last few years, we recognized one of those holes in need of a perfectly fitting solution. Luckily for us, we had a solution to go back to, so rather than trying to approach dental lab product coverage from a completely new direction, we’ve looked to our past to bring back the Dental Products brand, and magazine.

DLP was a longtime cousin to DPR and a great resource for providing deep looks at the changing materials, technologies, and workflows employed in dental labs. This spring it will return to once again pick up that legacy, and just like materials designed to work hand in glove with each other, DLP and DLP will be ready to share content styles in order to tell a more complete story about the products and services dental professionals of all types have at their disposal.

It’s going to be exciting to get this new solution put together. With a range of best practices and key successes from DPR to build off of, DLP is going to be a strong publication right out of the gate. With a more robust approach to covering that part of the industry, another of our puzzle pieces is snugly back in the right place.

[ Mike Hennessy, Sr. ]  
Mike Hennessy, Sr. is chairman and founder of DPR’s parent company, MJH Life Sciences.

A collection of materials designed to work together for a specific workflow can certainly provide reassurance that they have been tested for compatibility.

And then there’s the situation where you have something new and need to find a solution that will fit. Practices add new services for many reasons, but the main ones are to bring better and more expanded care options to patients and to improve the practice’s efficiency and bottom line. In either situation, there’s a new system that needs to be put into place, and the best approach and new materials choices need to be sorted out.

THERE’S SOMETHING SATISFYING about puzzle pieces fitting together. When things connect and slide perfectly into their place there’s a sense of a job well done, and things being properly aligned. This is true just about everywhere, whether it’s a crown fitting perfectly on a prep, or a new hire seamlessly blending into the team right away.

But getting to this ideal fit is rarely a simple and easy task. It often takes research and requires training. It starts with an understanding of what you’re trying to fit together, and why it goes together in the first place. Then comes the how it will fit together, and sometimes this isn’t a straight answer.

When assembling a puzzle, there’s generally only one correct set of connections for each piece, so when the pictures and the notches and tabs all align, that’s the fit. But when it comes to something less defined, such as which is the best set of materials to use in your operatory, there’s often no single correct answer, and finding that easy, comfortable fit can be a game of trial and error.

It’s that specific puzzle we look at with this month’s cover story We’ve Got Chemistry, where we look at the universe of dental materials and whether clinicians can gain advantages by using a suite of complementary materials from the same company or if there are better ways to achieve the same clinical goals by putting together a custom kit of materials from a range of sources.
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IN OUR LAB.

HERE'S TO ANOTHER HALF-CENTURY OF PROGRESS.
**LOUPE FRAMES**

**Tempo™ Refined Fit Frames**

The Tempo Refined Fit loupe frames are designed to provide maximum comfort for clinicians who find traditional frames are a poor fit, usually those with a lower nose bridge or prominent cheekbones. The Tempo Refined Fit frames are designed to minimize common problems, such as frames sliding down the nose bridge or uncomfortably resting on cheekbones. They feature a unique nose pad wire to allow for a comfortable and secure fit. The Tempo was built with the optimal angle of pantoscopic tilt to alleviate discomfort and are available in a range of design features.

Orascopic
800-369-3698 | orascptic.com
CIRCLE RS #11

**UNIVERSAL CLEANER**

**KATANA™ Cleaner**

When cementing a restoration during trial fitting, the bond strength is reportedly weakened due to contamination with saliva and blood in the oral cavity. Enter KATANA Cleaner, which is designed to clean up contamination and improve bond strength. This cleaner is highly effective thanks to the surface-active characteristic of MDP Salt. KATANA is said to have a pH value of 4.5, which allows usage not only extraorally, but introrally as well, making it an all-purpose universal cleaner for tooth structure and prosthetics. It offers an easy, two-step workflow prior to cementation and reportedly only requires 10 seconds.

Kuraray Noritake
800-879-1676 | kuraraydental.com
CIRCLE RS #12

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**RESIN CEMENT**

**Nexus™ Universal**

Nexus™ Universal is an adhesive resin cement formulated to allow clinicians to cut their procedure steps by up to half. It also offers a flexible workflow to accommodate a clinician’s preferred cementation technique. Nexus Universal is reportedly the first cement to offer total dark-cure compatibility with any leading universal bonding agent. With its redox indicator system, Nexus virtually eliminates discoloration for better color stability and long-term appearance. It is compatible with a full range of indirect restorations, as well, including resin, zirconia, gold base metal alloys, and lithium disilicate.

KaVo Kerr
888-275-5286 | kavokerr.com
CIRCLE RS #9

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**FLOWABLE SYRINGE TIP**

**Flowable Syringe Tip**

This new and improved syringe is designed to simplify placement for 3M’s current flowable composites—3M™ Filtek™ Supreme Flowable Restorative and 3M Filtek Bulk Fill Flowable Restorative. The new tip is said to produce virtually no bubbles or material run-on during dispensing. The easy-to-bend cannula can be bent by hand without kinking, allowing for access to the prep area. The new syringe is also more ergonomic, featuring a triangle finger plate and larger plunger which are said to make the syringe easier to hold while injecting.

3M
800-634-2249 | 3m.com
CIRCLE RS #10
**RESIN CEMENT**

**ZR-Cem™**

ZR-Cem is a universal, self-adhesive resin cement specially formulated for zirconia that reportedly delivers superior bond strength and color stability. Its unique formula contains 1-MDP, which enables a strong bond to all ceramic materials, dentin, and enamel. ZR-Cem’s BPO/amine-free initiation system is said to translate to superior, lasting color stability compared to other cements. No pre-treatment of the crown or bonding is required, making it easy to use. Dual-cured with optimal viscosity, it handles well, is easy to clean up, and does not require refrigeration.

**Premier Dental**

888-670-6100 | premierdentalco.com

CIRCLE RS #15

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**COMPONENTS**

**Regennex Bioactive Universal Bond**

Regennex Bioactive Universal Bond incorporates bioactive materials directly into the adhesive layer, depositing biologically charged ions where it counts. This is said to allow clinicians to obtain bioactivity while using any composites or other restorative materials. Regennex uses Bioglass as the active ingredient, which is an osteogenic catalyst reportedly proven to stimulate bone cells toward self-repair. Bioglass is a biocompatible and antimicrobial material that is said to release the necessary ions to stimulate hydroxyapatite formation.

**Vista Dental**

877-418-4782 | vistadental.com

CIRCLE RS #14

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**COMPOSITE**

**Tetric® Prime**

Tetric Prime is a universal composite focused on Prime handling and offering a universal option to fit dentists’ workflows. It’s designed to provide the creamy handling necessary to brush and place in the anterior, but also provides the adaptability and non-slumping characteristics necessary to provide efficiency in the posterior region. Tetric Prime offers a single shade option for Class I and II restorations. The “T” shade is said to be 17 percent translucent and contains refractive index technology designed to match the optics of the natural tooth structure. It features a high radiopacity to visualize marginal integrity and ensure proper diagnosis in future recalls.

**Ivoclar Vivadent**

800-533-6825 | ivoclarvivadent.us

CIRCLE RS #16

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**3D PRINTER**

**VeriBuild LCD**

Dental labs and practices can now print precise models and accurate surgical guides with the VeriBuild LCD 3D printer. This open system printer is designed to print 405 nm print resins using the proper file with its advanced software. It features high resolution 47 µm print resolution and is equipped with Wi-Fi and auto-calibration. One Alpha 3D Nesting Software with no annual fees, two spare LCD panels, two resin vats, one build platform, and two resin vat film sheets are all included.

**Whip Mix**

800-626-5651 | whipmix.com

CIRCLE RS #13

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**BONDING AGENT**

**Regennex Bioactive Universal Bond**

Regennex Bioactive Universal Bond incorporates bioactive materials directly into the adhesive layer, depositing biologically charged ions where it counts. This is said to allow clinicians to obtain bioactivity while using any composites or other restorative materials. Regennex uses Bioglass as the active ingredient, which is an osteogenic catalyst reportedly proven to stimulate bone cells toward self-repair. Bioglass is a biocompatible and antimicrobial material that is said to release the necessary ions to stimulate hydroxyapatite formation.

**Vista Dental**

877-418-4782 | vistadental.com

CIRCLE RS #14

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**CIRCLE RS #13**

**CIRCLE RS #14**

**CIRCLE RS #15**

**CIRCLE RS #16**

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**NEW DENTAL PRODUCTS**

This open system printer is compatible with the VeriBuild Model OS White, Gray, and OS Surgical Guide resins.
CUREbox® Plus
The CUREbox Plus has all of the same features as the CUREbox, plus a few unique additions. For the dental industry, a dental one-touch preset makes it even easier and more efficient to use. The CUREbox Plus has a large temperature range (30 to 80 degrees C) and has the ability for fast heating. Just like the original CUREbox, the Plus has a large capacity chamber that measures 12-by-12-by-6.25 inches, designed to be sufficient for most dental parts. Both versions are also clean-room friendly and support virtually all of the photosensitive resins on the market.

Wicked Engineering
413-301-0765 | wickedengineering.com
CIRCLE RS #19

[ IMPLANT ABUTMENT ]
SMARTbase™ Engaging Ti Base Abutments
The SMARTbase CAD/CAM engaging abutment system features a dual hue finish for enhanced esthetics. The gold anodization allows for the use of more translucent restorative materials while the pink anodization of the titanium base offers a more natural blending with the gingival tissue. The concave transgingival profile is designed to shape tissue growth for a thicker gingival cuff, reducing the chances of the abutment showing through and enabling subcrestal placement. SMARTbase supports any workflow and is available in a variety of cuff heights and profile widths. With its “Floating Screw” option, the fixation screw can be pre-assembled into the base prior to placement for easier seating of the restoration.

Implant Direct
888-649-6425 | implantdirect.com
CIRCLE RS #20

[ CAD SOFTWARE ]
DentalCAD 2.4 Plovdiv
DentalCAD 2.4 Plovdiv features a significantly enhanced FullDenture module, which allows the design of removable single jaw dentures in a guided digital workflow. With the new expanded functionality in the FullDenture module, practically all digital full denture production methods can be mapped. An improved thimble crown design optimizes workflow for creating implant borne thimble bridges without rescanning the substructure. Model Creator allows new parameters, which allow adjustment of the offset around the model analogs and includes an extended library for attachments. The PartialCAD module has been improved for this release, featuring extended control and new options to meet fit preferences.

exocad
855-396-4223 | exocad.com
CIRCLE RS #18

[ LAB MOTOR ]
Heavy Duty Brushless Lab Motor
The Heavy Duty Brushless Lab Motor is newly upgraded to provide more power, performance, durability, and portability. The brushless 50k rpm micromotor unit is ideal for heavy acrylic use and can be operated in either vertical or horizontal placement. The Heavy Duty features an easy-to-read digital display, customizable preset memory storage, hand/foot change button, and self-diagnostic error display. A handpiece and variable speed foot control are included.

Aseptico
866-244-2954 | aseptico.com
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EACH YEAR IN LATE FEBRUARY the dental industry descends upon Chicago for a multitude of events that bring clinicians, technicians, hygienists, assistants, managers, manufacturers, and others together. Amidst the educational courses, the entertainment, the social functions—not to mention the food and tourist activities to be found in The Windy City—a massive number of new products for dental practices and labs make their industry debuts.

The Chicago Dental Society Midwinter Meeting and Lab Day are always premier launching pads for innovative ideas and enhancements to established brands. With other meetings orbiting this pair of major events, it’s no surprise companies of all sizes treat late February in Chicago as the industry’s Cape Canaveral.

Keeping track of all of these new items can be a challenge for anyone. Those who visited the Chicago events likely made some time to check out the exhibit halls and to find some new solutions for their practices and labs, but even spending three straight days walking the show floors isn’t likely to allow a single person enough time to see everything new. Those who weren’t able to attend possibly only saw some of the new products via online coverage, if they saw them at all.

That’s where this month’s Roundup article comes in. It’s not a completely comprehensive accounting, but we’ve collected quick snapshots of some of the recently launched products being highlighted at the Chicago shows to help those who attended—and those who did not—keep track of all the innovations.

Read on for an overview of some of the products that debuted or were highlighted during the Chicago events:
**Aeras 500 Elite Handpiece by Star®**
- With 39 watts of power, it is designed to provide the cutting power of an electric handpiece with the lightweight feel of an air-driven handpiece.
- Patent-pending RFID technology makes the handpiece interactive and intelligent in order to automatically track use and sterilization processes.
- Designed for in-office turbine replacement and features LubeFree technology for easier maintenance.
- Optimal head size for patient comfort and intraoral access is combined with cool-spectrum LED light technology.

**DentalEZ**
610-725-8004 | DentalEZ.com
CIRCLE RS #22

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**KaVo IXS**
- More durable than previous generations of sensors, KaVo IXS features KaVoTough™ engineering in both the sensor and the cable.
- The sensors are designed to be open architecture and can integrate with a range of leading imaging and practice management applications.
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**KaVo Imaging**
888-ASK-KAVO | KaVoKerr.com
CIRCLE RS #23

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**LumiCare Caries Diagnostic Rinse**
- An aqueous oral rinse featuring proprietary nanoparticles that reportedly illuminate early carious lesions in teeth using a curing light.
- The rinse is designed to enable early detection and treatment of dental caries.
- The material can be used via a simple protocol and images of detected carious lesions are easy for patients to understand.
- The product is still waiting FDA 510(k) clearance for sales in the U.S.

**GreenMark Biomedical**
517-896-3665 | greenmark.bio
CIRCLE RS #24

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**Premier® Implant Cement™ Plus**
- Designed to provide secure retention, the cement is said to enable easy, non-destructive crown retrieval when necessary.
- The elastomeric cement flexes under force to absorb shock and maintain a tight marginal seal.
- It is easily applied without the need for etch, primer, or bonding agent and achieves gel stage in two minutes for easy excess cement clean up.
- Available in both white and pink shades, it provides a high level of radiopacity.

**Premier Dental**
888-670-6100 | premierdentalco.com
CIRCLE RS #25

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**Easy Denture®**
- Designed to make denture fabrication as simple as boiling water, Easy Denture can be fit to a patient after boiling it in water for one minute and cooling it for another minute.
- While not intended as a replacement for lab-fabricated dentures, Easy Denture dentures aim to provide an immediate solution when needed.
- The dentures also are viewed as a solution for patients who cannot afford traditional removable solutions.

**Benco Dental**
800-GO-BENCO | benco.com
CIRCLE RS #26

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**HeronClinic™ Software**
- The latest updates to this intraoral scanning software are designed to offer benefits to clinicians and patients.
- Manual Bite Alignment allows users to ensure ideal alignment in scans, while the software now also allows users to open digital jaws for enhanced visual scan inspection.
- New colored distance maps help clinicians plan restorations for ideal function.
- Along with the scan software, a new HeronCloud solution provides improved information exchange between practices and labs.

**3Disc**
800-570-0363 | 3disc.com
CIRCLE RS #27
Empowerment Kit
A kit of hand instruments designed to enhance the effectiveness of ultrasonic solutions by allowing clinicians to detect and remove residual calculus from hard to reach areas following ultrasonic and air power scaling.
- The instruments feature blades that are 10 percent thinner than standard but still feature EVEREDGE 2.0 technology.
- The kit features seven scalers and an explorer housed in an Infinity Series® Cassette.
- There are 11 different Empowerment Scalers to choose from.

Virtual Office Assistant
Part of the MMG Manage suite of services, the Virtual Office Assistant includes Unified Communications and Task Manager tools.
- Unified Communication is an advanced VOIP phone system designed to improve communications with patients via AI tools that automatically capture and import details into the patient record.
- The AI-powered Task Manager system disseminates tasks to team members and monitors them through completion.

AMC-15 Self-Contained Mobile Operatory
- Designed to operate anywhere, the mobile cart can be used for general and endodontic dentistry without the need to connect to outside air or water.
- The mobile operatory features two high-speed handpieces, one low-speed handpiece, high-volume and low-volume suction, and an amalgam separator.
- A height-adjustable Auxiliary Arm with Accessory Tray is also available.

TeleDent™ Update
Enhanced communications tools are at the heart of the latest improvements to this mobile dentistry software platform.
- Improved video conferencing now supports seamless capture of still images, videos and full-length video conferences directly into the platform’s patient record.
- Provider Chat features allow for secure, HIPAA compliant provider to provider communications and real-time messaging.

GINGICaine Plus
- An enhanced formulation of this topical anesthetic provides up to one hour of efficacy.
- Formulated with 14 percent Benzocaine, 2 percent Butamben, and 2 percent Tetracaine Hydrochloride and an artificial banana flavor, it is designed to deliver fast, effective pain relief without bitterness.
- Available in a 1.2 mL syringe with a microneedle tip with a rounded end and a 7 mm gauge mark.

ClinCheck® “In-Face” Visualization Tool
- Part of the Invisalign Go system, this new tool is designed to enhance digital treatment planning and case presentation with a front-facing smile image incorporated into the ClinCheck treatment plan.
- These images can be a guide in patient consultations as they can be used to highlight the benefits of teeth straightening and visualize optimal outcomes.
- The solution will initially be available for Invisalign Go users and will eventually be rolled out to all Invisalign solutions.

MMG Fusion
844-938-7466 | mmgfusion.com
CIRCLE RS #29

Aseptico
866-244-2094 | aseptico.com
CIRCLE RS #30

Gingi-Pak
800-437-1514 | gingi-pak.com
CIRCLE RS #32

Align Technology
408-470-1000 | aligntech.com
CIRCLE RS #33
UltraSafe™
• A water line filtration system featuring two methods of patented technology to remove bacteria, virus, cysts, spores, and nutrients that bacteria feed on
• The UltraSafe filters out anything larger than 0.01 - 0.05 micrometers so bacteria cannot pass through the pores
• The material used in fabricating the filter is positively charged, so any negatively charged items such as viruses reportedly adhere to the surface of the filter
• These systems are made in the U.S., are ANSI/NSF 42, 61, 53 certified and available to treat whole offices or individual chairs

Toppen Dental
508-397-9725  toppendental.com
CIRCLE RS #34

Aligner Sleep Appliance (ASA) System
• Designed to allow clinicians to simultaneously treat patients for sleep disorders and provide clear aligner therapy, the ASA System is centered around a custom-designed appliance with doctor-to-doctor treatment planning consultation
• Expert consultation on bite positioning, IPR considerations, and 3D case review
• The sleep appliance seamlessly fits over existing clear aligners at any stage of treatment while creating up to 8 mm of mandibular advancement

SleepArchiTxs
888-777-3198  sleeparchitx.com
CIRCLE RS #35

Full Contact™ Sectional Matrix Bands
• Ultrathin and easy to place, these pre-contoured sectional matrix bands reportedly hold their shape once placed
• The bands can wedge from both buccal and lingual sides to ensure a complete gingival seal
• They can be used alone or with any ring system and are available in both adult and pediatric sizes

Cosmedent
800-621-6729  cosmedent.com
CIRCLE RS #36

Essentials Toothpaste
• Featuring 100 percent natural baking soda combined with fluoride for caries prevention and naturally sourced calcium for repair of the enamel surface, this toothpaste is designed to provide effective oral care with “just the right amount of natural” ingredients
• It is free of sodium lauryl sulfate (SLS), peroxide, preservatives, parabens, artificial sweeteners, and dyes
• It is available in two varieties, Essentials Whiten & Strengthen Fluoride Toothpaste, and Essentials Healthy Teeth & Gums Fluoride Toothpaste

Arm & Hammer
800-786-5135  armandhammer.com
CIRCLE RS #37

DentiMax 20
• The latest enhancements to this practice management solution are designed to make it easier to use and more customizable to individual practice needs
• A new color-coding system allows practices to set distinct colors for menus and tasks
• Patient information is now easier to manage and communications with entire families are simplified
• An enhanced Treatment Coordinator calculates insurance estimates and alerts users when treatments outside of age and frequency limits are scheduled
• Additional improvements allow for easier billing and statement management

DentiMax
800-704-8494  dentimax.com
CIRCLE RS #38

GUM® Hydral™
• A non-prescription dry mouth relief solution designed to soothe the oral mucosa
• The formulation features hyaluronic acid and three other moisturizing and hydrating ingredients said to work like natural saliva to relieve multiple xerostomia symptoms
• It is capable of providing immediate relief that lasts up to 4 hours to help patients with mild, moderate, and even severe dry mouth conditions
• Hydral is available as an oral rinse, an oral spray, an oral gel, and in an anti-cavity toothpaste

Sunstar Americas
773-777-4000  sunstargum.com
CIRCLE RS #39
**ACTIVA Presto**
- ACTIVA Presto is described as the first light cure composite designed to mimic the properties of natural teeth.
- Its hydrophilic resin is designed to facilitate the diffusion of bioavailable calcium, phosphate and fluoride ions.
- It contains a patented rubberized-resin that absorbs stress and resists wear, fracture, and chipping.
- The material is stackable, holds its shape, and does not slump, allowing for controlled placement.
- This universal composite is indicated for all classes of restorations and comes in a variety of shades.

*pulpdent*
800-343-4342  |  pulpdent.com
CIRCLE RS #76

**TheraCal PT**
- A biocompatible, dual-cured, resin-modified calcium silicate material designed to treat exposed dentin, it maintains tooth vitality by creating a barrier to protect the pulpal complex.
- It is designed for precise placement in deep cavity preparations.
- The material’s dual-cure properties allow for immediate placement of the restorative material.
- Ideal for pulpotomies, it is also suitable for use as a liner of for direct pulp capping.

*BISCO*
800-247-3368  |  bisco.com
CIRCLE RS #77

**KATANA™ Cleaner**
- Designed to eliminate contamination and enhance bond strength after try-in, KATANA Cleaner features MDP Salt.
- It features a pH of 4.5 allowing it to be used intraradially as well as outside of the mouth.
- It is applied via a two-step workflow that requires just 10 seconds.

*Kuraray Noritake*
800-879-1676  |  kuraraydental.com
CIRCLE RS #78

**3M™ Filtek™ Flowables**
- A new syringe design for 3M™ Filtek™ Supreme Flowable Restorative and 3M™ Filtek™ Bulk-Fill Flowable Restorative is said to simplify placement.
- The new tip design reportedly eliminates bubbles and material run-on during dispensing, and the cannula can easily be bent by hand without kinking.
- Additional enhancements to the syringe design such as a triangle finger plate and larger plunger make it more ergonomic and comfortable for clinicians.

*3M*
800-634-2249  |  3M.com
CIRCLE RS #79

**SMARTbase™ Engaging Ti Base Abutments**
- Designed to provide enhanced esthetics and more options for screw-retained implant restorations, these abutments can redirect the screw channel by up to 25 degrees.
- The abutments feature a dual hue finish for enhanced esthetics with a gold top and pink anodized titanium base.
- They are available in a range of cuff heights and profile widths and a “Floating Screw” option is available.

*Implant Direct*
888-649-6425  |  implantdirect.com
CIRCLE RS #80

**Tetric® Prime**
- A universal composite said to provide creamy handling for optimal results in the anterior and the posterior.
- Available in a 12-shade system designed for esthetic outcomes, Class I and II restorations can be treated with the single “T” shade, which matches the optics of the natural tooth surface.
- Highly radiopaque for easy marginal visualization.
- It reportedly combines esthetics with low shrinkage and a long working time for enhanced outcomes.

*Ivoclar Vivadent*
800-533-6825  |  ivoclarvivadent.us
CIRCLE RS #81
Go Midwest®

ALL NEW
Midwest Stylus® Plus Mini

SHORTER HEAD FOR DEEPER ACCESS
IMPROVED GRIP

Shorter head allows for extended bur projection to help with deeper preparations
Patented dimple-and-flat grip design aids tactile feel, index positioning, and control
Dynamic Speed Control provides power without excessive free speeds
Single-port water spray for powerful clearing of debris
Fiber Optic | Push Button Chuck
Available in Midwest and K-style Quick Connect

Call your Midwest Specialist at 800-800-2888 today to schedule a demo.

dentsplysirona.com/instruments

Interested? Circle Product Card No. 43
We’ve Got Chemistry

The dental products that can (and should) be used together.

[by Robert Elsenpeter]
Products
Dr. Shashikant Singhal, BDS, MS, director of professional services at Ivoclar Vivadent, observes that, on a grand scale, all the products dentists use should complement each other—from the moment a patient comes for a hygiene appointment, all the way through to a restorative treatment completion.

“Selection of products in a practice can be determined based on many factors, including clinical workflows; dentist’s, hygienist’s, or dental staff’s preferences, based on the ease of use, clinical success, price, storage; compatible chemistries; patient’s response to products and expectations,” Dr. Singhal says.

“All these factors are critical to consider while selecting products for an office. For example, during hygiene appointments, products such as fluoride varnish or chlorhexidine varnish, e.g. Cervitec Plus, can be used to improve a patient’s oral health. However, the mechanism of action of both products is different. Fluoride varnish protects teeth by making teeth stronger, whereas, Cervitec Plus will decrease the growth of micro-organisms to improve oral health. Therefore, it is critical for a user to understand products’ chemistry and indications before using them to provide the best service to their patients,” Dr. Singhal adds while describing Ivoclar Vivadent’s Cervitec Plus, a protective varnish containing chlorhexidine and thymol which protects exposed root surfaces and controls bacteria.

Products can work together for any number of reasons—including their formulation and for which function they serve.

“I think, very broadly, that where to start is that products in the same category tend to work well together,” Jason Goodchild, DMD, VP, clinical affairs, Premier Dental, observes. “Not necessarily complement, but compatible. Like resin. If you’re using a resin bonding, you know that a resin composite, or a resin flowable material, will be compatible. For the most part, that will be true. If you’re going to use the glass ionomer materials, the same basic chemistry exists and they’ll be somewhat compatible. Then, you have to think about cross categories. For example, if you’re going to be cementing a
Ceramic crown, there’s no ceramic cement. What I mean by that is a cement that’s made of ceramic. We have cements that are intended for ceramic, and that would be resin or glass ionomer.

Clinical scenarios

Complementary products seem to work best when they are used for the same procedure and can serve any number of needs. “Products that can work together, chemistry-wise, while complementing each other’s benefits offer an added value for practitioners,” Russ Perlman, executive director of marketing and communication North America at VOCO says.

“For example, our universal adhesive—Futarabond U—used in self-etch mode only requires a 30-second, one-layer application to create high bond strengths. Combined with our single-shade, omni-chromatic nano-ORMOCER restorative—Admir Fusion x-tra—that eliminates the shade selection step, delivers superior physical properties including enhanced biocompatibility, and can be placed in a single 4 mm layer—delivering an added value for those practitioners that want to simplify their procedures, minimize their chair time while maintaining and improving high quality results. Products and product lines that complement each other have the opportunity to create results that stand out to the practitioner, their staff as well as the patient.”

But it’s not always just the choice of materials. Finding the right auxiliary products can be just as important to achieving desired outcomes.

“There are complementary dental products that allow dentists to improve clinical outcomes and the patient’s comfort in a dental chair,” Dr. Singhal adds. “Isolation is extremely important to achieve good chemical bonding during direct and indirect bonding procedures. Products like OptraGate retract lips and cheeks, providing access for dental procedures by retracting soft tissues, allowing the dentist to maintain isolation. It is extremely easy to use, and it is latex-free as well.”

Sergio Arias, DDS, MS, a prosthodontist in Fort Lauderdale, Fla., pairs his indirect restorative materials—whether zirconia or lithium disilicate—with Kuraray Noritake’s PANAVIA SA Cement Universal.

“There are several reasons why I prefer to use PANAVIA SA Cement Universal with my ceramic restorations,” he explains. “First, it allows easy excess cement removal. It also has dual monomer technology. It contains the MDP that we need to bond to zirconia and metals, and the silane that we need to bond to glass ceramics, like lithium disilicate. Therefore, we no longer need to apply a separate ceramic primer to our crowns after sandblasting (if zirconia) or etching (if lithium disilicate). I have used this cement since they first came out with it in 2011. In order to achieve the best outcome, I pair the cement with the adhesive Clearfil Universal Bond Quick, which I apply to the tooth prior to cementation.”

There are any number of advantages to using complementary products. Dentists benefit from such qualities as esthetics, efficiency, and performance—among others.

“You’re looking at something that’s going to give you efficiency, less time, better results,” Perlman says. “For instance, we streamline the steps in the procedure, the time that procedure takes, but maximize the quality of the restoration in which we’re providing the patient, in regard to its long-term performance.”

Some specific materials benefit from the complementary products formulated just for them.

“The use of zirconia restorations is increasing,” Dr. Singhal illustrates, while singling out some popular Ivoclar Vivadent products. “Are all-zirconia materials the same? No. Chemistries, manufacturing, and processing techniques provide variance in the properties of these materials. IPS e.max ZirCAD Prime is a premium oxide ceramic material that shares premium optical properties and high mechanical strength. IPS e.max ZirCAD Prime is complemented with self-adhesive resin cement, like SpeedCEM Plus. The presence of MDP in the cement helps in achieving chemical bond between IPS e.max ZirCAD Prime and SpeedCEM Plus without use of additional zirconia primer, hence these materials complement each other.”

Compatibility

Complementary products tend to be produced and marketed by the same manufacturer. That is, the same manufacturer that produces a composite is likely to sell etchants and bonding agents that the manufacturer says will work best with that composite. The main reason is simple utility—manufacturers already have access to and work with their products. Other manufacturers’ products would, quite simply, be more difficult to test.

“It makes sense that manufacturers that have a solution-based portfolio will test those materials, and then they would say they’re not...
only compatible, but they really complement each other,” Dr. Goodchild observes. “They can probably make the claim that those materials complement each other, because they test them. And by using them in a system-based approach, they complement each other.”

Performance is an important consideration when placing restorations, and working with products from the same manufacturer tends to ensure the best outcomes. Sometimes, those outcomes are achieved simply because their materials and chemistries are better matches, coming from the same producer.

For example, the Bioclear Method uses a suite of complementary tools, including a combination of 3M materials and Bioclear instruments, to deliver their restorative solution.

“If you’re doing a Bioclear technique in the anterior of the mouth, where you’re getting the flowable and the composite pretty well mixed together, but they can still have lines,” Tim Dunbar, PhD, advanced product development specialist at 3M, observes. “You really want to have both of those products shaded to the same color and the same opacity. And even though manufacturers generally claim that their composites are following the VITA Classical Shade Guide system, there can be slight shade variations among composites from different manufacturers. So, you could get an A3 from one manufacturer that, to another manufacturer, might match an A2 or even an A1, much better. So, if you’re doing a highly esthetic procedure, I would strongly recommend sticking with one system.

“If it’s something in the posterior, where esthetics aren’t as important, then it probably doesn’t matter as much. But the caveat is that when 3M designs our products, we ensure that they all work together. So we make sure that our composite is going to match well with every generation of adhesive that exists—fourth, fifth, sixth, seventh, and then this new universal generation.”

“With Admira Fusion x-tra being a single shade, they’re not having to decide: Is it an A1, is it a B2? They already know that what they’ve chosen is going to match,” adds VOCO’s Perlman. “It’s going to match very nicely and perform very nicely. It’s going to polish very nicely. Meanwhile, the universal adhesive works in every adhesive scenario, so the practitioner doesn’t have to play the guessing game, and continues to minimize the variables, while maximizing the consistency.”

That sentiment is echoed by Dr. Arias when performing his restorations.

“Kuraray Noritake doesn’t make light-cure cements for veneers,” he says. “For veneers, I use RelyX Veneer, and I use Scotchbond Universal. So it’s always important to pair your cement with the sister adhesive. So I’m not going to use a 3M adhe-

There are complementary dental products that allow dentists to improve clinical outcomes and the patient’s comfort in a dental chair.”

— DR. SHASHIKANT SINGHAL
CASE STUDY

Take a look at a clinical case to show the bonding steps for a zirconia crown with PANAVIA SA Cement Universal.

1. This was a 22-year-old patient who chipped an existing crown on his upper left central incisor and was concerned about gingival recession (Fig. 1).
2. A new zirconia crown was planned using KATANA STML.
3. After removing the provisional, the prep is cleaned (Fig. 2).
4. Clearfil Universal Bond Quick adhesive is applied to the prep for three seconds and light air is applied (Fig. 3).
5. The intaglio surface of the zirconia crown is sandblasted with 50 microns of aluminum oxide (Fig. 4).
6. PANAVIA SA Cement Universal is applied to the crown (Fig. 5).
7. The Crown is seated and tack cured for three to four seconds per side on the facial and lingual, then the cement is easily peeled from the crown (Fig. 6).
8. Tissue response to the final restoration was optimal (Fig. 7).
sive with my PANAVIA. I use the CLEARFIL Universal Bond Quick. They say you can go from one side to the other, but I think it’s best to keep it within the same family.”

**Mix-n-match**

While manufacturers encourage dentists to use products from the same source, doctors frequently use preferred products from different vendors. Dr. Goodchild refers to that practice as “hodgepodging.” “I can take an etch from Premier,” Dr. Goodchild says. “I could take a bonding agent from 3M, I could take a composite from Dentsply Sirona, I could take a curing light from Kerr, I could take a finishing and polishing system from Brasseler, and wind up with wonderful results. And the most important thing, hodgepodging is not a bad thing. In fact, some people like products from different manufacturers for different reasons. They handle well, their price is good. They’ve had great results in their hands. There are lots of reasons why people take products from different manufacturers rather than from just one. But the most important thing is that I’m reading directions and understanding how those products are intended to be used. Because, even though I think there’s this umbrella of ‘general compatibility’, each one of those products may have nuances that play a direct role in how well they perform.

“You have to be a little more careful to make sure that they’re all compatible and that you could get the best results,” he continues. “And that’s not going to be something that the manufacturer will tell you. That will probably come from peer review recommendation.”

Some manufacturers try to ensure at least some level of compatibility. These efforts provide greater freedom of choice, but there is no way to ensure universal compatibility. “Whenever we develop products, we aim to produce open systems that will be compatible with other manufacturer’s products with similar chemistries,” Dr. Singhal says. “We test the compatibility of Ivoclar Vivadent products with other manufacturer’s products. However, it is not possible for any manufacturer—including us—to test the compatibility of their products with all the products available in the market. In addition, during a clinical failure, if an operator has used competitive manufacturer’s products, it becomes difficult to troubleshoot a possible reason for a failure. The best recommendation will be to consider manufacturers as a resource, and contact them to confirm compatibility questions.”

**Beyond the chemistry set**

When dentists think about the chemistry of products that work well together, they aren’t just thinking about little bottles and syringes. The curing lights used to polymerize resin composites also affect the chemistry of those materials.
“In general, dentists don’t realize the importance of their lights for their practice,” Dunbar says. “We find a decent amount of, I guess, just ignorance. They’ve got so many things going on in their practices, that they often don’t have time to think about how important proper light curing is.”

“They don’t follow these instructions, in terms of the duration of light cure time, and things like that,” Tao Gong, technical services specialist at 3M, adds. “The biggest steps that are missed include not calibrating or measuring their light’s intensity, along with not being aware of the strength of light that it’s putting out, because strength of light and curing time are very related to each other.”

While the majority of curing light issues can be ameliorated by proper maintenance, other systems require specific curing lights.

“We have a composite system called the 3s PowerCure System,” Ivoclar Vivadent’s Dr. Singhal states. “This system includes an adhesive—Adhese Universal, flowable bulk fill composite—Tetric PowerFlow, condensable bulk fill composite—Tetric PowerFill, and a curing light—Bluephase PowerCure with a three-second curing mode having a light intensity of 1,000 mW/cm². When used together, an operator can polymerize adhesive and composites in only three seconds. Components of this system can be polymerized in 10 seconds if a curing light unit with power intensity of 1,000 mW/cm² is to be used. That’s the beauty of unique chemistries.”

The method in which those products are delivered are also affected by a product’s chemistry. That is, the composition of the material affects how it is applied. For example, Ultradent manufactures endodontic tips ideally suited for delivering specific medicament formulations.

“It’s super important to have a very high quality product for dental fields, but it’s also important how you deliver these products on the spot you need,” says Dr. Renato Miotto Palo, an in-house endodontist at Ultradent. “So, in many fields in dentistry, they have their own particularities. For example, in endodontic treatments, the root canal space is very narrow, very thin, with a lot of flattened areas that you need to clean, that you need to disinfect. So, good chemistry would help us to disinfect, to apply the bacteria-killing process. But it’s very important how to deliver this inside the very thin space. NaviTips are very thin tips that have side ports that you can deliver liquids for disinfection or paste for medication inside the root canal. So the best combination between sodium hydrochloride for disinfection and chlorhexidine and citric acid and EDTA.

“Also there’s a flexibility at the tip of NaviTips that helps you to navigate in curved canals,” he continues. “So, this combination of high-quality, high-finishing and flexibility puts NaviTips into very high-quality positions against other tips.”

NaviTips are marketed to be used with Ultradent’s own products, but they can be used with those of other manufacturers, as well.

“I know many dentists use the NaviTip to navigate inside of the root canal with different solutions,” Dr. Palo says. “NaviTips can be used with other solutions, because it’s a very good solution for what dentists need delivered.”

3M launched a new device at the Chicago Dental Society Midwinter Meeting. The new product is an updated syringe that was designed specifically for flowable composites and aims to improve product application. 3M’s current flowable composites, including 3M Filtek Supreme Flowable Restorative, will now feature the improved syringe design.

“It provides better hand comfort, eliminates bubbles and provides better access to the preparation, so that our customers can seamlessly incorporate our flowable composites into their clinical procedures,” Gong says. “It is a new delivery system, it’s a new syringe design that we created specifically to address the pain points for the customer in terms of ergonomics and bubbles during application.”

When in doubt...

There’s a homely adage that should guide any clinician who is interested in mixing and matching products: When in doubt, read all of the directions.

“I like to joke that instructions are for people that don’t know what they’re doing,” Dunbar observes. “When you pick up a bottle of adhesive that you haven’t used before, you think, ‘Oh, it’s just an adhesive. I’ll cure it, like I do my other adhesive’ or ‘I’ll apply it, like I do my others,’ but the doctor really needs to read the instructions to make sure there’s nothing differ-
ent about application of that adhesive. One of the most common mistakes is not reading and understanding the instructions for use for each product."

“The biggest advice I can give to any dentists when they want to adopt a new material, try something different, is, ‘You just have to read directions,’” Dr. Goodchild says. “We’re not good at that. I just thought dentists were lazy, but we’re not lazy. We’re just so used to doing the things that we do under this general umbrella of ‘compatibility’. We’re just so used to working in that arena, that when we pick up something new, we expect it to work just like everything else we’ve used. But that is not the case, and that’s why it’s so important for dentists to read directions. There are small nuances within each material, and if you use them apples-to-apples, you may not get the results you want. You have to treat it as a new thing, and that’s scary for dentists, because your ability to work quickly and efficiently rather than stop and read these directions before I go to the next step—that slows you down. And maybe that doesn’t give you the appearance of confidence in the chair. But, it’s so, so important for us to do it. There are a lot of forces acting on the dentist that make adoption of new products somewhat challenging, and that’s why we get forced back towards this idea of, ‘What works well in my hands.’ We need to break out of that.”

Dentists should not be afraid to embrace new systems or try to mix-and-match products if so desired (and those products are being used for appropriate indications).

“My advice is: I know that these products and these procedures work well in your hands and you’re used to doing them that way and you’re getting good,” Dr. Goodchild advises. “But what if I could show you a different way to get the same results that’s better, safer, faster, easier? What if I could show you something that could work better in your hands? Would you at least be open to it? They can really think, ‘You know, this has worked well for me in my career. Why should I want to try something new?’ They could think that, but they just need to be open to the idea that things are changing, things are evolving. We’re coming up with new and better stuff all the time. So, find a way to evaluate it. Ask for samples. Watch videos online. Go to CE courses. Call your buddies or your peers. Continue to look and see what else is out there. The end goal is to figure out how can we continue to improve and provide the best service we can for our patients.”

Some adventurous souls decided to use a superficial game show to help them find their perfect match. Happily, dental product manufacturers have done the heavy lifting, so it’s not necessary to go to such measures to find products that work and play well together.
Protecting the integrity of the restoration and the tooth-restoration interface

Featuring Nobio’s proprietary QASi particle technology, Infinix™ Flowable Composite and Bulk Fill Flow Composite are designed to provide long-lasting protection. [ compiled by Stan Goff ]

Information provided by Nobio.

THE PROBLEM

Degradation can occur at the tooth-restoration interface

Additionally, as bacteria creates an acidic environment, it leads to demineralization, loss of tooth surface, and resultant carious lesions.

THE SOLUTION

Infinix™ Flowable Composite and Bulk Fill Flow Composite

• Nobio’s QASi particle technology consists of antimicrobial, filler particles that can be incorporated into resin-based materials and stay within the polymerized matrix after light curing. The non-soluble antimicrobial effect is exerted only upon contact between the bacteria and the polymerized material, and is not dependent on release, so it doesn’t fade away or impact the oral flora

• Nobio’s QASi particle technology protects the integrity of the restoration and the tooth-restoration interface

• The Nobio QASI particle technology kills microbes indefinitely. The effectiveness of other antimicrobial technologies which dissolve or leach, will fade over time

• The Nobio QASi particle technology provides protection at the cavity-restoration micro-gaps, which is a gateway for cariogenic pathogens. This may lessen the recurrent caries risk and minimize technique-sensitive posterior restoration procedures

• The Nobio QASi particles act only by direct contact between the microorganism and the restoration material, thus not affecting the microbiota (normal flora) of the oral cavity
A universal, stackable composite that mimics the properties of natural teeth

ACTIVA Presto light cure composite from Pulpdent is strong and durable; also releases and recharges calcium, phosphate and fluoride. [compiled by Stan Goff]

Information provided by Pulpdent Corporation.

THE PROBLEM

Traditional composites do not mimic tooth structure

They are passive, do not contain essential minerals such as calcium and phosphate, are prone to fracture and chipping, and placement can be time-consuming.

THE SOLUTION

ACTIVA Presto

- Hydrophilic mineral-enriched resin facilitates release and recharge of calcium, phosphate and fluoride ions
- Patented rubberized-resin absorbs stress and resists wear, fracture, and chipping, even in thin areas on bevel margins
- Unique stackable composite holds shape and does not slump for controlled placement
- Penetrates and integrates with tooth structure for margin-free adaptation to teeth
- Versatile—Universal composite for all classes of cavities
- Contains No Bis-GMA, No
BULK FILL COMPOSITES were introduced into dentistry more than a decade ago, and yet they still only account for 16.9 percent of composite revenues annually. There are approximately 180 composites on the market, 26 of which are classified as bulk fill.

Currently more than 167 million resin-based restorations are placed annually in the U.S., with an average longevity of only six years.\(^1\)-\(^3\) Approximately 180 composites on the market, 26 of which are classified as bulk fill. Our most common procedures performed day-in and day-out are posterior composites. With the current technological advances in dental materials and light polymerization, we have to demand more from ourselves and our restorations.

The advantages of composites are that they are aesthetic, more conservative, do not require mechanical retention, and bonded restorations can reinforce existing tooth structure. The disadvantages are that they are more costly, and typically the procedure requires more time, which can mean that it can become unprofitable for many offices dealing with insurance reimbursements.

If we are going to improve our success of posterior composites, we must first understand what accounts for such a low longevity rate that has been indicated in composite failures. Micro-leakage, lack of moisture control, polymerization shrinkage, bonding technique, voids, size of the restoration, degradation, secondary caries, and improper depth of cure have all been indicated as sources of increased failure.\(^5\)

Understanding these mechanisms of failure have helped us to create better techniques, using a streamlined process with materials that are more idealized to use in our posterior restorations. In simple terms we must:

1. Prevent contamination during the restorative process.
2. Simplify and minimize clinical steps to prevent the introduction of error.
3. Speed the process to help prevent moisture contamination.
4. Verify proper cure of the bonding agent and composite.

As efficient as standard bulk-fill composites can be to assist in this process, the 3s PowerCure System from Ivoclar Vivadent requires only a 3 second cure for each step: Adhese Universal comes in VivaPen format, Tetric PowerFlow, and Tetric PowerFill. This is accomplished with the use of Ivoclar Vivadent’s Bluephase PowerCure light, capable of providing 3,000 mW/cm\(^2\) of light to the cavity preparation. This is accomplished with the use of Ivoclar Vivadent’s Bluephase PowerCure light, capable of providing 3,000 mW/cm\(^2\) of light to the cavity preparation. Likewise, Adhese Universal bonding agent, Tetric PowerFlow, and Tetric PowerFill.

The following case demonstrates how efficiently posterior composites can be placed. Bulk fill composites are indicated for use in the posterior dentition and help to not only speed the process, but also help eliminate steps, thus helping to eliminate the introduction of error into the process.

**Case presentation**

A quadrant of failing amalgams have been selected for replacement (Fig. 1). One of the first options to reduce the incidence of failure is the use of an OptraDam from Ivoclar Vivadent (Fig. 2). This is a self-retracted, non-latex rubber dam that can be used without the need of rubber dam frame or clamps.

Once the failing restorations and decay are completely removed the restorative process begins using the 3s PowerCure System.

**PowerCure light**

- The Bluephase PowerCure curing light cures in just 3 seconds
- Adhese Universal comes in VivaPen
- Tetric PowerFlow/PowderFill are sculptable 4 mm composites with Ivocerin and Resins
- Ivoclar Vivadent

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**CIRCLERS #46**
1. A quadrant of failing amalgams have been selected for replacement.

2. An Optradam is used to reduce the possibility of contamination without the need of a rubber dam frame or clamps.

3. Selective etching protocol used 35 percent phosphoric acid on the enamel for 15 seconds.

4. Adhese Universal from Ivoclar Vivadent was applied to the selectively etched enamel and was scrubbed into the non-etched dentin for 20 seconds.

5. Having the light not directly over the tooth will result in inadequate polymerization.

6. Using the curing light too far away from the tooth will also result in inadequate polymerization.

7. The restorations are polished with Astropol polishing cups and white carbide polishing burs from Brasseler USA.

8. The Ivoclar Vivadent PowerCure and PowerFill system allows dentists to easily place restorations with a 3 second cure per step.

9. The final restoration is shown.

10. March 2020
age stresses and ensure complete curing, Tetric PowerFlow was used for the first increment. It can be placed in increments up to 4 mm without concerns about shrinkage stresses or incomplete curing, and its self-adapting technology contributes to void-free restorations in the deepest boxes.

Esthetically, dark underlying tooth structure is blocked by the similar dentin-like opacity that’s achieved after the 3 second cure per tooth with the PowerCure light. A single, final layer of Tetric PowerFill is placed, condensed, and initial anatomical form placed using hand instrumentation and cured for 3 seconds per tooth with the PowerCure light.

After the bands were removed, the restorations were cured for an additional 3 seconds from the proximal surfaces to ensure complete curing. As important as the amount of energy delivered from the light is the position of the light in relation to the material. Having the light not directly over the tooth will result in inadequate polymerization of the material (Fig. 5), as well as having the light too far away from the tooth (Fig. 6) will result in inadequate polymerization.

To finish the case, the occlusion is harmonized, and the restorations are polished with Astropol polishing cups and white carbide polishing burs from Brasseler USA (Fig. 7).

How can you increase the success rate of your posterior composites and simultaneously increase the profitability of these procedures? Use materials that are specifically designed for this category of dentistry. Bulk fill composites allow for reduced layers, minimizing the chances of voids, reduced steps due to increased depth of cure, reduced polymerization shrinkage, reduced polymerization stress, reduced cusp strain, and increased fracture resistance.7

These benefits can ensure prevention of early composite failures, as well as increase one’s profitability with a streamlined system. In addition, the Ivoclar Vivadent 3s PowerCure System allows one to further increase the ease of placement with only a 3 second cure per step, allowing the dentist to perform predictable, esthetic posterior composites with a single system (Figs. 8-9).  

REFERENCES
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The first simple-to-place pulpotomy treatment

BISCO’s TheraCal PT is part of the Thera family and the biocompatible dual-cured resin-modified calcium silicate material intended for use as a pulpotomy treatment easily earns the Catapult Vote of Confidence. [by Carla Cohn, DMD]

**About Catapult**
Catapult is an organization that consists of more than 50 clinicians spread throughout Canada and the United States. As a company, manufacturers pay a fee for their product to be evaluated and what we deliver are truthful, independent answers from surveys that we develop with them. We have had many products that have either had to be altered before hitting the market or simply never arrived because of our openly honest evaluations. In this way, Catapult assists the manufacturer to avoid potentially releasing a faulty product, or simply a product that needs refinement. Lastly, our clients are omnipresent in the industry, small to large, no favoritism, simply reviewing the latest products in our practices.

**Clinical Case**

Pre-operative view shown in Figure 1. Primary second molar requiring pulpotomy procedure.

Amputation of coronal pulp chamber to the level of radicular pulp stumps was performed with NSK Dental slow speed large round bur #8, removing coronal pulp tissue with gentle upward motion (Fig. 2). Hemostasis is achieved with a saline-soaked sterile cotton pellet (Figs. 3-4). Figure 5 also illustrates hemostasis.

Next came extrusion of TheraCal PT into the pulp chamber, being sure to reach the base of the coronal pulp chamber with material and without voids or bubbles and light cure (Figs. 6-7). Figure 8 shows cured TheraCal PT. The patient’s full-coverage stainless-steel crown (Fig. 9).

BISCO’s TheraCal PT is a real game changer. It is the first simple-to-place pulpotomy treatment. The efficiency and efficacy will make this a valuable material for any dentist performing pulpotomies.

Within their evaluation, the Catapult Group found:

- Working and setting time to be appropriate—90 percent
- Radiopacity acceptable—85 percent
- Ease-of-placement into pulp chamber acceptable—80 percent

TheraCal PT was recommended by 100 percent of the evaluators. Given this unanimous approval, it is our pleasure to give TheraCal PT from BISCO the Catapult Vote of Confidence.

**TheraCal PT**
TheraCal PT is a biocompatible, dual-cured, resin-modified calcium silicate designed for pulpotomy treatment. TheraCal PT maintains tooth vitality by performing as a barrier and protectant of the dental pulpal complex. The material is radiopaque for easy identification and differentiation from recurrent decay and other restorative materials.

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Formulated for your success.
Alchemy exists, but you may not recognize it

In order to grasp all situations, it’s important to know why we work with certain products, as well as knowing what we can offer to our increasing number of older patients.  [by Dr. John Flucke]

When I was in college, I was taught a bit about the history of Alchemy. What they taught me was that at one point, there was a field of study where brilliant (and sometimes not so brilliant) chemists were trying to figure out how to take worthless/plentiful elements and somehow turn them into gold. What I always found sort of philosophically entertaining about that whole idea was that if you could suddenly make gold plentiful, then it wouldn’t really be that valuable now would it?

But all of that amazing philosophical thought I came up with really belongs in a totally different article and— it’s probably not one you would read any way. Yet, this column WILL actually have a point that I can tie to Alchemy, and that is, in certain ways, we really are turning difficult situations into ones that our patients find incredibly valuable. It’s hard to put a price on your quality of life.

It’s incredible isn’t it? No matter how much progress we make, there is always more progress to be made and with progress, comes understanding. And with understanding comes the answer to “why?”

I’ve told you before that I’m a “why guy.” However, in case you missed it, let me give you a quick fill-in. Being a doctor is a complicated job. We have to take into account all of the necessary information that is needed to make a complete diagnosis. We then have to assimilate that information into a workable diagnosis, and then fabricate a comprehensive and cohesive treatment plan that creates a solution to the diagnosis.

In dentistry this often entails performing a hands (heck, that’s why the majority of us have a degree as Doctor of Dental Surgery). I frequently say you could teach a smart monkey the hand skills, but the monkey will never know WHY the treatment is needed; or the WHY of myriad products, that the choice was the 2 or 3 in the procedural outline of WHAT we were trying to accomplish.

The whole thing comes down to not only knowing “what and how,” but “why.”

That’s a great way to open this month’s column, because I’m going to be dealing with a couple of subjects. One is why we work with certain products and the other is on things we can offer our older patients.

It’s all about the chemistry

Like any good relationship, restorative dentistry is all about the chemistry. The restorative process can be fraught with complications. We deal with these on practically every patient. There are things such as precise chemical makeup of the teeth, size and shape of the preparation, the chemical factors between restorative materials, and the ever dreaded contamination, just to name a few.

Composite restorations are something that we do every day. In fact, operative dentistry is the most frequently performed procedure in the profession. Because of that, we’ve got to make sure we are doing it correctly. No one involved in the restorative process wants to have to do it more than once to achieve success. One and done is the preferred way to perform.

Because of that, we need to make sure that every piece in the “restorative puzzle” fits together the way we expect it to.

Quite honestly, there is enough chance for error when we are doing everything right. The last thing we need is to introduce potentials for error into the process. Part of the problem can be traced to costs. Dental materials are incredibly expensive. If you think gasoline is pricey, sit down and calculate what a gallon of bonding agent would cost (hint, it’s way more than you think). Because of that, offices are often hesitant to purchase a new bonding agent—or any new restorative material when they have plenty of the “regular stuff” in stock.

This can also apply to inventory management. In a busy dental practice, it can be difficult to keep track of all the different restorative materials sitting on the shelves or hiding in the back of drawers. The more you have, the higher the chances it will somehow be misplaced or forgotten about, only to be rediscovered when it has passed its expiration date. This is one of the reasons that “single shade match” composites such as OMNICHROMA from Tokuyama Dental and Admira Fusion X-tra from VOCO America are rising in popularity.

I’m a huge fan of the KISS principle when it comes to restorative procedures. I feel that I’d rather be very proficient with one or two materials than “partially proficient” with many. Because of that, I have focused on fifth generation bonding and incorporate that into every possible bonded restorative clinical situation. Fifth generation is total etch with 37 percent phosphoric acid gel for 15 seconds and the application of the dentin primer and dentin bonding agent in one solution. The thing I love about this procedure is...
it provides exceptional bond strengths and, when performed correctly, minimal post-operative sensitivity.

In maintaining the KISS principle, I use the same brand of etch and the same brand of bonding agent across the board whenever possible. However, I am also a tremendous need for details and I never bring a new material into my clinical armamentarium without first very carefully digesting the IFUs. There are some products where the manufacturer clearly outlines what products are to be used and in those situations you are much better off following exactly what the instructions advise.

My thoughts in this are as follows.

If I know my bonding agent of choice provides 60 MPa on a regular basis, why would I want to use a different material if the manufacturer doesn’t specify to do so?

My thoughts are to decrease errors as much as possible by utilizing easily and well understood clinical steps. The more you work with just a few products, the more proficient you become with them. Only vary your clinical routine when necessary and let the “why” dictate the “when.”

Our aging patient demographics

This issue of Dental Products Report also examines how we can better help our patients faced with the physical changes that come with aging. Our healthcare system is working some incredible miracles and because of that, patients are living much longer than in previous generations and with a greater quality of life. However, some of the changes we undergo as we age cannot yet be controlled and some things, such as xerostomia, can be a consequence of life-prolonging medications. My parents are both approaching the age of 90 and in the last 10 years I’ve seen them both battle the effects of aging.

Problems in the oral cavity can often be traced back to neglect. If a patient fails to keep “their end of the dental bargain” there’s a breakdown in the system and problems frequently follow. Aging, though, puts a serious twist on that equation.

As the patient ages, their coordination ages with them, resulting in a loss of their ability to perform homecare at the same levels we have come to expect of them in the past. Because of that we need to address their situations in different ways. It isn’t always laziness. Sometimes the body just refuses to cooperate any longer.

Once again, it’s all about the chemistry

It’s a different problem than I discussed earlier in this article, but it’s still about the chemistry.

The aging process causes many of our patients to experience a noted decrease in their salivary flow which can lead to problems. The first is that dry teeth are less self-cleansing. A dry surface is simply easier for debris to adhere to. This means that both plaque and food remnants are more likely to remain adhered to the surfaces of teeth and provide an undisturbed substrate for pathogens. The longer bacteria and its resultant plaque remain on the teeth undisturbed, the more pathogenic it becomes. This can lead to breakdown of either the tooth structure, the supporting periodontal structures, or in the worst case scenario, both.

The second problem relates to remineralization. The teeth are in a constant flux of being demineralized by bacteria and remineralized by the concentration of needed chemicals in the saliva. Without the presence of saliva and its buffering effects on the oral chemistry, breakdown of tooth structure is much more likely to occur, and much more likely to occur at an accelerated rate.

The salivary decrease can be due to either age or due to medications. Many of the prescriptions our patients take have a side effect of decreasing salivary flow, which then contributes to the problems noted. In the not too distant future, we are going to be seeing kits that allow us to understand the pH of the oral cavity and then buffer it accordingly so that the mouth stays in a viable equilibrium. That small chemical procedure will be a game changer for our older patients.

Until then, the easiest way for patients to combat these problems is by using enhanced cleansing techniques provided by powered toothbrushes and devices that aid in flossing. While homecare is always important, I would advocate that it is perhaps even “more” important in the aging demographic.

Wrapping things up

While we still haven’t accomplished turning iron into gold, we have managed to come a long way in our processes of turning difficult situations into ones that bring longer life and greater enjoyment of those increasing number of days. Sometimes I tell myself that even if I can’t “think outside the box,” maybe by sheer force of will we can collectively push against the side of that box until it distorts outward and enve- lopes that thing we’ve been pursuing. Perhaps even better is visualizing that we are in a universe of boxes bounded by yet ever bigger boxes and our con- stantly pushing against the walls leads us into the realm of the next, much larger box. As REO Speedwagon once sang during my youth, “Keep Pushin’!” Until next month…

ABOUT THE AUTHOR

John Flucke, DDS, is Technology Editor for Dental Products Report and dentistry’s Technology Evangelist. He blogs about technology and life at blog.denticle.com.

Editor’s Note: An extended version of this article can be found online at dentalproductsreport.com.

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This next-gen curing light enhances polymerization

The PinkWave Curing Light increases composite hardness and decreases shrinkage.  
[compiled by Kristin Hohman]

Information provided by Apex Dental Materials.

The problem

Most curing lights use standard blue and UV lights

UV and blue lights contribute to composite shrinkage

The solution

PinkWave

- QuadWave Curing Technology enhances composite polymerization compared to standard blue or polywave (blue and UV) curing lights
- Said to increase hardness by more than 20 percent while simultaneously decreasing composite shrinkage by 15 percent or more
- Reportedly has the largest curing area capability on the market at 115 m²
- Features a built-in transluminator for crack and caries detection, improving diagnostic capabilities and treatment plans
- Ergonomically friendly designed on/off buttons placed on the top and bottom of the device
- Cordless charging for portability
How virtual reality is changing the dental patient experience

One patient consistently became so anxious, she passed out in the chair. That all changed when she experienced OperaVR™. [by Jo Donofrio]

It is estimated that more than 80 percent of Americans experience some form of anxiety when going to the dentist and approximately 22 percent skip getting the care they need because they are afraid. Jennifer Fernjack, a motivational speaker from Spring Park, Minn., knows this fear all too well.

“For years, I have passed out in the dental chair, sometimes even before getting the Novocaine,” Fernjack says. “My ears start ringing, my hands get clammy, my blood pressure drops, and I am out.”

For Fernjack, her anxiety extended far beyond her time in the dental chair. “For me, it was not only getting through the time in the dental chair, but also the worrying before my next appointment that this would happen again.”

Fernjack is a patient of Bryan Laskin, DDS, founder of Lake Minnetonka Dental in Wayzata, Minn., and the inventor of OperaVR, a virtual reality system that is changing the dental experience for both patient and practitioner.

Scientific research has shown that virtual reality can effectively reduce pain and anxiety and limit worry. More than a mere distraction, OperaVR also known as digital nitrous, takes the patient “out of the office” and into a whole different dimension known as “involuntary mindfulness.”

The OperaVR headset is specifically designed for dentists and features glasses with an adjustable and flexible strap that goes behind the patient’s head. The headset is also designed to not obstruct the dentist’s workspace.

Providing a drug-free sedation, OperaVR also includes several adventures or scenes that depict calming settings such as a beach or sunset that “transport” the patient’s awareness to a different environment and quickly reduces their anxiety and perception of pain.

Patients are encouraged to choose a scene that is relevant to them. “Some dentists have a TV in the procedure rooms to distract you,” Fernjack says, “but with OperaVR, you choose the channel, so to speak.”

Having this choice gives you a perceived sense of control in a setting where you don’t normally feel like you have control.” The patient can also use earbuds to add audio that further enhances the experience. OperaVR can be used with a variety of dental procedures including routine dental visits, extractions, fillings, and root canals.

Additional instructional videos on oral health topics also provide consistent messaging and save time for the dental assistant.

“When people see the OperaVR hardware, they assume it only benefits the patient and only when the patient is in the chair,” Fernjack says. “But the benefits go beyond the chair and beyond the patient.”

The drug-free sedation achieved with OperaVR also reduces the need for nitrous oxide and decreases liability, potential risks, and costs for dentists. It eliminates potential side effects for the patient as well and may result in increased procedural efficiency due to the patient’s relaxed state.

Patients who are confident and comfortable with their dental care are more likely to be compliant with their treatment plan and to tell others about their positive experience, creating word-of-mouth marketing for the dental practice.

“OperaVR is an amazing product,” Fernjack concludes. “When Dr. Laskin first suggested the VR glasses, it gave me a sense of hope. Today, my fears and anxiety about going to the dentist have been transformed thanks to OperaVR.”

OperaVR
OperaVR is a virtual reality headset that provides a drug-free calming experience for anxious patients. OperaVR is reportedly effective at reducing pain and anxiety by immersing patients in a different environment. The headset is designed specifically for dentists and will not obstruct the workspace. OperaVR is equipped with sound, so patients can plug in and become fully focused on a scene of their choosing.

OperaVR “Digital Nitrous” 612-389-9085 | digitalnitrous.com

CIRCLE RS #52

One patient consistently became so anxious, she passed out in the chair. That all changed when she experienced OperaVR™.
LASERS IN DENTISTRY

Dental lasers provide an alternative to traditional treatments, are less invasive, and limit complications.

[by Shannon Pace Brinker, CDA, and Angie Wallace, RDH]

Since their introduction nearly 60 years ago, light amplification by stimulated emission of radiation (i.e., laser) devices have been widely used in the manufacturing, electronics, consumer, and medical industries.

The first laser for dentistry—called the ruby laser—became available in 1964 and was used primarily for hard-tissue ablation, but it was eventually abandoned for dental hard-tissue preparation due to the thermal side effects of the laser light wavelengths, which increased temperatures in dental pulp, caused microcracks, and carbonization.

In the 1980s, ultraviolet excimer lasers and infrared erbium lasers were developed to provide better-quality temperature control and shallower penetration depths. Smaller dental laser devices were introduced in the 1990s, enabling new ablation techniques that limited damage to surrounding tissues.

Over the years, a variety of dental lasers have been introduced and are now used increasingly for a wide range of applications. In fact, applications for today’s dental lasers range from soft-tissue procedures, hard-tissue (i.e., tooth) procedures, diagnostics, intraoral scanning for digital impressions, low-level laser therapy to relieve pain, provide wound healing, and tooth whitening, among others. In particular, specific dental laser devices are cleared by the FDA for certain applications. Broad clearance for soft-tissue surgery includes incision, excision, and coagulation of intraloral soft tissues. Other procedures range from treating herpetic lesions/aphthous ulcers to subcutaneous debridement, cementum-mediated new attachment, reducing bacterial level and inflammation, and pulpotomy. Cleared hard-tissue applications include composite curing, tooth whitening, carious lesion removal and tooth preparation, osseous surgery (e.g., ostectomy, bone shaping, osseous crown lengthening), and endodontic procedures (e.g., canal debridement, preparation, cleaning, apicectomy).

Additionally, dental lasers have been instrumental in diagnostic applications for detecting carious lesions and calculus, as well as providing pain relief. For example, dental laser photobiomodulation (PBM) procedures are useful for temporarily increasing local blood circulation, and also temporarily relieving minor muscle and joint aches, pains, and stiffness.

However, each dental laser is cleared for use for only certain indications and according to specific techniques. These are determined by the dental laser technology’s specific wavelengths of laser light, which dictate the types of tissues (e.g., hard or soft) on which a particular device can be used. As a result, nearly every dental specialty—such as periodontics, endodontics, orthodontics, and oral and maxillofacial surgery—have dental lasers of different wavelengths available for use to facilitate appropriate procedures.

A laser very good for use with one procedure may not be appropriate for another, since no single wavelength will treat all dental tissues.

Therefore, it behooves dentists and their team members to understand their treatment objectives, what they want to accomplish, and different dental laser mechanisms of action before purchasing and subsequently using a dental laser in practice. This requires knowledge of a laser’s effects on tissue and how those effects are achieved.

Categorizing dental lasers

Dental lasers are typically distinguished by their active medium and can contain gas, a crystal, or a solid-state semiconductor. The center of a laser device contains a cavity core, which comprises an active medium consisting of chemical elements, molecules, or compounds. When stimulated, it is the materials in the optical cavity core that produce specific laser light wavelengths. Different than ordinary light, lasers produce monochromatic light, with each wave identical in physical size and shape. The coherent, collimated, and monochromatic wave of light creates a uniquely efficient energy source.

Dental laser wavelength

The wavelength of a laser’s light dictates its interactions, indications, and specificity for use in treatment procedures and for which types of tissues. Soft-tissue lasers’ wavelengths range within the visible light spectrum from argon at 488 nm, argon at 515 nm, to potassium titanyl phosphate at 532 nm. On the electromagnetic spectrum, near-infrared soft-tissue lasers’ wavelengths consist of 810 nm, 940 nm, 980 nm, and 1064 nm. Mid-infrared region lasers—such as those used for hard-tissue procedures—include wavelengths of 2,780 nm and 2,940 nm, and far-infrared region at 10,600 nm.

Four types of interactions (reflected, scattered, transmitted, and absorbed) and non-interactions occur between a laser and soft tissue. Lack of interaction occurs when the laser light beam reflects off of the surface, or when the light beam passes directly through the tissue, reflection and transmission occur, respectively. The most common laser interactions within soft tissue are absorption and scattering. Scattering occurs when the laser light disperses in a non-uniform way throughout the tissue. Absorption occurs when light radiation is absorbed by specific soft tissue elements, such as hemoglobin, melanin, water, and hydroxyapatite.

Once absorbed by the tissue, laser light energy produces a thermal reaction in that tissue. For example, ablation of soft tissue—which is composed of a high percentage of water—occurs at approximately 100°C, the point of water vaporization. This is also the setting that hygienists use to reduce bacteria. In other words, as light energy enters into tissue, if it’s absorbed very readily on the surface, it will vaporize the tissue by raising the temperature until the water in the cells turns to steam, explode, and the tissue is removed.

Other thermal points can treat the tissue, such as at 50°C and above, which inactivates non-sporulating infections.

The Waterlase Express from BIOLASE is a portable all-tissue dental laser.
biological response for healing. Deeper into the tissue to stimulate a readily absorbed, but rather penetrate ing, the laser wavelength should not be able.4,10 Some delivery systems also arms are other delivery systems avail-

A dental laser can deliver its laser energy to tissue through one of several systems. Optic fibers, which are the most common delivery system, use small flexible glass fibers directly in contact with the tissue to deliver the energy.4 Semi-flexible, hollow wave-guides and rigid sectional articulated arms are other delivery systems available.4,9 Some delivery systems also incorporate additional small quartz or sapphire tips that attach to the hand-piece and contact the tissue.25

Types of dental lasers

CARBON DIOXIDE LASERS: Used in dentistry for more than 25 years, carbon dioxide (CO2) lasers produce wavelengths of 10,600 nm and are ideal for incising and excising biopsies, frenectomies, and gingivectomies because their laser light readily interacts with free water molecules in the soft tissue and vaporizes the intercellular wall of pathogens.26 Although CO2 lasers incorporate continuous-wave emission mode, many also include gated-pulse interruption in either super-pulsed and micro-pulsed modes.11 CO2 lasers use waveguide and articulated arm delivery systems.4

The continuous-wave mode with gated pulse reduces the potential of thermal damage to the root surfaces, enabling CO2 laser use for periodontal therapy.18 Irradiation with a CO2 laser produces a positive effect on osteoblast proliferation and differentiation,19 and use of a CO2 laser in combination with augmentative techniques to treat peri-implant inflammatory defects by decontaminating implant surfaces can be an effective way to address peri-implantitis.20 The Solea laser from Convergent Dental was the first CO2 dental laser to be cleared by the FDA for treatment on hard and soft tissue and operates at 9,300 nm.

DIODE LASERS: Diode lasers produce invisible near-infrared light at wavelengths of 810 nm, 940 nm, 980 nm, and 1,064 nm,4 and similar to CO2 lasers, diode lasers are continuous-wave emission mode that can also be manipulated into a gated pulse. Diode wavelengths specifically target the pigments in soft tissue, pathogens, and inflammatory and vascularized tissue.10

Effective for performing gingivectomies, biopsies, impression trenching, and frenectomies, diode lasers also produce bactericidal effects.4 Also, unlike CO2 lasers, diode lasers avoid creating surface defects on zirconia implants because they do not penetrate zirconia material.20 With a single application, diode lasers are also efficient in controlling inflammation around treated implants.21

ERBIUM LASERS: Erbium lasers (i.e., Er:YSGG and Er:YAG) produce wavelengths of 2,780 nm and 2,940 nm, respectively,4 and can effectively treat both hard and soft tissues;21 they are often referred to as all-tissue lasers and improved hemostasis.28 Ideal for gingivectomy, hemostasis.28 Ideal for gingivectomy, debride, and decontaminating implant surfaces,23 regenerate osseous tissues without complications but with high patient and clinician satisfaction,29 and treat peri-implantitis, resulting in improvements in plaque index, bleeding on probing, probing depth, gingival recession, inflammation, and clinical attachment level.27

Further, Er:YAG lasers can be used to successfully debride/ decontaminate implant surfaces,23 regenerate osseous tissues without complications but with high patient and clinician satisfaction,29 and treat peri-implantitis, resulting in improvements in plaque index, bleeding on probing, probing depth, gingival recession, inflammation, and clinical attachment level.27

ND:YAG LASERS: Developed for use in periodontal treatments, Nd:YAG lasers produce wavelengths in the near-infrared range of 1,064 nm and target the pigments in the soft tissue, primarily hemoglobin and melanin.4 With free-running pulsed emission mode, Nd:YAG lasers have various pulse increments for transitioning from cutting to hemostasis.24 Ideal for gingivectomy, frenectomy, impression trenching, biopsy, debridement, and disinfec-
Within surgical procedures, good hemostasis and reduced need for sutures is achieved when soft-tissue lasers are used. Other benefits include selective and exact interaction with tissues—which results in less trauma, ability to lower the bacterial load in the surgical field, reduced inflammation, and stimulation of new fibroblasts and osteoblasts for improved healing. Soft-tissue lasers have also been instrumental for managing gingival tissues for esthetic treatment, non-surgical and surgical periodontal pocket therapy, osseous surgery, and implant therapy. What’s more, compared to a scalpel, lasers produce excellent coagulation, reduce pathogens, temporarily seal nerve endings and lymphatic vessels, and potentially eliminate the need for sutures, all with less scar formation.

Additionally, soft-tissue dental lasers are beneficial in helping to manage periodontal disease. Various soft-tissue laser wavelengths for treating chronic periodontitis—in addition to conventional scaling and root planning—have been shown to effectively reduce probing depth and subgingival bacterial populations.

**Hard-tissue laser procedures**
Erbium lasers can prepare enamel, dentin, caries, cementum, and bone. In addition, erbium and other hard-tissue lasers can be used for removing bone in crown-lengthening procedures for esthetic enhancements. They can also cut soft tissue. When used for hard-tissue applications, erbium lasers diminish or eradicate vibrations, the sound of dental drills, microfractures, and alleviate a great deal of stress that patients associate with high-speed handpieces. Restoratively speaking, and compared to a drill, hard-tissue lasers produce no smear layer on dentin or bone, no microfracturing of enamel rods, and simultaneously disinfect hard-tissue surfaces.

In fact, hard-tissue lasers have been used in conjunction with endodontics since the early 1970s. Laser applications within endodontics include pulp diagnosis, treating dental hypersensitivity, pulp capping and pulpotomy, root canal sterilization, root canal shaping, and obturation and apicectomy.

**Low-level laser procedures**
Low-level laser therapy (LLLT) or PBM, has been a treatment modality for the past 30 years. Low-level laser therapy or cold laser therapy is used for wound healing and muscle repair. LLLT also has FDA clearance for treating and managing oral mucositis. LLLT uses light energy from adenosine triphosphate (ATP) to stimulate the body’s biological responses. This increases cellular energy and alterations in the cell membrane, resulting in pain relief, wound healing, muscle relaxation, immune system modulation, and nerve regeneration.

Although low-level laser therapy has been used with soft tissues, it is also being used increasingly for hard-tissue applications, such as treating dentin hypersensitivity and pain attributed to the periodontal ligament. In fact, research has demonstrated that laser therapy is advantageous compared to topical medicaments when treating dentin hypersensitivity.

**Laser diagnostic procedures**
Since their introduction, diagnostic lasers have increasingly become a part of routine clinical examinations. Fiber-optic transillumination is visible to the naked eye, showing changes in color, shadowing, and craze lines within enamel and dentin. Digital imaging fiber-optic transillumination incorporates a transilluminating camera to identify demineralization and capture images of the illuminated tooth using visible light. The examination can be performed in real time, with the camera moved around a patient’s mouth. This technique also can determine changes in density, even in interproximal areas.

Camera’s such as the Digital Doc’s LUM extends the detection capabilities of America’s leading camera IRIS with well-proven sub-enamel illumination diagnostic methods. This compact, easy-to-use tool provides instant documentation as well as detection of all findings. The LUM’s specialized LED technology applies a high-intensity light source to the tooth with unique positioning so the light is traveling perpendicular to the plane of the tooth.

In a tooth without impurities the light will travel uninterrupted from the buccal surface to the lingual, which can be observed on the occlusal table of the tooth by its uniform illumination. When a tooth has impurities such as fractures or leaking amalgam, the light is dispersed showing up clearly in near X-ray like images.

Laser-induced fluorescence, however, is often considered the benchmark for cavity detection. These devices direct laser light at hard dental tissues in order to identify if there will be a shift in the light wavelength being reflected back from the tooth, depending on the nature and density of the tissue. Typically, a 635-nm cavity detection laser uses fluorescence to quantify the presence of decay, help identify pit-and-fissure lesions, and provide quantitative data.

More recently introduced caries detection lasers rely on light emitting diode (LED) fluorescence, filters and image-capturing technology within the unit to differentiate between decay...
and demineralized tooth structure. Differently colored areas indicate the progression of carious lesions or the effectiveness of remineralization therapy.39

Education and use requirements
As with all technologies, it is imperative that dental professionals undergo thorough and comprehensive training in order to understand the functionalities, limitations, and applications of dental laser technologies. It’s also essential that the entire staff is appropriately trained on the safe and effective use of dental lasers, as well as an understanding of safety standards and government regulations.

Among the important considerations for dental practices to follow when incorporating lasers is the requirement of having a designated Laser Safety Officer (LSO). The LSO is responsible for establishing the office’s laser procedural and administrative controls and protocols to ensure the laser is used in a safe and effective manner. Some of the primary duties of the LSO include defining the hazard zone when a laser is in use and ensuring that all of the practice’s staff members have been adequately educated and trained on laser use and safety to the appropriate level for their duties. The LSO’s other responsibilities include—but are not limited to—regular inspection of the laser system(s) in use; ensuring laser protective eyewear is appropriate and in good repair; and ensuring standards for laser safety and infection control protocols are followed.

Although each state’s dental practice act regarding lasers varies in terms of certification, training, and who can use a laser for which procedures, licensed dental professionals must be properly trained and use a laser within their scope of practice, as well as in a manner that is safe, effective, and consistent with the clinician’s education, training, and experience.

Hands-on training should focus specifically on the device the clinician is using and the procedures being performed. Regulations on whether a dental hygienist may or may not use a laser, and the type of training required, also varies from state to state.

Conclusion
From soft-tissue lasers to those designed for hard-tissue applications, and from lasers used for dental diagnostics to those approved for therapeutic indications, dental lasers today can serve many beneficial roles when used by properly trained professionals.

An alternative to conventional treatment modalities, laser treatments reduce the number of necessary appointments and stress, increase visibility, improve patient comfort, and reduce complications. As with any less-invasive treatment, laser therapy eliminates many of the complications associated with surgical treatment, providing regeneration effects.

Training, certification, and information on specific state regulations can be obtained from the Academy of Laser Dentistry (ALD) at laserdentistry.org. The ALD’s annual meeting this year will be held April 2-4 in San Diego.

For references and author biographies please go to www.dentalproductsreport.com.
If you’re not looking for something, you won’t see it.

In a column dedicated to engaging the topics that will shape the future of our profession, I can think of few topics more important than the dental practice’s role in raising awareness around airway health. The more researchers learn about the connections between breathing and overall wellness, the more we see critical links between airway health and everything from fatigue to food cravings, children’s behavioral issues, and even chronic infections.

The Foundation for Airway Health (FAH)—co-founded by Drs. Howard Hindin and Michael Gelb—is an interdisciplinary organization with a laser-like focus. “Our number one goal is that every single dentist should screen every single patient for an airway problem, not diagnosis or test, but screen,” said Dr. Hindin. “If a patient is at risk, the clinician can refer them out or they can learn more and pursue treatment—that is up to them. The goal of the Foundation is that everyone with a problem gets the information to recognize the issue. What professional spends more time with patients in the course of the year than the dentist and dental hygienist? This is the most logical place to start the conversation.”

According to the American Sleep Apnea Association, an estimated 22 million Americans suffer from sleep apnea, with 80 percent of the cases of moderate and severe obstructive sleep apnea undiagnosed. Dr. Hindin points out that almost every member of the FAH Board of Directors has a story of their own undiagnosed airway issue.

“One member bought a cone beam imaging system for his practice and volunteered to be the first one to try it out. When he saw how small his airway was, he sought treatment,” Dr. Hindin shared. “When I lecture to doctors, I point out that half of them have problems themselves. They should start with screening themselves. If dentists start looking and see how many people this affects, it will open their eyes and they won’t be able to close them again.”

Dr. Hindin and the FAH team understand that a critical part of raising awareness among both the public and the dental community means holding their own authority lightly. “We don’t have to be the sole education body, we just want people to seek out information. You can’t learn it all from one teacher or the first time,” said Dr. Hindin. “We are constantly considering how to present information in a way that will move people. We have to reach the people who aren’t already at the dental sleep medicine lectures and meetings.

“For that reason, we talk a lot about how important airway health can be in the long-term success of the dental practice,” he continues. “If you want a successful practice, you have to look at sleep because it impacts chronic health, children’s ability to learn, and is even a culprit in failed dental treatment. It is not a 100 percent cause of any of these
things, but important enough that if you don’t consider it, you’ll never fully address the problem. So, whether you screen and find nothing, or screen and refer to physicians, or screen and treat in-house, you are building trust and relationships with patients that will only improve your dentistry and support other aspects of the practice.”

At its annual meeting—the Airway Summit was held in November 2019—the FAH is doing its best to make not only the clinical, economic, and marketing case for embracing airway health screening, but also facilitating the kind of learning that comes from dental professionals engaging with other medical professionals.

“In the 1900s, the relationship between dentistry and medicine was much closer. Dentistry evolved to be more focused on repair than health, but we are now starting to see things switch back. This is why the Foundation isn’t just for dentists,” Dr. Hindin said. “One of the compensations for not breathing well is neck bending, which causes poor posture that needs to be corrected. So, we have a lot of physical therapists engaged in this work, we even have one as part of the team. Each field can manage their piece well, but optimal care comes from working together. That is why collaboration Cure is the theme of the annual meeting agenda, bringing an interdisciplinary team together to learn more about what one another does, and how to network.”

The Foundation is also committed to building a Corporate Roundtable that allows manufacturers to be part of the awareness-raising work, in addition to making it easier for dentists to find the goods and services that support them on their journey. Many have a footprint in the airway/sleep world, but the involvement is driven by information and helping dental professionals feel prepared and confident in discussing airway health. Progress is being made: In 2018, the American Dental Association passed a resolution that all doctors should be screening for sleep problems.

But, as Dr. Hindin points out, they never told practices how to network.

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Progress is being made: In 2018, the American Dental Association passed a resolution that all doctors should be screening for sleep problems. But, as Dr. Hindin points out, they never told practices how to implement the resolution.

“In response, a task force was assembled to create a screening questionnaire for children,” he shared. “One of our board members is heading it up and we will be presenting the recommendations in April.”

As a Board Member, as a clinician and as a member of the community, I am grateful for the work the Foundation is doing to help ensure that we are professionals who are informed enough to set the right priorities, and also doing the work to translate our values into action. If you are interested in helping awareness for airway health, consider joining FAH as an Airway Advocate; workshops and webinars are available throughout the year. For more information, go to airwayhealth.org.

ABOUT THE AUTHOR
Dr. Lou Shuman is the CEO of Cellerant Consulting Group, dentistry’s leading corporate incubator and accelerator, a venture-in-residence at Harvard’s i-Lab, the chairman of the technology advisory board at WEO Media; a long-time contributor to Dental Products Report; and the founder and creator of the Cellerant Best of Class Technology Awards, an unbiased nonprofit initiative that, in conjunction with the leading technology experts in the field, selects annually the most important technologies in the industry. Dr. Shuman is highly respected in the dental corporate and education community and is personally known for his expertise in internet strategy, strategic relations, emerging technologies, digital marketing methods, and operational practice management.

FAH Roundtable Partners

Corporate Roundtable members share their vision, intellect, and financial resources to help support initiatives that make a profound difference in improving the quality, access, and delivery of care and the training and resources for clinicians. Their work is worth recognizing:

- GreenSky
- HindexRV
- i-CAT
- ProSomnus
- RHINOMed
- SleepArchiTx
- Vatech

“ If you want a successful practice, you have to look at sleep because it impacts chronic health, children’s ability to learn, and is even a culprit in failed dental treatment.”

— HOWARD HINDIN, DDS

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A smart implant detector

The Spotter Smart Implant Detector from Forum Technologies is an advanced electronic device that accurately locates dental implants covered by gum tissue. [compiled by Stan Goff]

Information provided by Forum Technologies.

THE PROBLEM

Determining an accurate location of buried implants can be challenging and time consuming.

Chairtime, healing time, and pain required for either the patient and the dentist can be substantial.

THE SOLUTION

Spotter Smart Implant Detector

- This tool helps to easily and accurately find buried implants
- Eliminates the need to open the flap
- Minimizes suturing requirements and shortens the recovery period
- Saves valuable gum tissue
- Suitability with various Titanium implant systems
- For 2 stage implantology when using no healing cup, Spotter is a unique instrument in the modern implantology procedure. Utilizing advanced technology, it supports the dentist’s position as innovative and technology oriented.
Confidence and comfort with a powered injector for anesthesia

Dentapen from Septodont is designed to enable clinicians to deliver effortless and painless injections all day long, which is a big plus for both you and your patients. [compiled by Stan Goff]

Information provided by Septodont.

THE PROBLEM

Patients are afraid of needles, and practitioners can lose confidence in the routine administration of local anesthetics when they don’t get consistently good results.

Lengthy training is needed with some injection techniques in order to feel confident in delivering comfortable and reproducible injections all day long.

THE SOLUTION

The Dentapen

- Matches your patients’ preferences: Constant flow to reduce pain, with non-threatening look
- Two different handles allow you to hold like a traditional syringe or pen-style
- Matches your habits: No training (both syringe and pen-like handling) and compatible with any needle
- Features three injection speeds for better management of your injections and two modes (continuous flow or gradual increase)
- Designed to enable effortless injections and painless injections consistently
- The Dentapen is ergonomic and lightweight (1.4 ounces / 40 grams)
- Cordless and battery-operated without a foot pedal or console
A breakthrough approach to salivary screening

SillHa Oral Wellness System technology allows easy testing of patient’s saliva, providing a quick clinical measurement of tooth health, gum health, and oral cleanliness. [by Scott Rupp]

Simple saliva test yielding quick results—with an easy-to-understand, multi-point analysis—while providing opportunities for preventive or corrective care before signs of disease appear seem aspirational—until now.

The SillHa Oral Wellness System quickly and efficiently provides dentists and oral health professionals the ability to clinically test their patient’s saliva to complement an overall assessment of the patient’s oral health.

SillHa helps doctors easily measure three important oral health components, including the patient’s overall tooth health, gum health, and oral cleanliness.

With a small saliva sample, SillHa provides an objective measurement of key components of saliva that have been used to show an increased risk to develop caries—tooth decay—and periodontal disease.

Through the test, doctors can see if patients are at an increased risk for developing caries and periodontal disease. Using the dual reflectance method, SillHa measures the reactivity from a saliva sample applied to a test strip, and results can provide otherwise invisible information—the activity of bacteria, acidity, and presence of inflammatory markers.

Eринne Kennedy, DMD, MPH, MMSc, a partner at Alliance Dental Center in Quincy, Mass., practicing since 2015, has used SillHa since 2019.

“I jumped on board and was really excited to use it because this salivary technology and evaluation solution can be used chairside,” she said. “It is efficient for my busy practice, and has been easy to adapt, implement, and use during patient appointments.”

Dr. Kennedy’s staff tests each patient’s saliva using SillHa, about 150 per month, during each appointment, primarily as disease control, prevention, and treatment.

The system is easy to operate and minimizes workflow disruption. It measures seven items in one test in five minutes chairside during the patient’s appointment, so results are available almost immediately. The system is also compact and lightweight and can be used in small spaces.

The reports generated are visually appealing to support patient education and conversations about oral health.

“Patients with no sign of disease or symptoms of pain or discomfort usually think they are healthy, but the salivary data collected by SillHa technology helps us gain a view into the things in the mouth that may be changing or in some cases unhealthy,” she said.

This view into the mouth is especially crucial for patients who are undergoing physical changes, like pregnancy, or for those who are taking medications, so that patients and providers can identify the first signals of the disease process.

In one patient, a pregnant woman who had no history of restoration, Dr. Kennedy used the SillHa Oral Wellness System and found the patient’s saliva indicated she may be at risk for unhealthy oral health conditions during the pregnancy. Because of the test results, Dr. Kennedy responded with care and prevention before any long-term damage was done to the patient.

“A patient’s current condition or season of life can change, but we can now identify any changes in their saliva, even before there is evidence of the initial signs of disease,” Dr. Kennedy said.

Patient response is overwhelmingly positive. “Our patients are obsessed with this,” Dr. Kennedy said. “I haven’t had a patient that doesn’t love having a saliva test.”

Because of patient response to the tests, she now uses saliva to engage patients more, which—along with the results—helps them feel empowered and that they are taking proactive steps to improve and maintain their health, she said.

By using this technology regularly, Dr. Kennedy says her patients even request the saliva tests and are excited to see their results.

“They want the data to track themselves and to hold themselves accountable for their health,” she said. “Saliva is a reflection of what’s going on in our bodies, and understanding the role of saliva is vital to understanding a patient’s overall health.”
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DO MORE WITH LESS IN CLEAR ALIGNER THERAPY

These two cases demonstrate the power of MOPs® and HFV technology to maximize efficiency and predictability in clear aligner cases while drastically reducing the number of total office visits. [by Dr. Geoffrey Jackson]

SEEMINGLY OVERNIGHT, the world digitally transformed to a network in which everyone and everything is connected. The ability to start your car with your watch, and open the garage door with your voice are clear signs that times have changed and convenience is king. Today, we have opportunities to connect patients with excellent outcomes in fewer steps than ever before.

At Jackson Dental, we take customer service and technology to the next level. Located in the heart of downtown Tampa, Fla., in the Bank of America professional building, I built my practice around uniting two principles—excellence and efficiency. Patients want excellent results, delivered comfortably in as few visits as possible.

Developing systematic approaches and utilizing the latest technology to exceed patient expectations has been the driving force behind my practice decisions and rapid growth. Cosmetic veneers and crown restorations are scanned and milled to match perfectly in 15 minutes, eliminating extra appointments. Our chairs are heated massage chairs that recline to enjoy large screen TVs through sound cancelling headphones. Little touches that give patients what they want comfortably and faster go a long way.

Synergies between technology and biology are having a profound impact on orthodontic treatment, and its delivery. We are efficiently delivering excellent finishes, with tougher cases, in half the visits of standard treatment. The confidence I now have when presenting treatment plans allows me to remain price competitive despite premium commercial space and the advanced technology I include in treatment.

How long should treatment take?

Dr. DeWayne B. McCamish, DDS, MS, past-president of the American Association of Orthodontists (AAO), said, “What most people don’t understand is that moving teeth is a biological process that involves bone that dissolves and re-builds as teeth are moved into their new positions.” So whether using conventional braces or clear aligner therapy, the rate-limiting factor for tooth movement is always based on a patient’s biology.

A systematic review recently published by the American Journal of Orthodontics and Dentofacial Orthopedics (AJODO) tabulated the average time to complete orthodontic treatment was 20 months and required 18 visits. Further, it concluded, “The relative merits of measures to hasten orthodontic treatment should be balanced against this yardstick.”

How can we improve efficiency?

A huge advantage with clear aligners is patients not needing to routinely come in the office to get their braces “tightened.” I have dedicated time and training to learning the technology behind the Invisalign system and feel very comfortable treating advanced cases now. Clear aligner orthodontics allows patients to easily and incrementally advance their treatment with a mechanically advantageous light, continuous force.

If biology dictates movement, can we adjust the biology?

One of the most remarkable tools I have implemented is the biology activating effects delivered by Propel Orthodontics. As an early adopter of new technology, I began my first case with micro-osteoperforation (MOPs) treatment utilizing the motorized driver in November 2016. The premise was simple and amplifying the primary variable driving tooth movement just made biological sense. Disturb homeostasis with a shallow cortical perforation the size of pen point in an area where more biological activity is needed. The perforations then trigger a natural immune response, called the regional acceleratory phenomenon (RAP), that increases bone turnover.

Preclinical trials showed efficacy—subsequent human clinical trials (using the appropriate device and technique) have duplicated the response in humans. My first treatment was quick and uneventful as anticipated. My patient had no issues during or afterwards. I soon placed an order for more “tips” and decided to try their high-frequency vibration device (HFV) as well.

At that time, the product (VPro from Propel Orthodontics) was indicated as an aligner seater which seemed to be an expensive splurge compared to the chewies and munchies I was accustomed to giving. Regardless, I decided to try it with a patient experiencing mid-treatment tracking issues despite using traditional seating appliances.

It was my feeling the tracking issues were more related to wear time than seating, but I thought I’d try it out. Over the next few appointments she spontaneously expressed enthusiasm about the device in that it made wearing her aligners “feel more comfortable.” Ultimately, we completed the initial set of aligners and detailed with one short set of refinement aligners.

Today, both the MOPs treatment and VPro high-frequency vibration have been FDA cleared Class II for accelerated tooth movement. While I have, and do use these adjuncts independently at times, I now most often use them together. Based on what I have read, the MOPs treatment activates the bone remodeling biology, and the...
VPro device prolongs the biological response so I don’t have to repeat the MOPs treatment.

I didn’t intend for this article to delve deep into the science, instead I will refer you to supporting literature freely accessible on the company’s website. I would however enjoy sharing a transparent look at just how Propel biology and Invisalign technology have helped me deliver excellent finishes in far fewer office visits than the typical case (18).

Case 1 – Deep Bite (Step-by-step)

Patient is a 32-year-old male with frequent business air travel. Chief complaint was pain when chewing (TMJ) and how his front teeth looked. He elected treatment with Invisalign Full and 37 aligners were ordered. He presents with Class I molar relationship with 100 percent deep bite, moderate to severe crowding, a mandibular canine 60 percent blocked out, and occlusal contact on right-side only.

Visit 01 Attachments were placed on appropriate teeth using blue etch, Viva pen bond from Ivoclar Vivadent and Shofu’s Beautifil flowable-red, shade trans. Performed IPR as indicated. Aligner 1 fit is excellent. Delivered aligners 1-2 at 14-day interval.

Visit 02 Aligner 3 fit is good with minor lag on #7. Discussed Propel (MOPs) to allow better tracking and reduced to 7-day interval. Delivered aligners 3-4 because patient needs to be seen in one month prior to leaving on business for two months.

Visit 03 Aligner 5 fit is good. Performed IPR as indicated. Delivered aligners 1-2 at 14-day interval.

Visit 04 Aligner 9 fit is good. Delivered aligners 9-12 at 14-day interval.

Visit 05 Aligner 13 fit is good. Delivered aligners 13-16 at 14-day interval.

Visit 06 Aligner 16 has problem fit. Attachments are all in place. Reformatted scan taken. Discussed Propel Tx & VPro to activate biology and accelerate aligner exchange to 7-day interval but he must commit to wearing 22 hours/day. Patient agreed.

Visit 07 Refinement—Switching to Fast Lane. Refinement includes 18 aligners. New attachments placed. Aligner 1 demonstrates excellent fit. Removed aligner and proceeded with 2 rinses of chlorhexidine, infiltrate anesthesia and performed Propel MOPs treatment in areas of significant movement. Delivered VPro device and aligners 1-7 at 7-day interval, possibly decreasing to 5-day interval if tracking perfect.

Visit 08 Aligner 7 has excellent fit. Patient indicates aligners feel loose on day 4 and has been advancing aligners on day 5. VPro compliance tracker indicated he was often using it 2x per day. Delivered aligners 8-14 at 5-day interval.

Visit 09 Aligner 14 has good fit but has been on this stage for only two days. Patient commented, “I can’t believe how much my teeth are moving after Propel!” Delivered remaining aligners 15-18 at 5-day interval.

Completed aligner series:

Visit 10 Patient elected for a second refinement to resolve slight crowding of lower anterior. Took Scan and scheduled follow-up.

Visit 11 Refinement 2: Refinement includes 10 aligners. Attachments placed. Delivered all 10 aligners.

Visit 12 Completed active treatment: Patient states, “My TMJ is completely gone now. It’s crazy my teeth moved that much. They look awesome.” Removed attachments, took final photos and scanned for Vivera retainers from Invisalign.

Case 2 – Spacing (Step-by-step)

Patient is a 50-year-old male. Chief complaint was large space between front teeth. He presents with Class I molar relationship with generalized spacing, a 5 mm maxillary diastema, significant occlusal wear and Class V abfractions. He elected treatment with Invisalign Full and 20 aligners were ordered (17 + 3 OC).

Visit 01 Attachments were placed on appropriate teeth using blue etch, Viva pen bond and Shofu’s Beautifil flowable-red, shade trans. Per-

Table 1

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Efficiency Yardstick based on AJODO Systematic Review</th>
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<tr>
<td>Treatment time</td>
<td>13.5 months</td>
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<tr>
<td>Visits</td>
<td>12 (5 after MOPs/VPro)</td>
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CASE 2

Table 2 Efficiency Yardstick based on AJODO Systematic Review\textsuperscript{2}

<table>
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<tr>
<th></th>
<th>Treatment time</th>
<th>7 months</th>
<th>68% faster</th>
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<tbody>
<tr>
<td>Visits</td>
<td>7</td>
<td></td>
<td>61% fewer</td>
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formed IPR as indicated. Aligner 1 fit is excellent. Removed aligner and proceeded with two rinses of chlorhexidine, infiltrate anesthesia and performed Propel MOPs treatment in areas of significant movement. Delivered VPro device and aligners 1-8 at 5-day interval.

VISIT 02 Aligner 8 has good fit. Patient states, “I love this thing,” referring to how his VPro device makes aligners stick to his teeth and exchanges more comfortably. Delivered aligners 9-17 at 5-day interval.

VISIT 03 Aligner 17 has good fit after two days wear. Instructed patient to wear 17 and 18 for 7 days each and delivered aligner 18 (Over correction) and whitening syringes.

VISIT 04 Completed aligner series: Aligner 18 has good fit. Patient has 0.5 mm gap remaining between centrals and elects to do a refinement. Removed all attachments and performed scan.

VISIT 05 Refinement 1: Refinement includes 13 aligners. Attachments placed. IPR is scheduled for Aligner 9. Delivered aligners 1-8 at 7-day interval approaching retention stage.

VISIT 06 Progress scan indicates all green. Aligner 8 has good fit. IPR performed as indicated. Delivered aligners 9-13 at 7-day interval.

VISIT 07 Completed active treatment: Patient is very happy with smile and already whitened teeth in preparation for cosmetic bonding. Bioclear matrix system used to eliminate black triangles. Removed attachments, took final photos and scanned for Vivera retainers.

Takeaways and conclusion Neither of these cases were simple. Both presented challenges for aligner therapy. Torquing mandibular canines has been notoriously challenging with aligners. Translation/space closures are difficult even with fixed appliances.

Today I would prescribe MOPs/VPro from the beginning on both cases and implement MOPs treatment at visit 2. Doing so could have eliminated up to six office visits on case one alone. I now prefer to initiate aligner wear at 14-day intervals providing just two aligners to gauge compliance. Then at visit 2, we “activate the biology,” accelerating aligner exchanges to 5-day intervals moving treatment along three times faster.

Patients know if they are not compliant with aligner wear or five minutes per day VPro use, we will have to “slow down treatment” and return to longer aligner exchange intervals. This is a major driver of compliance.

Running a busy practice is a daunting decision tree. How do we increase production, or get more time to do the things we want? The efficiency game is about doing more with less. I have found that sometimes the biggest impacts can come from the smallest things, like just giving someone a smile.

For references and author bio, visit: www.dentalproductsreport.com.

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A non-prescription option for dry mouth sufferers

The GUM® Hydral™ Dry Mouth Relief line provides all-day, all-night relief for xerostomia. [compiled by Kristin Hohman]

Information provided by Sunstar America, Inc.

THE PROBLEM

Most dry mouth sufferers have been searching for a multi-symptom relief option

82 percent of xerostomia sufferers wish they had a better treatment option for their dry mouth*

THE SOLUTION

GUM® Hydral™
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- Ingredients work like natural saliva to relieve multiple xerostomia symptoms and provide deep moisturizing relief at the tissue level, soothing oral mucosa
- Proven to provide patients with immediate and long-lasting relief up to 4 hours
- Sugar-free formula with gentle mint flavor and improved taste
- Suitable for those with allergies as it does not contain milk or egg
- Free samples available at the manufacturer’s website

*Source: Gallup Study of Dry Mouth, 2017
**Source: Sunstar DOF-0026
***As sodium hyaluronate

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Simplify and accelerate denture and retainer cleaning

The iSonic DS310 ultrasonic cleaner is ideally suited for cleaning dentures and is designed to prevent cross contamination. [compiled by Noah Levine]

Information provided by iSonic.

THE PROBLEM

Using a Ziploc bag in an ultrasonic cleaner to clean dentures or retainers doesn’t clean well and OSHA calls it a risky practice

The soft plastic bag material blocks ultrasound and is prone to puncture. Cross-contamination is also a concern, but using two bags or a bag inside a beaker creates a double-barrier, reducing cleaning effectiveness.

THE SOLUTION

iSonic DS310 miniaturized commercial ultrasonic cleaner with a disposable PET cup

- The world’s smallest commercial ultrasonic cleaner—less than 9 by 6 by 6 inches—features a powerful stack transducer and power intensity 2 to 3 times or higher than a larger instrument cleaner
- Using a standard 9 oz. PET water cup—a hard plastic that transmits ultrasound—provides a leak-free, disposable and low-cost way to clean appliances and it doesn’t interfere with regular instrument cleaning
- Used in conjunction with iSonic White denture/retainer cleaning crystal it is proven to be effective
- A disposable PET cup can also be used for chair-side operations such as removing debris from a rotary tool with saline water
- The system includes an integrated stainless steel beaker with a cover for cleaning burs and files, and the main stainless steel tank can also be used to clean instruments as well
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Sweeping up prophy efficiency

The Ultrapro Tx Sweep disposable prophy angles from Ultradent feature an innovative brush guard that reduces splatter and keeps prophy paste where you want it. [compiled by Noah Levine]

Information provided by Ultradent Products.

THE PROBLEM

Prophy paste can splatter when being applied, creating a mess and wasting material.

This splatter not only causes clinicians to use extra prophy paste during each appointment, but it can also obscure the working area, reducing a clinician's efficiency.

THE SOLUTION

Ultrapro™ Tx Sweep™

• The innovative brush guard features flexible bristles designed to reduce splatter and prevent saliva from collecting and roping around the cup.

• In testing, the disposable prophy angles reduced splatter by up to 95 percent.

• The brush is designed to sweep paste and saliva back toward the patient's tooth allowing clinicians to continue working and reducing the number of stops needed to refill the prophy cup with paste.

• The Sweep angles feature the same benefits as other Ultrapro Tx prophy angles, such as advanced internal blade design and outer ridges for enhanced interproximal clearing.

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* 2017 Gallup study of Dry Mouth
** Data on file DOF-0036
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GRAY MATTER

DENTAL CARE FOR AN AGING POPULATION
While each patient is unique and has his or her own specific care needs, some patient demographics have their own group-wide demands. Not unlike pediatric dentistry, older patients require their own forms of care—from specific types of materials and equipment to the ways in which they are treated, not to mention their overall access to care.

Population needs

While loss of teeth increases with age and varies by race and ethnicity, nearly 19 percent of seniors 65 and up no longer have natural teeth, according to a 2017 study published in the American Journal of Public Health (June, “Oral Health and Aging”).

Tooth loss has multiple impacts on health and well-being. Seniors who have lost all or most of their natural teeth avoid eating fresh fruits and vegetables; a reliance on soft foods results in a decline in nutrition.

Additionally, 53 percent of seniors have moderate or severe periodontal disease, with evidence increasingly pointing at an association of periodontal disease with chronic conditions such as diabetes, heart disease, and stroke, the AJPH study states.

Part of the solution is regular, consistent oral care.

“There are a few things that are very important for older patients,” says Dr. Quinn Dufurrena, DDS, chief dental officer at United Concordia Dental. “Number one is that they need to be receiving regular oral care, because as they get older and their gums recede, it creates other problems, like root caries.”

Knowing the patient’s dental and medical record is necessary, and one detail that tends to suffer is having an accurate record of the patient’s medication. Some medications commonly cause dry mouth, while still others could pose interaction complications.

“A lot of times, patients forget what medications they’re on,” Dr. Dufurrena says. “And especially older individuals are sometimes on quite a few medications. I always ask my patients to bring a list of medications with them, because if they get to the office and they start writing them down, a lot of times they will forget, or, in some instances, they just don’t think that it’s important. But they don’t understand the ramifications of a lot of the medications that they take.”

To that end, simply having insurance coverage and access to a dentist is critical for seniors, especially because Medicare doesn’t cover most dental care, Dr. Dufurrena says.

“It is important to understand that the older population may not have employersponsored dental plans, and traditional Medicare doesn’t really cover dental,” Dr. Dufurrena says. “United Concordia Dental offers coverage under Medicare Advantage plans offered under many of our Blue partnership arrangements across the country. It’s important that this older population maintain coverage if they can.”

Teledentistry

For some senior patients, physically getting to the office is extremely difficult. Under these circumstances, it’s helpful for dental professionals to visit to them instead. In such cases, a hygienist equipped with teledentistry gear can be dispatched so the patient doesn’t have to go to the office, but the dentist can still see what’s going on. MouthWatch’s TeleDent software platform helps coordinate those connections.

“It could be as simple a setup as an intraoral camera, which is...
Why Seniors Don’t Seek Dental Care

About half of seniors do not go to the dentist regularly and more than 1 in 5 Medicare beneficiaries have not visited a dentist in five years, according to a 2017 study published in the American Journal of Public Health (June, “Oral Health and Aging”). Below are two of the most cited reasons why senior citizens skip dental care.

- **COST & COVERAGE:** About 70 percent of older Americans lack dental insurance, the A-JPH study states, with the remainder being covered through employer plans, Medicaid, or self-purchased supplemental insurance. Despite its 55 million recipients, Medicare covers very little in the way of dental care. Medicare Advantage plans do offer limited dental coverage and most elderly people lose coverage when they retire. The irony here is many seniors lose dental insurance when its most needed. That puts the onus on individuals to pay out-of-pocket for their own care. Therefore, it’s no surprise that most cite cost as a reason they skip dental appointments.
  - Medicaid does offer limited dental benefits, but that varies state-by-state. Only 15 states offer a comprehensive dental benefit to Medicaid recipients, according to a 2015 Washington Post article.
  - Additionally, 80 percent of dentists do not accept Medicaid due to low reimbursement rates, according to the A-JPH study.

- **TRANSPORTATION AND MOBILITY:** Safe and accessible transportation remains a top concern for older adults and caregivers, according to the National Aging and Disability Transportation Center. Add in decreased mobility and increased frailty, and transportation is all the more difficult.

very affordable—that we sell for $299—and then that gets plugged into a computer with a browser, and that’s all you need for someone, such as a nurse practitioner in a nursing home, to collect the visual data that facilitates a dentist creating a treatment plan,” says Brant Herman, CEO of MouthWatch. “It could be just a computer and intraoral camera, or it could be as robust as a full portable preventive or restorative care unit that a provider brings on site where they’re doing restorations, taking impressions for dentures or the original needs being identified via teledentistry. Even referrals can take place with this data.”

This means that hard-to-serve patients receive the care they need, and MouthWatch’s goal is to deliver a new method of care in the most convenient way possible, Herman adds.

“Our goal is connecting patients to dentists and dental care providers in the most convenient and efficient way possible,” Herman says. “We see teams of providers being able to deliver new models of care—a hygienist going into a nursing home or an independent living facility or a senior living community, providing preventive care, keeping the most expensive part of dentistry—the dentist—in a more efficient role where they’re building treatment plans, providing evaluations, and connecting patients to care. But, they’re doing that without having to travel and be on-site.”

Remote workflows

If a concern is identified, the dentist can jump onto the video feed and take a closer look. And just like in a traditional brick-and-mortar practice, the dentist conducts an evaluation of areas of concern, then makes a recommendation for treatment, and the patient is scheduled to come back for another appointment, Herman explains.

“All of that happens, except the dentist’s evaluation is happening virtually. If there is an offsite preventive program and there’s a need for treatment that’s recognized, the hygienist isn’t diagnosing, but they are identifying the areas of concern. The dentist is creating a treatment plan, and whether a mobile dentist goes out to the senior or transportation is arranged, and the senior comes into the brick-and-mortar practice, that’s what we’re able to provide.”

Similar to pediatric patients, a guardian may need to be involved when it comes to care for senior patients. In these cases, teledentistry allows for the easy sharing of information with caregivers.

“Sometimes, the same things that a kid needs are the things that a senior in a nursing home would need,” Herman says. “We can allow communication of treatment plans with images, with procedure codes, with clinical notes, so that a dentist who’s offsite at their home office builds a treatment plan. They include pictures of issues that are identified, cost estimates of what services they recommend. That treatment plan can now be shared.

“If we’re in a school setting, it might go to the mom or the dad. In a senior setting, it goes to the power of attorney or the resident’s adult child. So, we’re sharing the information that’s needed for the elderly parent in the nursing home directly to the person who has to pay for the services.

“Now, the dentist and the adult child can have a video conference, communicate and say, ‘Look, can you explain this a little bit more? I’m not sure why mom needs two extractions and then a partial denture,’” he continues. “With a live video conference, the dentist can explain everything to the family member, get sign-off, and then go provide services to the senior.”

End-to-end care

The dental and medical worlds tend to live in two disparate silos. That is, the two disciplines don’t often come together. However, there is more and more evidence that the two should be more complementary of each other.

“We have participated in a lot of research about the association between periodontal disease and systemic diseases like diabetes and heart disease,” Dr. Dufurrena says. “A lot of older patients don’t understand that association, and rightfully so. But, it’s very important for the dentists to understand this association.”

An easy way to achieve that goal is by simply asking questions and really listen to what patients have to say, Dr. Dufurrena says. Being aware of the interactions of prescription medication is paramount, he adds.

“In the short term, it’s very important that dentists ask their patients about their medications and really listen,” Dr. Dufurrena says. “A lot of times, a patient has a whole list of medicines that they’re on, and a lot of times it’s easier for the older patients to bring in a list. The dentist has to be very cognizant of the interactions of those medications.”

“In the long-term,” he continues, “we should integrate medical and dental practice software, so the dentists have direct access to the medications a patient is taking. I think that would be a big help, but we’re a ways from that.”

Going deeper, it requires coordination between the dentist and medical doctor. Technologies like TeleDent can help with that communication, Herman observes.

“It helps improve the communication and collaboration between all of the touch points a patient might have in their healthcare journey,”

“Our goal is connecting patients to dentists and dental care providers in the most convenient and efficient way possible.”

— Brant Herman, CEO of MouthWatch
he says. “Maybe that looks like a patient who is seeing an oncologist and needs periodontal treatment prior to chemotherapy. We want to connect that oncology office to a dental office so that they can have a visual evaluation. Maybe it’s an urgent care facility or an emergency room where, if you don’t have the dental services provided, you can efficiently connect that patient to the proper care services. We have a platform that allows that. They do it through real-time video conferencing, real-time data exchange. Also in teledentistry, we have what’s called an asynchronous or store-and-forward system, where information gets collected at one site, uploaded to the cloud, and because dentists are busy, they’re not on demand, but as soon as they have a few minutes to quickly look, they can log in, review all the clinical data, and build a treatment plan based on that.”

**Generational concerns**

Baby Boomers have always had an outsized presence compared with other generations, according to the Pew Research Center. This generation peaked at 78.8 million in 1999 and have remained the largest living adult generation. They hit retirement age in 2011 and their bubble will keep rising. In addition to their parents’ needs, this generation brings its own with them, as well.

“I read recently in the Journal of the American Dental Association that complete tooth loss in adults age 65 to 74 has decreased by more than 75 percent over the past decade,” Dr. Dufurrena says. “This older population is keeping their teeth longer, which creates other issues. That’s great, but it means they are prone to other problems, like caries.”

But, no matter which generation is being discussed, Dr. Dufurrena observes that going in to see a dentist is a critical concern.

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**Keys to working with senior patients**

- Like most populations, seniors need to receive regular oral care as they age.
- An understanding of a patient’s medical history is necessary due to medication. Prescription drug interaction is a concern among senior citizens.
- Keep in mind, many members of this generation are unable to physically come to a practice for an appointment. Utilizing tools such as teledentistry can remove that burden.
- Treatment plans should be communicated to the patient as well as any caregivers.
- Dentists and GPs should work in conjunction with each other so senior patients are getting the best care possible.

“It’s important to have insurance, and that’s why United Concordia provides coverage through Medicare Advantage,” Dr. Dufurrena says. “The main thing is to keep older individuals going to the dentist.”

Older patients, certainly, have their own, specific needs. With the combined work of dentists and general practitioners, as well as tools such as teledentistry, there can be mechanisms in place that help seniors get the care they need.

Associate Editor Kristin Hohman contributed to this article.
Everything you need to grow your dental practice

This all-inclusive solution from Scorpion is designed to improve patient acquisition and drive practice growth with services customized to your practice and your budget. [compiled by Stan Goff]

Information provided by Scorpion.

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Getting the website that you deserve

To ensure you get what you want, be actively involved from the requirements and needs phase, to the functional specification phase, to negotiating a tight development contract. [by Mike Uretz]

As website technology gets increasingly sophisticated with more capabilities every day, many groups and practices are looking to upgrade and improve their outdated websites. And without a solid web presence these days you could have a struggle getting new patients and retaining old ones.

However, the horror stories of web development companies taking advantage of innocent groups and practices are endless. Websites many times come in over budget and expectations are not met. In many cases, the practices complain that they feel they are held hostage by the development company.

Having helped customers select and contract with web development companies over the years, I definitely understand how there can be a disconnect between customer and the company. By selecting the right company and holding them accountable, it is possible to have a much more productive and successful website development or upgrade experience.

Determining your needs
You can’t expect a great website meeting all your expectations if you don’t take the time upfront to determine what type of functionality you need.

For example, is it just a marketing-oriented site or is it an interactive site with such features as form submissions, online registration, Q&A, and other interactive features? What are your goals and expectations for the site? Are you upgrading what you have or redesigning your site completely?

Would you like to be heavy with images throughout the site or have it be more informational in nature? There are many decisions to make when putting together a website that will serve your purposes for years to come. If you cannot convey those goals to a perspective web developer then how can you expect them to provide you what you truly need at the end of the day?

**Functional specifications**
Think about how you work with an architect building a house. You can convey all your needs and wants regarding what you want in your new house. But until the architect puts the design into their CAD system and shares their architectural renderings with you visually, it is difficult to envision how the whole thing goes together including traffic patterns, flow of rooms, etc. The same rules apply when constructing a website. This is where the functional specifications come in.

A rendering of every page in the site should be presented to you, including images, copy, links, and buttons. In addition, the navigation and interaction between these pages should be spelled out. If you have any interactive functionality such as form submission, online registration, or other interactive components, the workings of these should be specified as well.

There is typically a lot of heavy lifting during this phase and a considerable amount of back and forth until you and your development vendor are on the same page and you agree that this is ultimately a look and feel of what you are getting for. The beauty of developing an agreed-to set of functional specifications is that you can include them in the contract and therefore, hold your vendor accountable.

**Hold your vendor accountable**
Now let’s get into the ultimate way you can assure you get what you paid for from your web development company. The answer is to have a solid contract or agreement that holds your vendor accountable for not just “talking the talk,” but also “walking the walk”.

There are so many balls in the air when developing a site that there is opportunity for a vendor to pull some “smoke and mirrors” where you think that you’re getting what you expected but in reality, you’re not. When developing or negotiating an agreement for web development services it is extremely important that you and your vendor develop and agree to a “milestone-based” schedule and associated timelines.

If you first develop functional specifications, which is a detailed look at what you are getting, then a web development company should not have any problems putting together a detailed project plan and associated timelines. This is where the rubber meets the road and gives you control over accountability of your vendor during the development project. If they don’t meet the schedule timelines, there are repercussions.

It is also critical to make your payments to the vendor dependent on reaching certain milestones per specification, as well as not making a final payment until the site is exactly as you expected. Finally, just because a website seems to be working upon Go Live doesn’t mean that you won’t run into problems down the line. So you need to get warranties on the vendor’s work as well as discuss what ongoing support would look like.

Building a new website or upgrading an existing one isn’t as simple as just turning everything over to your web development company and calling it a day. If you follow these steps and take control of the process then you’ll have a better chance of getting what you need and expect.

**ABOUT THE AUTHOR**
Mike Uretz is a nationally recognized dental software, IT and EHR expert. He is the founder of DentalSoftwareAdvisor.com. As a leading industry consultant and educator, Uretz has helped DDSs and dental groups evaluate and select software vendors and solutions, structure and negotiate vendor contracts, and provide vendor management. Mike can be reached at mike@dentalgrouppartners.com or 425-434-7102.
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Take steps now to combat cyberattacks

Cybersecurity best practices can, and should, be implemented by large and small dental practices, employees and individuals.

[by Dr. Lorne Lavine]

Cybersecurity. It’s almost impossible to go through your favorite news website and not see some article or headline about cybersecurity, a recent breach, or other IT nightmares out there. With so much being written about cybersecurity, I think it’s important to review exactly what that means, and, more importantly, what are the minimum steps you need to be doing to protect patient data.

There are obviously multiple definitions of cybersecurity. According to Techtarget, cybersecurity is the protection of internet-connected systems, including hardware, software and data, from cyberattacks. In a computing context, security comprises cybersecurity and physical security—both should be used by dental offices to protect against unauthorized access to data centers and other computerized systems. The goal of cybersecurity is to limit risk and protect IT assets from attackers with malicious intent. Information security, which is designed to maintain the confidentiality, integrity and availability of data, is a subset of cybersecurity. HIPAA focuses a lot on information security.

Cybersecurity best practices can, and should, be implemented by large and small dental practices, employees and individuals. One of the most problematic elements of cybersecurity is the continually evolving nature of security risks and advanced persistent threats.

Probably the most well-known cybersecurity threat over the past two years has been ransomware attacks. Ransomware criminals have become much more sophisticated in their attacks. Initially, they would just target individual dental offices in the hopes of getting a few hundred to a few thousand dollars. Recently, though, they discovered that some dental IT companies who provide remote access support to clients had inadequate security, and by hacking their systems, they could reach exponentially more people. The recent attacks on 400 dental offices in Wisconsin in August and another 100 in Colorado in November is proof of this. And, more recently, not only are the attackers demanding a ransom, but knowing that some people can avoid the ransom by restoring a backup, they are now threatening victims that not paying the ransom will result in the data being published online to the public. Scary stuff.

So, why is this such a big deal? As I mentioned in a previous article, back in 2016, Health and Human Services made a determination that if you are hit with ransomware, then you must declare a breach, because their definition of a breach is “loss of control of your data,” which is exactly what a ransomware virus does, it locks your files. Unlike much of HIPAA which is ambiguous, the Breach Notification Rule is very clear: A breach of patient data requires notifying all patients in writing, notifying the news media, and having your practice listed on the HHS Wall of Shame.

Here are the basic steps you should do right now to protect yourself:

1. Do a formal risk assessment and develop a HIPAA management plan. Just like you can’t diagnose a patient until you take x-rays and do your charting, you can’t know where you are at risk unless you actually look.
2. Get a good, paid antivirus software program. Ones like ESET and Bitdefender are good, and make sure you keep them current and up-to-date.
3. Invest in ransomware-specific software. Many general purpose antivirus software don’t do the best job against ransomware, and for around $40 per computer per year, you can have some really good ransomware protection.
4. Get a business-class firewall. I’d stay away from the consumer-level routers such as Linksys, D-Link, and Netgear, but instead invest in a better firewall from companies such as Sophos or Sonicwall.
5. Encrypt all computers that contain patient information. This always includes the server, and often the dentist’s and office manager’s PCs.
6. Finally, realize that you can’t prevent all breaches, and invest in some good cybersecurity insurance. I would recommend a minimum of $500,000 of coverage. Protecting your patient data is critical for the livelihood of your practice. Taking the time to properly prevent these attacks is a worthwhile endeavor that will save you a lot of grief down the road.

ABOUT THE AUTHOR
Dr. Lorne Lavine, founder and president of The Digital Dentist, has more than 30 years invested in the dental and dental technology fields. A graduate of USC, he earned his DMD from Boston University and completed his residency at the Eastman Dental Center in Rochester, N.Y. He received his specialty training at the University of Washington and went into private practice in Vermont until moving to California in 2002 to establish TDD, a company that focuses on the specialized technological and HIPAA needs of the dental community. He can be reached at dlavine@thedigitaldentist.com or 866-204-3398.
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A ‘Headache Behind the Eye’

Headaches can be caused by neck pain in one of the most-used muscles during delivery of dental care.

[by Dr. Bethany Valachi, PT, DPT, MS, CEAS]

**Dear Dr. Valachi:** I have been experiencing neck pain combined with a headache behind my eye that won’t go away with over the counter pain meds. I am wondering if this could be related to my ergonomics in the operatory?

**Dear Doctor: Absolutely!** The headache location you are describing is a referral pattern from trigger point #1 in the upper trapezius (Fig. 1). The upper trapezius is the most active muscle in the body during the delivery of dental care, therefore this is a common pain referral pattern. Trigger point #1 in the upper trapezius muscle can also cause pain into the neck.

If left untreated, these trigger points can lead to the development of a painful condition called trapezius myalgia. Symptoms include pain, spasms, or tenderness in the upper trapezius muscle can also lead to the development of a pain-referral pattern. Trigger point #1 in the upper trapezius (Fig. 1). The referral pattern from trigger point #1 in the upper trapezius muscle should be treated with exercise that increases blood flow.

**Treatment of trigger points**

It is important to relieve trigger points as soon as possible to restore nutrient flow to the muscle, prevent muscle imbalances, and prevent compression on nerves. There are numerous approaches that medical professionals use to treat trigger points. However, self-treating your trigger points is an easy and practical option.

**Preventing upper trapezius trigger points**

1. **Correct Patient Height:** Position the height of the patient so your forearms are sloping only 10 degrees or so upward. Positioning higher than this often leads to shoulder elevation, especially when working between the 8 and 11 o’clock positions. Also, working with the shoulders on a tilted axis or the head turned to one side can lead to worsening of upper trapezius pain. Operators with short torsos may find that when they position their knees under the patient head or backrest, they have to elevate their shoulders when working. This problem is easily resolved with proper stool adjustment.

2. **Use Ergonomic Loupes:** Excessive forward head posture is commonly observed in the operatory and strains the upper trapezius muscles. Loupes with a poor declination angle forces the operator to assume a head tilt greater than 20 degrees—a posture that has been associated with neck pain. Ergonomic flip-up loupes will allow the most neutral, upright working posture. But beware: Some flip-up loupes can worsen neck pain.

3. **Utilize Armrests:** Supporting the arm weight is especially important for trapezius myalgia sufferers. Dentists who use armrests have been shown to have less pain than those who do not.

4. **Perform Chairside Stretches:** Sustained low-level contraction of the upper trapezius with few breaks greatly increases its susceptibility to ischemic pain. Without sufficient rest periods or dynamic movement, tension can accumulate in these muscles and, by the end of the day, you may be wearing your shoulders as “earrings” without realizing it. Frequent performing upper trapezius stretches can reduce tension and pain in these muscles.

5. **Manage Your Stress:** Your upper trapezius muscle is the most responsive muscle in the body to emotional stress, resulting in neuromuscular hypertension. The statically contracted muscle becomes ischemic and painful. Stress management strategies that target muscular pain are helpful in prevention.

6. **Corrective Exercise:** Training the upper trapezius muscle with heavy weight resistance is one of the most common exercise mistakes dental operators make. This can worsen the unique muscle imbalance to which dental professionals are already prone and cause neck pain. The upper trapezius muscle should be targeted with exercise that increases blood flow.

**About the Author**

Dr. Bethany Valachi, PT, DPT, MS, CEAS, is author of the video training series, The Valachi WellBody System for Dental Professionals, and clinical instructor of ergonomics at OHSU School of Dentistry in Portland, Oregon. A physical therapist who has worked with dental professionals for nearly 20 years, she is recognized internationally as an expert in dental ergonomics and has developed patient positioning and exercise videos specifically for dental professionals. She offers free newsletters, articles, videos and product reviews on her website at www.posturedontics.com. Bethany can be reached at info@posturedontics.com.
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OK, Boomer: Marketing your dental practice to Baby Boomers and beyond

When marketing to patients of this generation, how and where to spend your marketing dollars might surprise you.

[by Naomi Cooper, CEO at Doctor Distillery]

Using this information, dentists can better craft a marketing plan that will be more effective in targeting this key demographic.

5 ways to attract and keep more Baby Boomer dental patients
1. Bring Your Website Up to Speed
   The dental practice website needs to be easy to read on all types of devices, with plenty of white space, as opposed to crammed with a ton of text in small print. Keep the office contact information visible on every page of the site so that it is easy to find. Make sure it is secure and HTTPS-compliant. Add engaging elements like blog posts and videos that provide dental information, as Baby Boomer patients are voracious consumers of online content.
2. Complete Your Google Business Profile
   Knowing Boomers are tech savvy makes having a complete business profile on Google a no-brainer. Be sure to update the contact information and hours of operation, link to the website, and add professional photos of the practice. Then start asking happy patients to leave reviews on Google in order to help shore up your online presence.
3. Focus on Shareable Facebook Content
   Baby Boomers engage on this social media platform more than any other, and they use it in a more active way than their younger counterparts. It was recently reported that Boomers are 19 percent more likely to share content than any other generation. Dentists can capitalize on this by posting links to their website or interesting blog posts on their business Facebook profile. Be sure to promote special services and offers that appeal to this demographic, including same-day procedures, implants, and cosmetic treatment.
4. Go Viral with Video
   Video content is proving to be incredibly popular among Baby Boomers as well, as research from Google showed that 54 percent of Boomers watch online videos. According to the same study, after watching an online video, Boomers will often visit the associated website, forward the video, and even post the video on their own Facebook profiles. Now that’s what I call viral! High-quality videos can be easily created using a smartphone and the content of the videos can be anything that is relevant to these patients, from descriptions of popular procedures to a tour of the office to post-op instructions.
5. Make the In-Office Experience Go Viral with Video
   While modern tactics are good at attracting Baby Boomer patients, they still appreciate the value of good customer service and a comfortable, yet high-tech environment. Be sure the front desk is equipped with strong verbal skills when speaking to patients on the phone. And don’t forget to take the time to talk one-on-one with them on a regular basis in order to gain their trust and buy-in.

While these concepts may be especially helpful when it comes to attracting Baby Boomers, they will still appreciate the value of good customer service and a comfortable, yet high-tech environment. Be sure the front desk is equipped with strong verbal skills when speaking to patients on the phone. And don’t forget to take the time to talk one-on-one with them on a regular basis in order to gain their trust and buy-in.

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Best practices for mobile dental operations

Mobile operations provide essential care to hard-to-reach patients, but these providers must make sure to also provide necessary levels of infection control. [by Robert Elsenpeter]

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TOP 12 REASONS I LOVE MY DENTIST

[by Lisa Newburger]

Top 12 Reasons I Love My Dentist

01. **He/She knows me.**
   “I don’t have to repeat my history over and over. They know what I have gone through and what works for me.”

02. **I trust my dentist.**
   “Trust was the most important reason. Some of us have baggage from a bad experience with previous dentists.”

03. **The magazines in the waiting room are current and have a wide variety to choose from.**
   “There must be some kind of discount on parenting magazines and auto mechanic magazines that some dentists use. I so love to have a variety to choose from. It helps make time pass.”

04. **They have a Keurig in the waiting room.**
   “Whether a patient or a parent, coffee matters. Just wish they had decaf favored more often.”

05. **There is a remote control in the waiting room for the TV.**
   “Being in control matters. I hate the last dentist where they had ‘educational’ programs on a loop. Boring. That did nothing to reduce my stress level of seeing the dentist.”

06. **The office location is convenient.**
   “Location, location, location. That motto works well for many things. Convenient access to the office matters in a busy schedule.”

07. **They give me a thorough cleaning.**
   “Sure, my gums bleed, but I know that they got all the plaque out.”

08. **They don’t shame me.**
   “They educate without making me feel bad that I am not doing enough to keep my teeth clean.”

09. **They treat me with respect.**
   “I transitioned from being a child patient to be an adult seamlessly.”

10. **He/She has an excellent reputation.**
    “There is comfort to know that other patients think highly of my dentist.”

11. **They call me when the dentist is running late.**
    “This is especially important so that I don’t waste too much PTO. This matters when you are working and don’t have a flexible boss.”

12. **The dentist doesn’t rush.**
    “I know that it is not a mill. He/She takes as much time as needed to provide care and answer my questions. Thank goodness they don’t ask questions when it is impossible for me to respond.”

Many of the reasons that were given tie into good communication, marketing, and respect. The bottom line—they respect their dentist and he/she respects them. Do you know why patients love your practice? If not, maybe addressing why is a wise decision so we as dental professionals can understand ways to give our patients more reasons to smile.

Email me at diana2@discussdirectives.com and share why patients love your practice or what you like about your own dentist.
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