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DENTAL ADVISOR™

Product insights you can trust.

What's New in Composites?

DENTAL ADVISOR
Product insights you can trust.

SEPT/OCT 2021
VOL. 38, NO. 5

FROM THE DESK OF
Dr. Sabiha S. Bunek, Editor-in-Chief

This month's issue takes a look at the most recent trends in universal composites. We have limited the information to discuss universal composites, both packable and flowable. Although some Dentists are using Bulk Fill Composites, we see more reverting back to traditional composites, layering and sculpting or using universal flowables. We will report on Bulk Fills in a future issue. Our biomaterials testing laboratory has been performing several interesting tests on composites, and we discuss things to look out for clinically using laboratory data.

As always, I welcome your comments and suggestions. You can reach me at drbunek@dentaladvisor.com. Thank you for your continued support and reading!

— *Sabiha S. Bunek*

Ideal characteristics of Composites

Radiopaque • **Low shrinkage upon curing**

Easy to handle, non-sticky, sculptable • *Easily dispensed*

Excellent, lifelike esthetics **Stable color**

No shade shift upon curing

Composites

Not sensitive to ambient light

Chameleon effect when blending *Decreased placement and finishing time*

Little or no polishing needed • **No voids or bubbles**

Strength and longevity without marginal leakage, fracture and discoloration

Excellent physical properties that are tested outside the company

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Universal

TREND: Universal Shading

Using simplified shading systems or one shade which blends and has a chameleon effect

Pre-operative view, Estelite Sigma Quick, of fractured tooth No. 9^{MIFL}

Post-operative view of the final restoration.
Photos courtesy of Sabiha S. Bunek, D.D.S.,

KEY CONSIDERATIONS:

- Is there a **shade shift after curing?**
- Does the shading system **match the VITA® Shade Guide?**
- How **translucent is the composite** and is an opaquer offered?

TREND: Universal Application

Can be used in any cavity classification in any area of the mouth.

Pre-operative view, G-aenial Universal Flo tooth #7^{IF} and #8^{DIF}

Post-operative view of the final restoration.
Photos courtesy of Sabiha S. Bunek, D.D.S.

KEY CONSIDERATIONS:

- Can the **material sustain itself** in load-bearing areas?
- Are the **esthetics sufficient for both anterior and posterio**r restorations?

Pre-operative Harmonize tooth #8^{MIF}

Post-operative view of the final restoration.
Photos courtesy of Sabiha S. Bunek, D.D.S.

Product **Showcase**

Filtek™ Supreme Ultra Universal Restorative
(3M.com)

The versatile universal composite with unsurpassed esthetics and outstanding strength for every restoration — anterior or posterior.

- Exceptional esthetics
- Excellent polish retention
- Exceptional handling
- Outstanding strength for anterior and posterior
- Excellent wear resistance
- Natural-looking fluorescence
- True nanotechnology
- 36 shades, 4 opacities

3M™ Filtek™ Universal Restorative
(3M.com)

A universal composite featuring *NaturalMatch* technology creates beautiful, natural looking restorations that blend in with surrounding dentition, providing a chameleon effect. 3M's *True Nanoparticles* provides excellent wear resistance and polish retention.

- *NaturalMatch Technology* (A blend of nanofillers and proprietary monomers)
- Creates beautiful, natural restorations with less shades
- Blends to surrounding dentition - Chameleon effect
- Excellent, creamy handling
- Designer shades match the VITA classical and bleach shades*
- *AFM Monomer* provides stress relief, Low-shrinkage stress
- Long-lasting polish
- Designer shades cover most patients
- 2 mm depth of cure

3M™ Filtek™ Supreme Flowable Restorative
(3M.com)

A flowable composite featuring an innovative syringe design to virtually eliminate bubbles. Ergonomic and easy to inject, the syringe provides better access with a bendable cannula. Versatile for a wide range of indications and techniques including injection molding.

- Virtually no bubbles or material "run-on"
- Easy-to-bend cannula for improved access
- Ergonomic design is easy to hold and inject
- Excellent adaptation, polish retention and wear resistance
- Versatile for a wide range of indications and techniques
- Can be warmed for injection molding
- Available in 12 shades

CLEARFIL MAJESTY™ ES-2 Universal
(Kuraray America, Inc.)

How many different shades of composite do you need in the posterior region? If you opt for ***CLEARFIL MAJESTY™ ES-2 Universal***, a single shade will do the trick. The go-to solution for common posterior restorations, independent of the color of the underlying and adjacent tooth structure. A blocker or opaquer is not needed. This is due to the material's specific level of translucency and the integration of Kuraray Noritake Dental's *Light Diffusion Technology (LDT)*, which makes restorations diffuse light in a similar way tooth structure does. As a consequence, the material integrates easily and smoothly into the surrounding tooth structure and preparation margins become virtually invisible.

- *Light Diffusion Technology*
- Wide blending effect & reduces/eliminates need to use opaquer or blocker resin.
- Excellent esthetics
- Reduced number of shades
- Fewer steps, fewer potential problems
- Excellent blending at margins

Media Link: https://www.youtube.com/watch?v=ILumk4BrTpU

Evanesce™ Nano-Enhanced Universal Restorative
(Clinician's Choice)

Simple or complex. Single shade or layering technique, anterior or posterior. Whatever your technique or indication, ***Evanesce™ Universal Restorative*** is designed for truly natural, life-like esthetics.

• ***Evanesce*** nano-hybrid composite's non-sticky formulation makes it easy to manipulate and highly adaptable. Once placed, ***Evanesce*** can be sculpted without slumping to save on finishing time.

• ***Evanesce*** is available in 30 VITA shades and 3 opacities and polishes to an ultra-high, long-term shine in seconds.

• High-strength ***Evanesce*** is 82% filled and boasts a high compressive strength, low wear, and low shrinkage to give you confidence for both anterior and posterior restorations.

To request a demonstration or a visit:

G-aenial A'CHORD™
(GC America, Inc.)

G-aenial A'CHORD™ is an advanced unishade composite system which provides the ideal balance of simplicity, esthetics, and new technology in one product! With only 5 core shades, ***G-aenial A'CHORD*** can achieve the esthetic of all 16 Classic VITA shades while delivering high durability and natural fluorescence. ***G-aenial A'CHORD's*** combined *Full-Coverage Silane Coating (FSC)* and *High Performance Pulverized CERASMART® (HPC)* technologies deliver:

- Simplified handling
- High wear resistance, color retention, and radiopacity
- Easy polishing with high gloss retention
- Natural fluorescence that mimics natural light reflection in any light
- Universal flexibility for use in anterior, posterior, large or small restorations

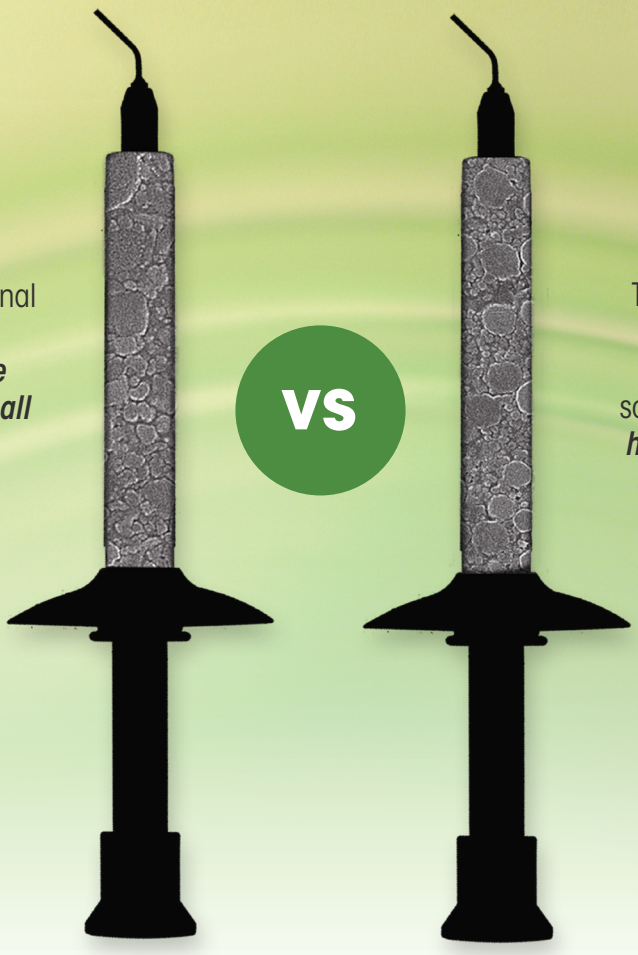
For complex cases requiring a more exacting esthetic, an extended portfolio of cervical, opaque, enamel, and bleach shades are available. ***G-aenial A'CHORD*** helps take the guesswork out of shade matching and provides your patients with long lasting, life-like restorations.

Flowable Composites

Traditional flowables had high resin content with low filler content. They could be used in areas where strength is not a concern, in minimally invasive dentistry, as a sealant, or for repairs. When flowables changed properties, it was an issue to prove to dentists that they were strong enough to be used in high stress and high load bearing areas.

HIGHLY-FILLED

Closer in strength to traditional composites, these types of composites ***offer more universal applications for all cavity indications***.



LOW-FILLED

These types of composites are typically ***less viscous, great for repairs*** and in some indications, but ***do not have the strength or stress capability of highly-filled composites***.

What's new?

To further increase strength, flowable composites are now being introduced with ***fiber-reinforcement technology.***

everX Flow™ (GC America, Inc.)

everX Flow™ is a fiber-reinforced flowable composite indicated for dentin replacement in direct restorations (together with a conventional composite as enamel layer), and for core build-up.
everX Flow efficiently reinforces restorations and reportedly displays an exceptionally high fracture toughness. Fibers help to prevent crack propagation through fillings and tooth structure to avoid catastrophic failures, which makes ***everX Flow*** an optimal material to use in weakened or cracked teeth, especially after amalgam removal.

SEM image of the glass fibres embedded in everX Flow courtesy of Dr Lippo Lassila, University of Turku

everX Flow has a very thixotropic viscosity which allows it to flow and adapt perfectly to the cavity floor, but without slumping - even when used in upper molars. ***everX Flow*** is available in two unique shades to answer all your clinical needs. The *Bulk* shade features a depth of cure of 5.5mm and is indicated for deep cavities. The *Dentin* shade has a higher opacity and is recommended for more esthetic restorations.

BEAUTIFIL Flow Plus X

(SHOFU)

Shofu's bioactive nano-hybrid flowable composite, ***BEAUTIFIL Flow Plus X***, demonstrates excellent flexural and compressive strength, maintains exceptional color stability before and after curing, and contains *Giomer technology*—the release and recharge of six beneficial ions. These bio-active ions inhibit plaque formation, minimizes hypersensitivity, neutralize acid, and release and recharge fluoride. The patented nano *S-PRG* filler particles (400 nm) provide ***BEAUTIFIL Flow Plus X***, enhanced mechanical properties and effortless polishing that produces a sustainable high-luster finish. Intended for direct anterior and posterior restorations, classes I–V, ***BEAUTIFIL Flow Plus X***, is available in two viscosities, *Zero Flow (F00)* and *Low Flow (F03)*.

- Achieves more surface gloss in less time — effortless polishing
- Improved handling
- Stackable & sculptable; stays put
- Chameleon effect—aesthetically blends with the natural tooth
- High flexural strength
- Low wear resistance and shrinkage

Media Link: https://www.shofu.com/en/product/beautifil-flow-plus-x

OMNICHROMA FLOW

(Tokuyama Dental America, Inc.)

Utilizing *Smart Chromatic Technology* and uniformly sized supra-nano spherical fillers, ***OMNICHROMA FLOW*** is the world's first one-shade flowable composite to esthetically match every color of tooth from A1 to D4 with a single shade, saving clinicians time and money. Indicated for all cases of direct anterior and posterior r estorations, cavity base or liner, and composite repair.

Benefits to Clinicians:

- Increase efficiency – saving time and money
- Simplified inventory management
- Reduction of composite waste
- Never run low on composite shades ever again

Outstanding Features:

- Unprecedented shade matching
- High polishability
- High stain resistance
- Flexural and compressive strength suitable for a wide range of indications
- Low wear and abrasion
- Low polymerization shrinkage

Request a free sample: www.onichromaflow.com/us

BRILLIANT EverGlow® Flow

(Coltene)

The latest addition to the ***BRILLIANT EverGlow®*** system of submicron hybrid composites, ***BRILLIANT EverGlow Flow*** combines high stability and excellent flowability in one versatile material. It was developed specifically around the need for precise shading, wear resistance, and excellent polishability. Like ***BRILLIANT EverGlow***, this flowable composite utilizes a unique *Duo Shade* system that covers two *Vita* shades in a single shade. This helps to consolidate inventory and simplify shade selection, while providing exceptional shade matching. ***BRILLIANT EverGlow Flow*** is offered in a concise array of eight shades and offers an extra thin 0.4 mm application needle for precise dosing of small quantities.

Clinical applications:

- Suitable for initial layers in all cavity classes
- Direct Class V fillings such as cervical caries
- Root erosion and wedge-shaped defects
- Repairs to anterior teeth (Class III and IV)
- Small fillings of all cavity classes
- Blocking out of undercuts
- Luting of indirect restorations
- Repairs of direct and indirect restorations
- Preventative fissure sealing

CLEARFIL MAJESTY™ ES Flow

(Kuraray America, Inc.)

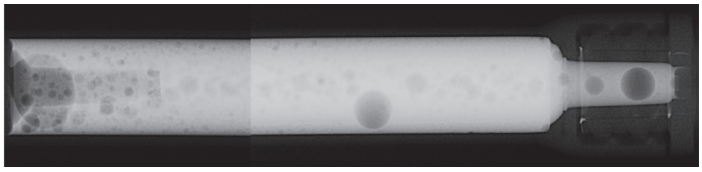
CLEARFIL MAJESTY ES Flow is a new, light-cure, universal flowable composite that is more than a liner/base. With its superior durability and esthetics, it can be used in class 1, 2, and occlusal surface restorations, as well as class 5 restorations. ***CLEARFIL MAJESTY ES Flow*** is easy to polish by wiping the cured resin with an ethanol-soaked gauze or cotton roll, making it simple to incorporate into the clinical workflow. It contains special submicron fillers that are treated with a proprietary silane coupling agent, giving the product excellent mechanical properties. Available in shades A1, A2, A3, A3.5, A4, KA6, B1, B2, XW, and W. These shades correspond with Kuraray's ***CLEARFIL MAJESTY ES-2*** shade guide.

- Extremely high filler loading and low viscosity
- High Polish Retention
- High Gloss
- Low shrinkage and high mechanical properties (strength, wear resistance, durability)
- Multiple uses including as a universal composite resin
- Excellent consistency (appropriate flowability, that is not runny or sticky)
- Easy handling (bubble free and controllable) with the new dispensing syringe
- Versatile shade selection for multiple uses
- Direct restorations for anterior and posterior teeth (Class I-III, V cavities, cervical caries, root erosion)
- Cavity base / liner
- Intraoral repairs of fractured crowns/bridges and composite resin

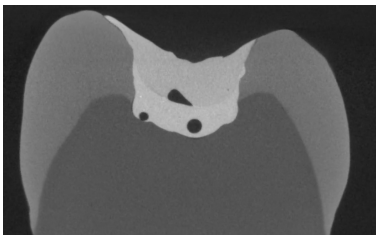
Media Link: https://www.youtube.com/watch?v=2RxT-z-CYPs

From the **Biomaterials Laboratory**

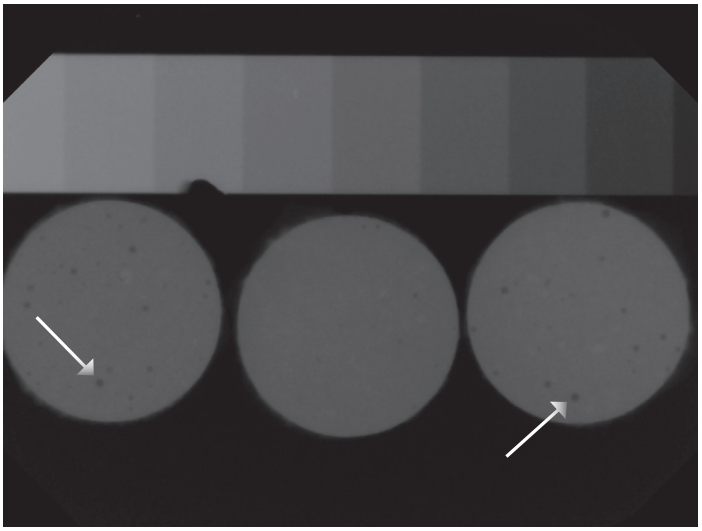
We are always interested in **new ways to evaluate dental restoratives** as technology continuously improves. Here are some new ways we have been evaluating composite materials in the last 5 years.



Radiograph of syringe voids: Radiographs of syringes are a quick way to determine if there is a packaging problem with restoratives. Bubbles can often be heard as a pop when dispensing, but are not always visible. Voids in a final restoration can cause a multitude of clinical failures, including stress fractures.

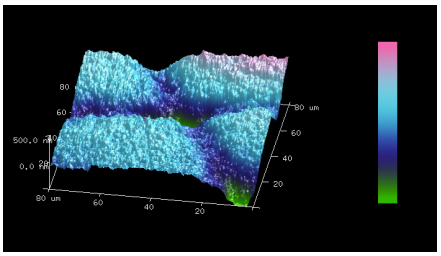


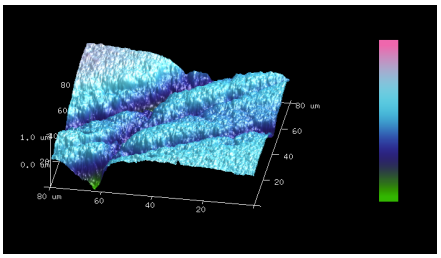
MicroCT of Voids: High resolution, non-destructive scans of tooth restorations can be used to show problems with placement techniques, or due to packaging issues of composites.

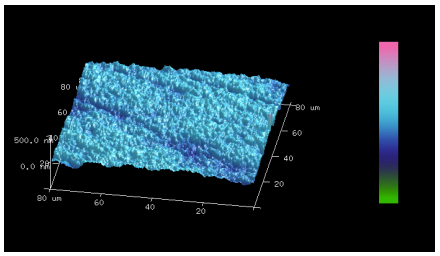


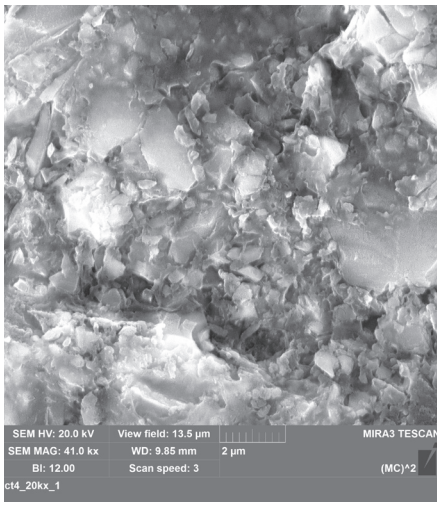
A digital radiograph of a flowable composite in a 1 mm layer shows voids evident in the restoration.

AFM of Polishing: Atomic force microscopy (AFM) is among the most accurate methods of measuring the surface tomography of materials by utilizing a probe down to 30 nm in width. The Veeco Dimension Icon can measure the surface roughness of polishing specimens over a 80 x 80 µm area to establish how composites perform with different polishing systems. Clinicians want to avoid any surface roughness to deter plaque accumulation, occlusal adjustments and potential fracture.









SEM & EDS of Bioactivity:

Scanning Electron Microscopy (SEM) combined with Energy-dispersive X-ray spectroscopy (EDS) or Raman spectroscopy can be used to evaluate, quantify and measure the changes in surface properties of materials. Whether it is chemical changes due to aging, bioactive adhesion of precipitated particles or crystal growth, the changes can be characterized by newer instruments.

MicroCT of Shrinkage:

MicroCT scans of composites before and after curing are one of the most accurate methods of measuring the volumetric shrinkage of composites. The picture above, displays the shrinkage of composite after curing, with the difference in volume shown in red. Volumetric shrinkage is a key metric that determines the level of microleakage and potential for internal stress fractures possible after curing.

EDITORS' CHOICE

Bluephase® PowerCure

Ivoclar Vivadent ivoclarvivadent.com

+++++

dentaladvisor.com RATING SYSTEM: Excellent + + + + + Very Good + + + + Good + + +

8 CLINICAL EVALUATORS

340 TOTAL USES

98% CLINICAL RATING

Key features: High-performance curing light • Four light intensities including a 3-second ***PowerCure*** mode • Polyvision technology • Broad spectrum

Description

The ***Bluephase® PowerCure*** is an intelligent LED curing light with:

- An innovative, fully automated *Polyvision* technology, which alerts a user by vibration if the light shifts away from its initial position.
- Depending on cure time, the light will automatically adjust to avoid curing errors.
- *Polywave* LED, suitable for every light cured material.
- Four different curing and light intensity modes: High power mode, Turbo mode, 3S mode (in conjunction with the ***3s PowerCure*** product system) and a *Pre-Cure* mode for tack-curing materials.

Indication

- Polywave LED covers between 385 nm and 515 nm to cure all current dental photo-initiators and materials without limitation.

Photo courtesy of Dr. Jeff Riggs

Clinical Tips

- Incorporate all power settings, all are useful.
- Use this light with the protective shield.
- Place in charger between patient use.
- Read the instructions well to learn all functions as it has many options for use.
- ***3s PowerCure System*** with rapid curing is extremely useful for difficult situations, especially with children, sealant placement, and gaggers.

Unique Attributes

- If the light wanders off of the targeted area while curing, the *Polyvision* will detect the motion and vibrate to alert you that you may no longer be curing the intended area.
- The *Polywave* LED covers between 385 nm and 515 nm, which covers a wide range of materials and all current dental photo-initiators.

"GOOD WEIGHT WITH A BALANCED, SLEEK, AND MODERN DESIGN."

Evaluators' Comments

"Great curing intensity, it had different curing options and an easy swiveling curing tip."

*"The 3-second **PowerCure** with the **PowerFill** materials are amazing. It almost feels too fast to believe."*

"The tack cure, 'pre-cure' mode was spot on, making for a very consistent cleanup."

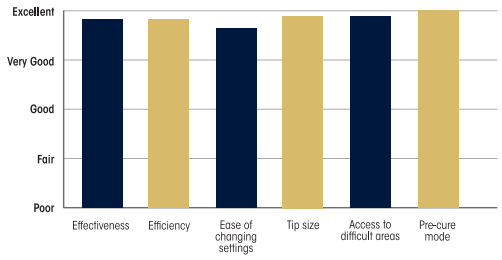
"Cool piece of technology! We will be buying one for our practice in the future."

"The battery charging station has a very small footprint on my counter and is easy to clean and disinfect."

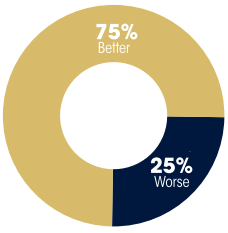
*"I already like and use the **Bluephase®** line of curing lights. The addition of the **PowerCure** settings makes this a great addition to the line."*

"I would like a little larger tip diameter."

Evaluation Summary:



Compared to Competitive Products:



Consultants who would:

87% Recommend to a colleague

Consultants who would want to stock in office:

62% Yes, instead of current curing light

38% Yes, in addition to current curing light

From our Biomaterials Lab

Bluephase® PowerCure curing light was tested to determine if similar bond strengths could be achieved using ***Tetric® PowerFill*** and ***Tetric® PowerFlow*** with a 3-second flash cure versus the ***Bluephase® G2*** in a 10-second cure.

Our independent findings showed that light curing with the ***Bluephase® PowerCure*** in a 3-second flash cure provided equivalent bond strength to light curing for 10 seconds with the ***Bluephase® G2*** for the ***Tetric® PowerFill*** and ***Tetric® PowerFlow*** composites and ***Adhese Universal***. This reduces procedure time for the clinician.

Product Innovation: 3s PowerCure System (Ivoclar Vivadent)

Combining composites with the ***Bluephase® PowerCure*** curing light offers a complete product system with ***Adhese® Universal*** single-component universal adhesive, ***Tetric® PowerFill*** sculptable 4-mm composite and ***Tetric® PowerFlow*** flowable 4-mm composite. All the of products for direct restorative procedures are optimally coordinated with each other and help you increase your workflow efficiency – without compromises in esthetics.

Light polymerization is seen as the most common source of error in direct restorative treatments. An efficient polymerization protocol that minimizes the curing time to the shortest possible length reduces the risks inherent in the light-curing step and increases the quality of the final restoration. All shades of the Tetric family of products can be cured with the same exposure times if the same light intensity is used.

Crest Whitening Emulsions

with LED Accelerator Light

Crest crestwhitesmiles.com

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DENTAL ADVISOR ++++

24 CLINICAL EVALUATORS

224 TOTAL USES

89% CLINICAL RATING

Key features: Take-home whitening system ● Applied directly to the teeth with a wand applicator ● LED light to enhance results

Description

Crest Whitening Emulsions with ***LED Accelerator Light*** is a take-home whitening system where:

- Whitening material is placed on the teeth with an applicator wand. This wand has a silicone tip that delivers the whitening material onto the teeth.
- Active hydrogen peroxide microdroplets diffuse into the teeth.
- A blue light is utilized at the end of the whitening session to boost whitening results.

Indications

- Take-home whitening.
- Ideal for all teeth alignments.

Unique Attributes

- This product is applied directly to the teeth with a silicone tipped wand; there are no trays.
- An *LED Accelerator Light* is only needed for 3-minutes after the patient has worn the gel for 30-minutes.
- This material is safe enough to be used up to four times per day with virtually no sensitivity.

Clinical Tips

- Make sure your teeth are dry before applying.
- You only need to use a small amount.
- You get better results if you use the product more than one time per day.

"NO SENSITIVITY IS A GAME CHANGER."

Evaluators' Comments

"It was easy to apply, it had a nice minty fresh flavor, and I liked that there was no tray needed."

"The lack of sensitivity afterwards was big for me as I usually have sensitive teeth."

"It is easy to use on individual teeth."

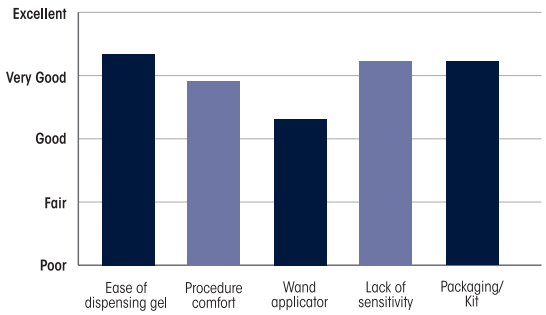
"This product is good for teenagers, post-ortho."

"A tray option would be nice. Other than that, I love it!"

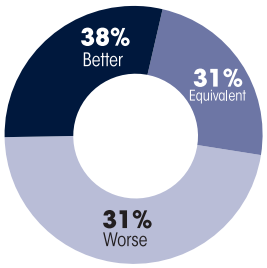
"I would like to see a formula that only needs 15-minutes of application instead of 30-minutes. Only because you have to wait until the end to use the light."

"Great concept and packaging."

Professionals Evaluation Summary:



Comparison to Competitive Products
***(Professional as well as non-professional strengths)*:**



Consultants who would:

50% Recommend to a colleague

67% Recommend to a patient

Consultants who would want to stock in their office:

50% Yes, instead or in addition to current

22% I might want to order this product for certain cases

Radii Xpert

SDI sdi.com/au

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DENTAL ADVISOR ++++

20 CLINICAL EVALUATORS

711 TOTAL USES

87% CLINICAL RATING

Key features: LED curing light ● Interchangeable heads for a variety of indications

Description

Radii Xpert is a professional LED curing light with:

- Pulse technology to reduce heat.
- Interchangeable heads.
- Built-in intensity meter in the base.
- Target assist precision curing that enables you to position before curing.
- Smart technology that allows you to save your favorite settings.
- A collimated beam that is ideal for restorations of all sizes, including bulk-filled restorations.

Indications

Full Arch Bleach Attachment
Designed for acceleration of in-office tooth whitening materials such as ***Pola Office*** and ***Pola Office+***

Diagnostic Attachment
Provides transillumination to assist in early detection and diagnosis of clinical problems.

The ***Radii Xpert Diagnostic*** LED attachment emits a safe white light that passes through the tooth structure to aid in diagnosis of cracked teeth, interproximal caries, calculus and more.

Orthodontic Attachment
Specifically designed for orthodontics the ***Radii Xpert Orthodontic*** LED attachment uses a collimated beam that ensures light intensity is maintained on the bonded tooth surface. The 5-minute option provides continuous light for fast and efficient bonding of brackets.

Unique Attributes

- This curing light is extremely versatile due to the interchangeable heads.
- Automatic programs load when the tip is changed.
- You can set your favorite curing times.

"CORDLESS, HIGH-TECH APPEARANCE, AND NICE CHARGER."

Evaluators' Comments

"I liked the different attachments and all of the programable options. It was very versatile."

"Clear readout LED panel."

"Long handle allows for easier gripping, and access in certain areas."

"It's a fantastic all-around design with great light output."

"The small head allowed for convenient maneuverability and was easy to rotate for any curing location."

"There are a variety of programs and you can set your favorites, which was a little confusing at first."

"I prefer a flat tip instead of a convex tip."

"Relocate on-off button or make the display window smaller for easier activation."

Consultants who would:

60% Recommend to a colleague

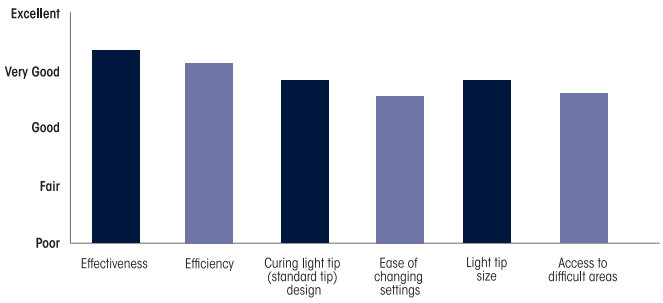
Consultants who would want to stock in their office:

10% Yes, instead of current product

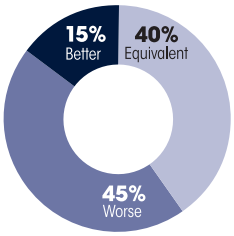
30% Yes, in addition to current product

25% I might want to order this product for certain cases

Evaluation Summary:



Compared to Competitive Products:



Pola Rapid

SDI sdi.com/au/au

++++½

DENTAL ADVISOR ++++½

19 CLINICAL EVALUATORS

56 TOTAL USES

92% CLINICAL RATING

Key features: In-office whitening system ● 38% Hydrogen Peroxide ● Dual-barrel syringe dispenser with brush-tip applicator

Description

Pola Rapid is an advanced in-office tooth whitening system:

- Whitens teeth with an incredibly fast 24-minute application time.
- Features built-in desensitizers and fluoride.
- Uses a 38% hydrogen peroxide formulation.
- Simple and precise application.

Unique application tip

Indication

- In-office teeth whitening.

Unique Attributes

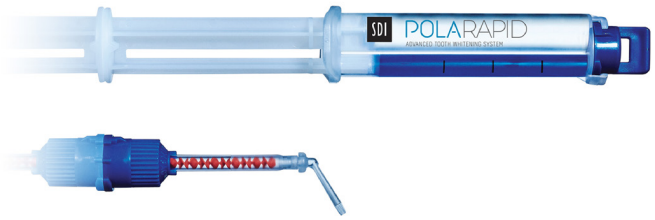
- Blue gel makes for easy application and visibility.
- Faster system - this material only requires 24 minutes of treatment, significantly reducing patient time in the chair.
- The brush tip allows you to place very easily.
- Light is not necessary; however, the ***Radii Xpert*** light can be used with the whitening attachment and the ***Pola Stand.***

BEFORE

AFTER

Photos courtesy of Dr. Ona Erdt

Pola Stand with ***Radii Xpert*** Light



Clinical Tips

- Use a surgical suction to remove the whitening gel between applications for fast and precise removal.
- Double check the barrier between each application and make sure there are no areas of leakage.
- Make the time to take before and after photos. It really shows the patient the difference. Even I did not realize there was such a big difference for a couple of patients until I looked at the photos later.

"GOOD RESULTS, EASY TO USE, AND NO LIGHT NEEDED."

Evaluators' Comments

"Instructions were easy to follow and time for the procedure was excellent."

"I really liked the brush tip and simplicity of the packaging."

"Easy application."

"The quick chair time is amazing. I had patients who have had other brand name in-office whitening comment they this was so much faster and they got better results."

"Color of the gel allowed easy visibility in placing."

*"I feel that it worked well both with and without the **Radii Xpert** light."*

"The brush applicator takes a little getting used to. It makes the applicator tip overall wider than you may be used to."

"Worked nicely and didn't drive sensitivity on root exposure patient - able to control application."

"When dispensing the first amount, it was difficult to get the mixing of material just right - seems like a lot wasted."

Consultants who would:

72% Recommend to a colleague

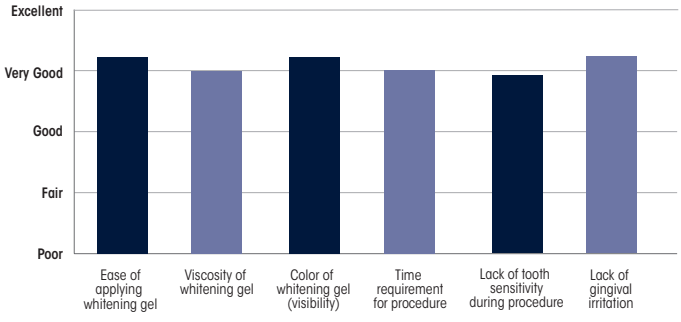
Consultants who would want to stock in their office:

33% Yes, instead of current product

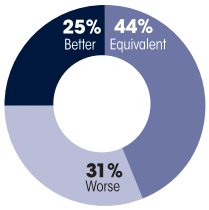
28% Yes, in addition to current product

28% I might want to order this product for certain cases

Evaluation Summary:



Compared to Competitive Products:



CLINICAL EVALUATION

NeoPUTTY®

Avalon Biomed Avalonbiomed.com

++++

DENTAL ADVISOR ++++

23 CLINICAL EVALUATORS

199 TOTAL USES

90% CLINICAL RATING

Key features: Root and pulp treatment ● Resin-free bioactive bioceramic ● Unique dispenser

Description

NeoPUTTY® (MTA) is a premixed bioactive bioceramic root and pulp treatment that is:

- Ready to use, with no mixing required.
- Does not dry out between uses.
- Calcium and hydroxide ion releasing, promoting the formation of hydroxyapatite to seal and support healing.
- Initially high in pH (basic) to promote osteogentic response when applied, allowing it to be antimicrobial.
- Highest radiopacity in its class for better placement checks and follow up.
- Non-staining.
- Resin-free for maximum bioactivity and dimensional stability.

Zero-waste dispenser

Unique Attributes

- This MTA material is already mixed and in a perfect putty form, for quick placement.
- You can restore immediately after placement of this material - this saves considerable chair time compared to other MTA materials.
- This material has a wide range of uses and can easily be your go-to material for root and pulp treatments.

Indications

- Direct pulp cap
- Indirect pulp cap
- Partial pulpotomy
- Cavity liner and base
- Pulpotomy and apexogenesis
- Perforation repair
- Root resorption
- Obturation
- Root apexification
- Root-end filling

Clinical Tips

- Do not desiccate the site. ***NeoPUTTY*** needs slight moisture to set.
- Use a light curable glass ionomer over the ***NeoPUTTY*** prior to restoring.
- Less is more. Use a small ball burnisher to apply for indirect/direct pulp capping.

"EASY PLACEMENT AND IT DOES NOT DISCOLOR TEETH."

Evaluators' Comments

"I like the fact that it is pre-mixed and syringeable. It makes it very easy to use in a pinch and is already the perfect consistency for placing."

"Much easier to place than my current MTA material and it did not wash out after placing."

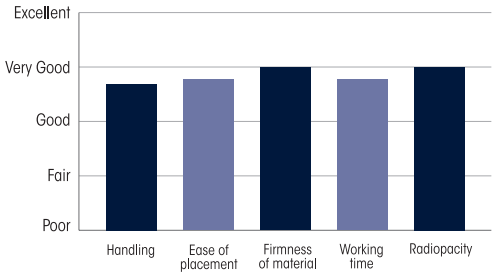
"It is a multi-purpose material."

"Provided a well-sealed restoration immediately after pulp capping."

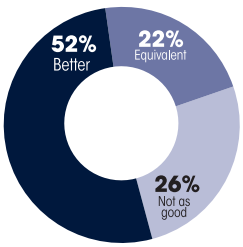
"Difficult to manipulate especially for small spaces - I would like a tip to try and place more directly."

"It stays soft. I would like it to firm up a bit more prior to restoration placement."

Evaluation Summary:



Compared to Competitive Products:



Consultants who would:

78% Recommend to a colleague

Consultants who would want to stock in office:

43% Yes, instead of current product

22% Yes, in addition to current product

13% No, however I might want to order it for certain cases

DycloPro

Septodont septodont.com

++++

DENTAL ADVISOR ++++

32 CLINICAL EVALUATORS

452 TOTAL USES

88% CLINICAL RATING

Key features: Topical anesthetic rinse ● One-ounce bottles ● Versatile

Description

DycloPro topical anesthetic is:

- An old favorite that has returned to the U.S. market in liquid form.
- A topical rinse.
- Dyclonine Hydrochloride topical solution 0.5%.

Indications

- Scaling and root planning.
- Blocking the gag reflex.
- Local numbing of mucous membrane prior to injection of local anesthetics.

Clinical Tips

- Have the patient rinse once, grossly debride, and then have them rinse again.
- Do not be tempted to add mouthwash to change the taste, it is not indicated by the manufacturer and at a minimum it dilutes it.
- Let the patient know ahead of time about the taste and that it will numb tissue more than tooth root surfaces, including their tongue.
- Have the patient rinse or swish for at least a full minute and half. Swishing for over a minute feels like a long time. Have a timer set.
- If you are trying to avoid the liquid going into the back of the throat, have them lean their head forward when swishing.
- Use at first gag. It makes life easier.
- Make sure to tell the patient not swallow the product.
- Have the patient rinse immediately. Allow a full 5-10 minutes prior to the start of the procedure so the onset of anesthesia can have full impact.

Unique Attributes

- ***DycloPro*** is administered as a liquid that the patient can swish (like mouthwash) or gargle depending on the target and intended use.
- Dispensed in 1-oz bottles for single patient use or multiple uses.

"THIS PRODUCT IS A KEEPER!"

Evaluators' Comments

"Works great for profound anesthesia of mucous membrane areas and for a long duration."

"Patients felt a benefit and always commented how much more comfortable their experience was."

"A patient who was nervous about a general cleaning was at ease when they rinsed."

"If you have patients that gag, use this…it works!"

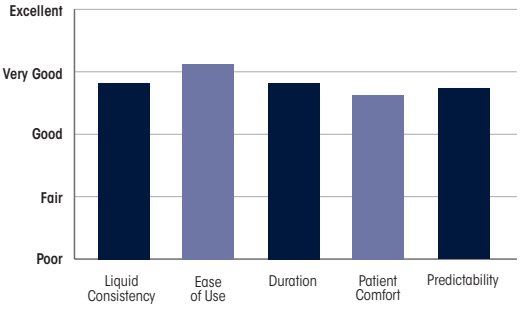
"It is nice to have this type of product, it should be in every dental office."

"Full-mouth topical that is easy to use."

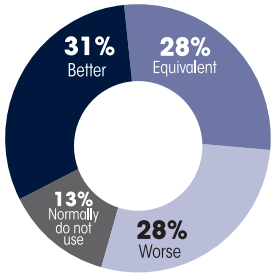
"Needs to be available in a variety of flavors, the current flavor is not desirable."

"Onset can be rather slow, at up to 10 minutes, to achieve full potency."

Evaluation Summary:



Compared to Competitive Products:



Consultants who would:

72% Recommend to a colleague

Consultants who would want to stock in office:

16% Yes, instead of current product

38% Yes, in addition to current product

19% I might want to order this product for certain cases

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Biomaterials Research Report

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Number 152– August 9, 2021

Laboratory Evaluation of BRILLIANT EverGlow®

M. Cowen, J.M. Powers

Purpose:

To evaluate the ***BRILLIANT EverGlow®*** composite system for strength, radiopacity, interface compatibility and flowabilty of ***BRILLIANT EverGlow® Flow.***

Results Summary:

BRILLIANT EverGlow and ***BRILLIANT EverGlow Flow*** show remarkably similar mechanical properties of ultimate flexural strength and compressive strength as well as similar radiopacity. The compressive strength in particular is within the top 10 percentile for composites, and the radiopacity is in an ideal range to distiguish the composites from dental tissue. The MicroCT evaluation showed exemplary interface compatibility between ***BRILLIANT EverGlow*** and ***BRILLIANT EverGlow Flow*** and good marginal adaptation of ***BRILLIANT EverGlow Flow*** to the cavity walls. The flow characteristics of ***BRILLIANT EverGlow Flow*** resist slumping to allow precise placement with enough flowability to adapt to small crevices. Overall, the combination of ***BRILLIANT EverGlow*** and ***BRILLIANT EverGlow Flow*** appears to be a very physically compatible and well-designed composite system.

Experimental Design:

MATERIALS:

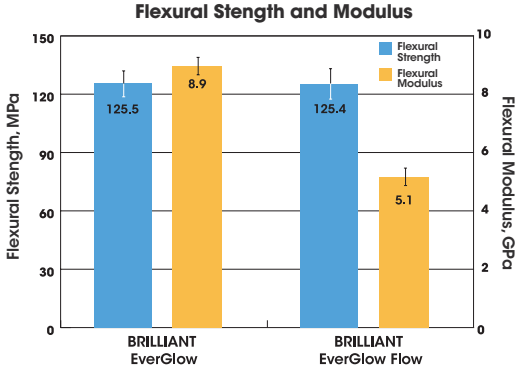
Composite: ***Brilliant EverGlow*** [lot: K34464 shade A1] and ***BRILLIANT EverGlow Flow*** [lot: K01698 shade A1] (Coltene)

Adhesive: ***ONE COAT 7 UNIVERSAL*** (Coltene)

TESTS:

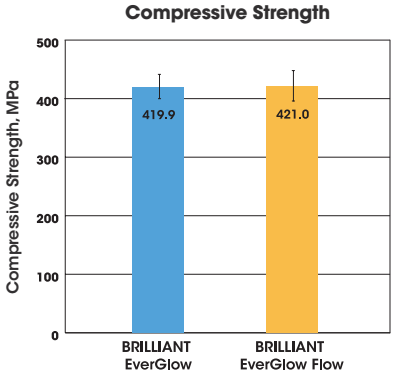
Flexural strength and modulus, (n=10): 2 mm x 2 mm x 25 mm bar specimens were tested after each set of specimens had been stored in distilled water for 24 hours at 37 C according to ISO 4049:2019. They were tested using an Instron 5866 universal test machine with a 1 mm/min crosshead speed.

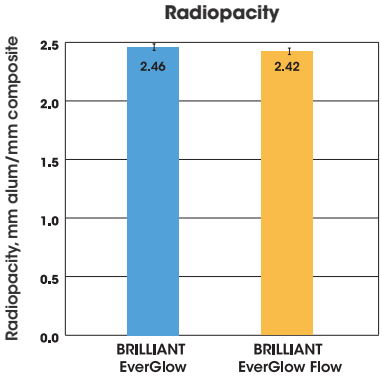
The flexural strength is well above the ISO 4049 requirement of 80 MPa for a composite restorative indicated for occlusal surfaces. The packable version of ***BRILLIANT EverGlow*** has a higher modulus of 8.9 GPa to resist occlusal impacts with less flexing, while the ***BRILLIANT EverGlow Flow*** has a lower modulus for higher energy absorption typical for flowable composites.

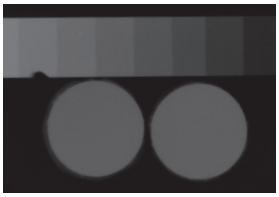


Compressive Strength, n=10: 4 mm diameter x 8 mm cylinder specimens were made in a Teflon split mold, light cured for 40 seconds on each side and stored in distilled water for 24 hours at 37 C. They were tested using an Instron 5866 universal test machine with a 1 mm/min crosshead speed.

Both products exhibit a compressive strength on the high end of the spectrum found for composites cured intraorally [320-440 MPa]. They should be more than adequate to resist compressive forces in occlusion.



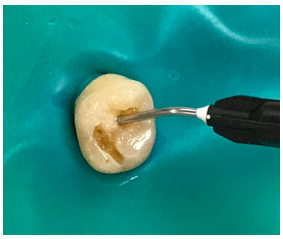




Radiopacity According to ISO 13116:2014, n=3: Composite specimens 1 mm thick and 10 mm diameter had digital x-rays *(Dexis Titanium)* taken alongside an aluminum step wedge and evaluated in an image analysis software using the histogram function to determine grey levels and measure and compare the radiopacity in units of mm of aluminum/mm of thickness for each material.

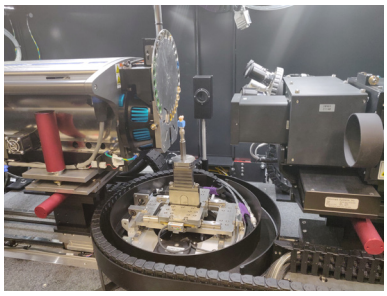
This is greater than the ISO 4049 requirement of 1.0 mm aluminum equivalent.

The radiopacity of dentin is roughly equivalent to 1 mm of aluminum, while enamel is equivalent to 2 mm. The radiopacity of ***BRILLIANT EverGlow*** is within an ideal range to be visually distinct from any tooth tissue.

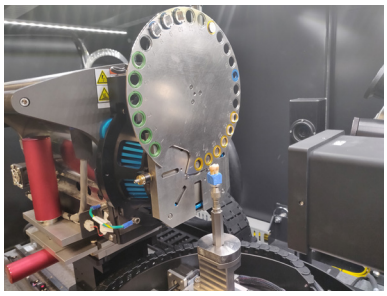


BRILLIANT EverGlow Flow during placement of Tooth#1

BRILLIANT EverGlow Flow after finishing and polishing

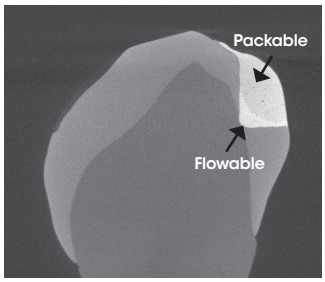


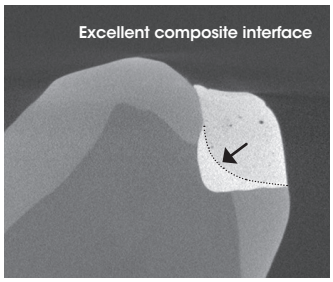
Zeiss Xradia Versa 520 3D X-ray Microscope

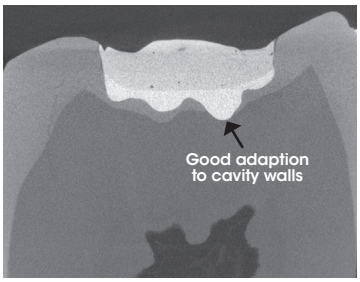


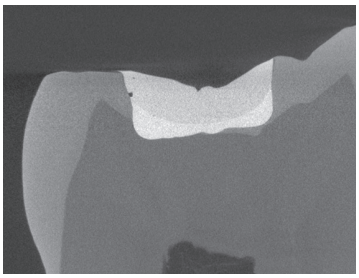
Zeiss Xradia Versa 520 3D X-ray Microscope

MicroCT Interface Evaluation: Three extracted molars, two which previously contained an amalgam filling and one carious molar were restored by a clinician, using ***ONE COAT 7 UNIVERSAL, BRILLIANT EverGlow Flow*** as a base/liner, and ***BRILILANT EverGlow*** as a capping layer. The restorations were scanned using a Zeiss Xradia Versa 520 3D X-ray Microscope with a 14 um voxel resolution. The scans were qualitatively evaluated for how the composites worked together to adapt to cavity walls and provide smooth interfaces between the two composites.





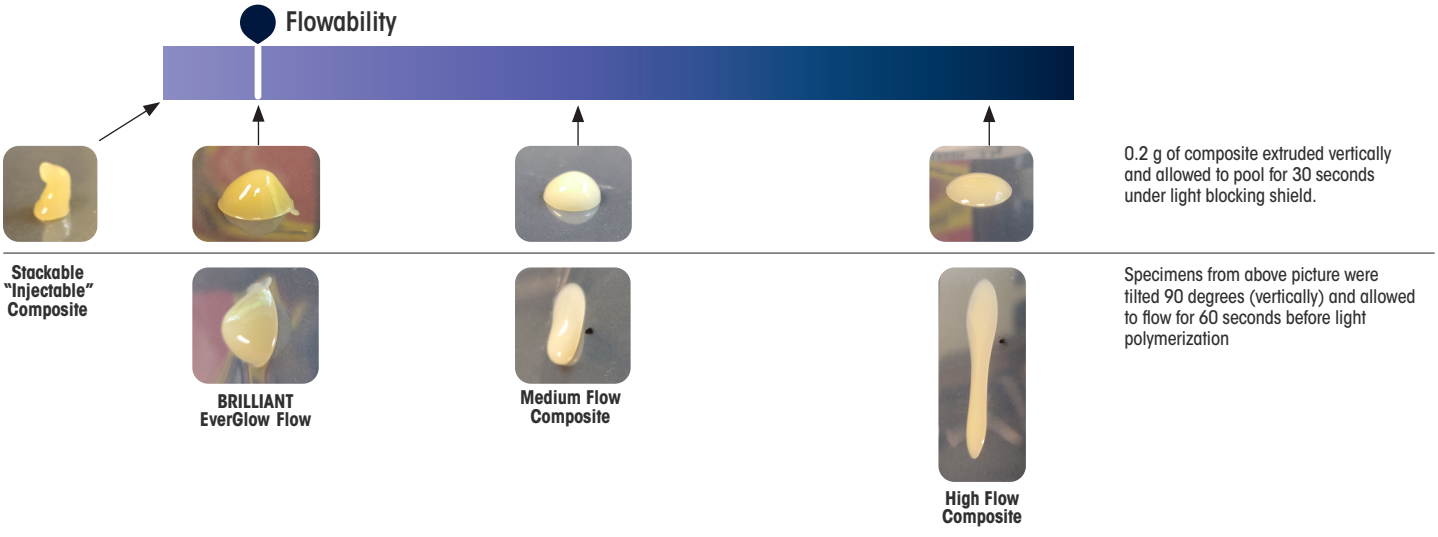




Integrity of Packable and Flowable Interfaces: No gaps were formed between the flowable and packable interfaces indicating a good ability of the packable composite to bond to the flowable composite. Having a strong bond between the composite interfaces which resists polymerization shrinkage allows maximum strength of the restoration by utilizing the lower modulus of the flowable to reduce stresses on the cavity walls while the packable composite resists occlusal stresses.

Adaptation to Cavity Walls: The adaptation of the composite restoratives to the prepared cavity walls was largely successful. This is a function of the rheological properties (ability to deform or flow under force/stress) of the composites for the restorations to have close adaptation to the shape of the prepared cavity, the composite to stick to the applied adhesive and resist polymerization shrinkage stresses. The ***BRILLIANT EverGlow Flow*** showed intimate contact with all walls and appears to have been successful in resisting polymerization shrinkage to maintain contact.

Flowability: ***BRILLIANT EverGlow Flow*** tends to stay in place where it is applied. It has high enough flowability to become round under its' own weight (not stackable), but low enough flowability that when held vertical, it does not significantly move. The primary way in which it will fill crevices in cavity preps is from extrusion directly into the cavity preparation and allowing the rheological properties to spread the composite evenly across the cavity floor. Passing a probe tip through to material may allow more assurance that the composite adapts to all crevices and walls.



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Biomaterials Research Report

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This report was presented at IADR in conjunction with GC America

IADR GENERAL SESSION

Number 154 – August, 2021

Novel Universal Cement Bond Strength to Multiple Substrates

M. Cowen[1] , G. Joshi [2], M.A. Heiss [2] , D. Graham[1] , J. M. Powers[1]
[1]Dental Consultants, Inc., Ann Arbor, MI and [2]GC America Inc., Alsip, Illinois

Introduction:

G-CEM ONE is the latest in a series of universal cements which may be used with or without an additional primer to a variety of surfaces. In this case, it also includes an additional *Adhesive Enhancing Primer* with touch-curing technology which allows rapid curing of the cement at the critical tooth interface to prevent gap formation and provide early bond strength. This study used a modified ISO/TS 11405:2015 method for testing cement indirect bond strength by using a single sided PTFE tape to create a 3 mm interface and cement is bonded to an opaque metal disc to test the self-curing capabilities of the cement. We tested this cement system to human dentin and enamel, zirconia and a lithium disilicate glass ceramic at 10 minutes, 24 hours and after artificial aging of 10,000 thermocycles.

Experimental Design:

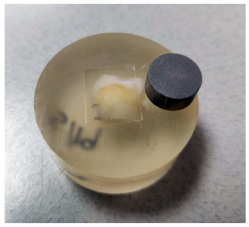
MATERIALS:

G-CEM ONE, G-CEM ONE Adhesive Enhancing Primer (AEP) and ***G-Multi Primer, RelyX Unicem 2 + RelyX Ceramic Primer, RelyX Ultimate + Scotchbond Universal*** (3M), ***Maxcem Elite + Silane Primer*** (KaVo Kerr), ***Panavia V5*** + ***Tooth Primer*** and ***Clearfil Ceramic Primer Plus*** (Kuraray)

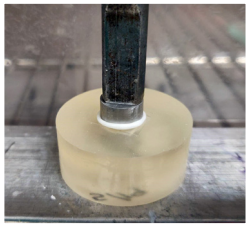
TESTS:

Substrates: Human Dentin, Human Enamel, Initial LiSi Block and Initial Zirconia
Storage Conditions: immediate 10 minute test, 24 hours in water, 10,000 thermocycles

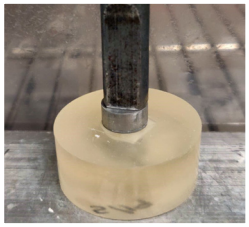
Indirect Shear Bond Strength [n=8] to dentin, enamel, Initial LiSi Block and Initial Zirconia: Molars, sterilized in a 1% chloramine solution, and stored in deionized water were embedded in acrylic resin discs and ground through 600-grit SiC paper to form bonding substrates of superficial dentin and ground enamel. *Initial Zirconia* and *Initial LiSi Block* plates were cut to be ~12 mm x 12 mm x 2-3 mm thick, processed according to manufacturer instruction, embedded in acrylic resin discs, finished through 600 grit diamond paper, and surfaces treated according to manufacturer instructions. The surface treatment was 9.6% hydrofluoric acid for 20 seconds to *Initial LiSi Block* and sandblasting with 4 bar (0.4 MPa) pressure and 50 µm particles to *Initial Zirconia*. Test groups for adhesive bonding had their surfaces treated. Specimens were then prepared in which single-sided adhesive PTFE tape, ~0.10 mm thick, with an approximately 3 mm diameter hole is placed over the bonding site and burnished into place. 10 mm diameter metal cylinders were ground with 60 grit SiC Paper, sandblasted, and primed to simulate an indirect restoration which should have a higher bond strength than the substrate being tested. A dab of the cement was placed in the center of the metal cylinder and the cylinder gently applied concentric with the hole with finger pressure before being placed in a loading jig where a 1 kg weight was applied at room temperature. The excess cement was removed by cotton without light and the load was removed then transferred to a 37°C, 100% R.H. oven carefully and dwelled for 10 minutes. One test group was then tested, one group was then transferred to a container with 37 °C water for 24 hours and one group was thermocycled for 10,000 cycles between 5 and 55°C water. The shear bond strength test was performed on a universal testing machine (Instron model 5866) at a crosshead speed of 1 mm/min. Means and standard deviations of bond strength were calculated and reported in the results section. Data were analyzed by ANOVA and Fisher's PLSD at the 0.05 level of significance.



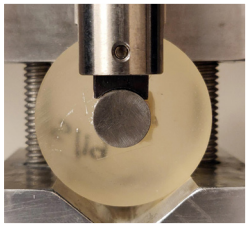
After surface treatment, tape with 3 mm hole is applied, and cement is applied to disc and placed over the hole.



Disc is loaded with 1 kg load.

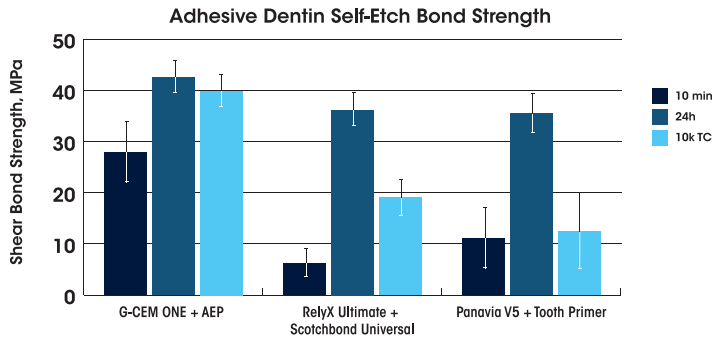


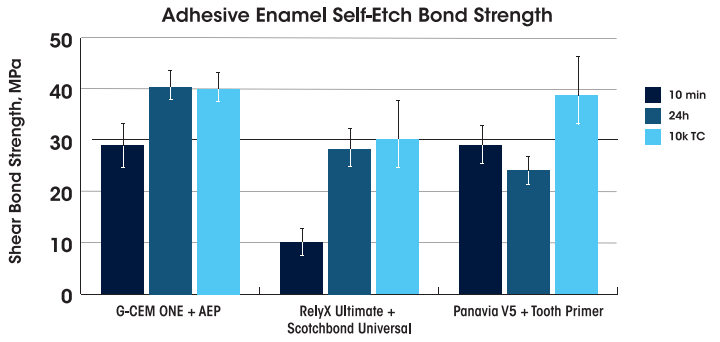
Cement is removed under load before continuing to cure in ~99% R.H. chamber for 10 minutes before testing or placed in water.

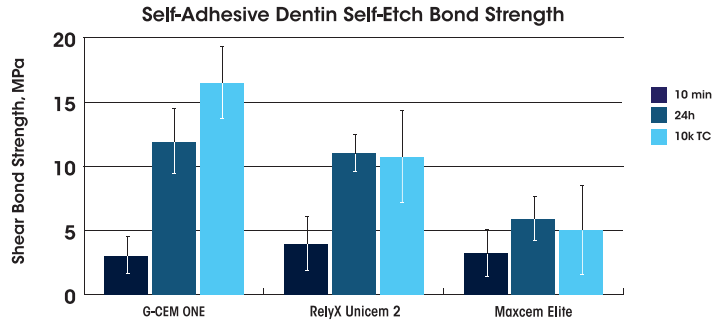


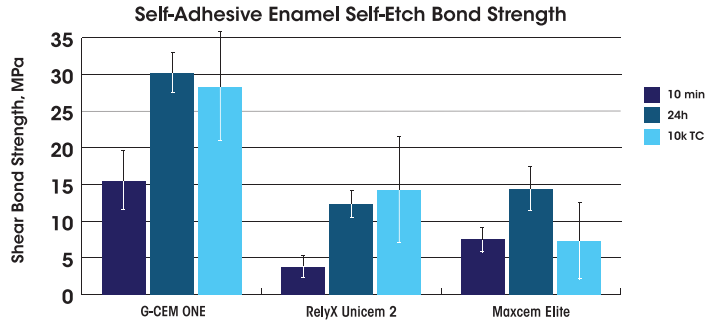
Shear bond test is conducted with 1 mm/min crosshead speed using an Instron model 5866.

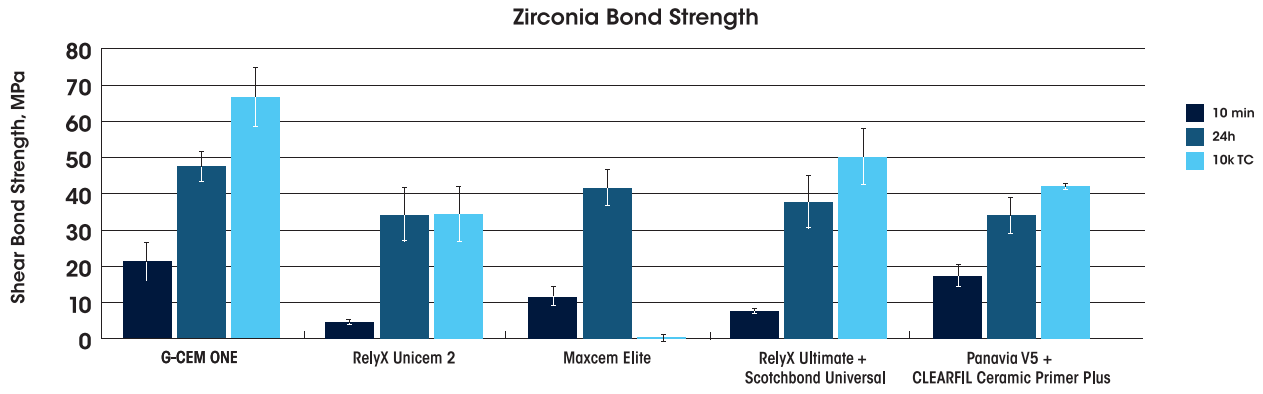
Results:

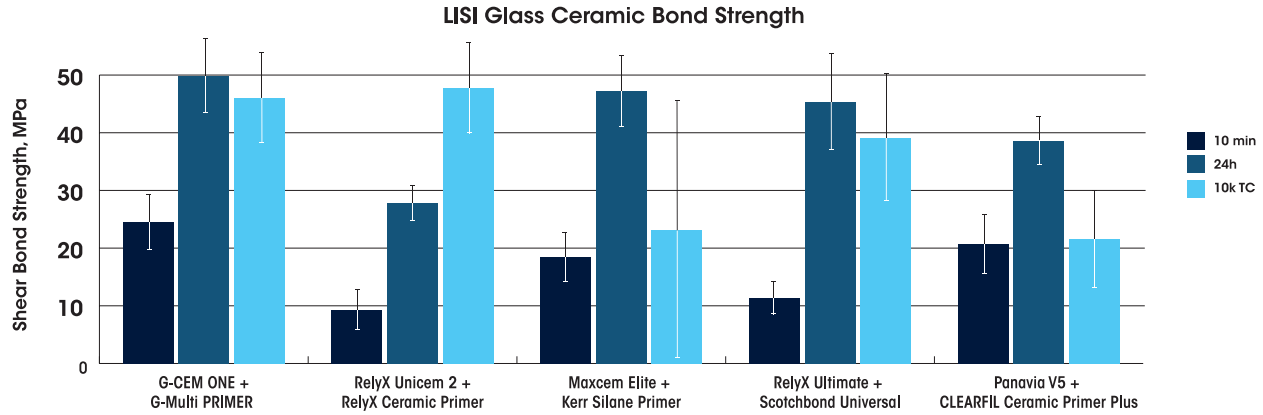












Conclusion:

G-CEM ONE has exceptional bond strength durability after thermocycling to all substrates tested, and high initial bond strength after limited curing time in combination with the *Adhesive Enhancing Primer* including touch curing technology.

Funding and products were provided by GC America

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Microbiology Research Report

J.A. Molinari, Ph.D., and D. Graham, B.A.

DENTAL ADVISOR Microbiology Research Center
3110 West Liberty, Ann Arbor, MI 48103

Number 151 – August, 2021

Bacterial Load Reduction Efficacy of the Conjunctive use of the TRIO Rx™ and MIST in a Dental Operatory

J.A. Molinari, Ph.D., and D. Graham, B.A.

Purpose:

To evaluate the bacterial load reduction abilities of the conjunctive utilization of the ***GenEon TRIO Rx***™ and ***GenEon MIST*** in a dental operatory after a typical aerosol generating hygiene procedure.

Challenge Device: The ***TRIO Rx***™ is a compact on-site generating system that creates a non-toxic cleaning, disinfecting, and deodorizing hypochlorous acid solution using ***GenEon's*** EPA registered proprietary mineral electrolyte packet and water. This solution has received EPA List N registration. The ***MIST*** is a handheld sprayer/blower with an adjustable flow rate that is filled with the ***TRIO Rx***™ solution, allowing for contactless cleaning and disinfecting in three minutes or less.

Device: MIST with TRIO Rx™ Solution

Experimental Design:

Materials:

1. ***TRIO Rx***™ *(GenEon Technologies)*
2. ***MIST*** *(GenEon Technologies)*
3. ***GenEon's Mineral Electrolyte Packet*** *(GenEon Technologies)*
4. SAS Super 180 Bioaerosol Sampler *(Bioscience International)*
5. TSA with lecithin and poly 90 contact plates
6. AccuPoint® Advanced HC ATP Reader and Surface Samplers *(Neogen)*
7. Cavitron 300 Series Ultrasonic Scaler *(Dentsply Sirona)*
8. Dental hygienist volunteer
9. Patient volunteers

Device: SAS Super 180 Bioaerosol Sampler

Test Methods

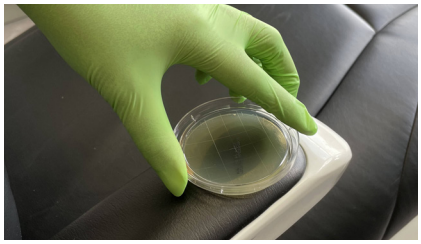
Each aerosol generating procedure was completed while the office was closed, and all procedures were completed in one designated operatory. Prior to the first patient, lines were cleaned with an evacuation line cleaner and traps were changed. Monarch Lines *(Air Techniques)* water treatment was utilized in a closed system (water bottle). Cavitron 300 Series Ultrasonic Scaler *(Dentsply Sirona)* was consistently set to 60Hz and was set at the highest water spray level using a Focused Spray 10 S Universal Insert. The same low-speed cordless hygiene handpiece, prophy angle, and coarse prophy paste was used for all polishing procedures. Before testing, all volunteers agreed to participate in the study and to having their photos taken. The same dental professional performed all procedures in this study.

For each procedure, all quadrants of the mouth were treated; anterior and posterior, buccal and lingual. Each hygiene procedure consisted of ten minutes of ultrasonic scaling followed by ten minutes of polishing. After each procedure was finished, the hygienist and patient volunteer exited the room and three separate samples were taken inside the operatory. The first of these samples was taken on the operator's handle of the over-the-patient delivery system and utilized the ATP reader with a new surface sampler (ATP sample). A second surface sample was taken by culturing the arm rest of the patient's chair with a TSA with lecithin and Poly 90 contact plate (contact plate sample). Lastly, a sample of the air was taken utilizing the SAS Super 180 Bioaerosol Sampler with a TSA with lecithin and poly 90 contact plate embedded inside. The bioaerosol sampler was positioned over the patient chair and pulled 1000L of air onto a new embedded contact plate in 5.5 minutes during each bioaerosol sample (bioaerosol sample).

Patient procedure

After each of the three samples were taken, the room was sprayed down using the ***MIST*** with the solution made from the ***TRIO Rx™***. After the appropriate contact time had passed (three minutes), the same three samples were taken using the ATP reader, a contact plate, and the bioaerosol sampler in their respective locations within the operatory. This process was repeated for all six patient volunteers. There was 10-20 minutes of room turnaround time between patients. Control samples were taken with the three devices in the same locations when the office was empty before any aerosol generation took place. After each sampling the exposed TSA with lecithin and poly 90 contact plates were immediately processed and incubated at 37°C for 48 hours. Microbial growth was then quantified and recorded for each sampling plate.

Control bioaerosol sample, CFU: 21



Control contact plate sample, CFU: 1

Control ATP sample, RLU: 3472

Results:

Data was analyzed by isolating each patient's comparative results due to the nature of differing microbiomes between patients. **For all 6 patients, the bacterial loads collected using each of the three sampling devices (the bioaerosol sampler, ATP reader, and contact plate) were lower after the conjunctive use of the *TRIO Rx™* and the *MIST* when compared to the sample taken before disinfecting in all three sample locations.** The percent decrease for each of the six replications was averaged by sampling device/location. On average, using the ***TRIO Rx™*** and ***MIST*** after a typical hygiene appointment decreased the number of collected colony forming units (CFU) on the arm rest of the patient's chair by 82% (Fig. 1). The average percent decrease of bacterial load found in the air from the bioaerosol sampler was 46% after the use of the ***MIST*** and ***TRIO Rx™*** (Fig. 2). The sample taken on the handle of the patient delivery system with the ATP reader decreased the collected relative light units (RLU) by an average of 58% after disinfection with the ***TRIO Rx™*** and ***MIST*** (Fig. 3).

Figure 1.

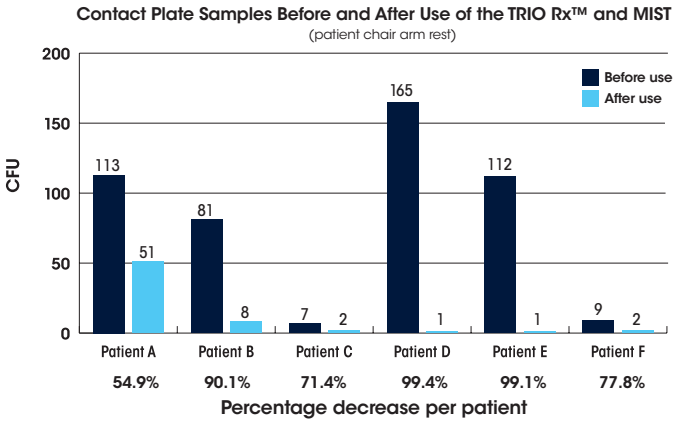
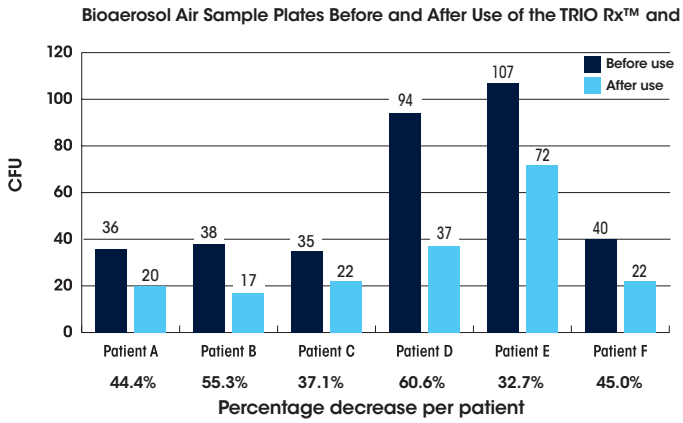


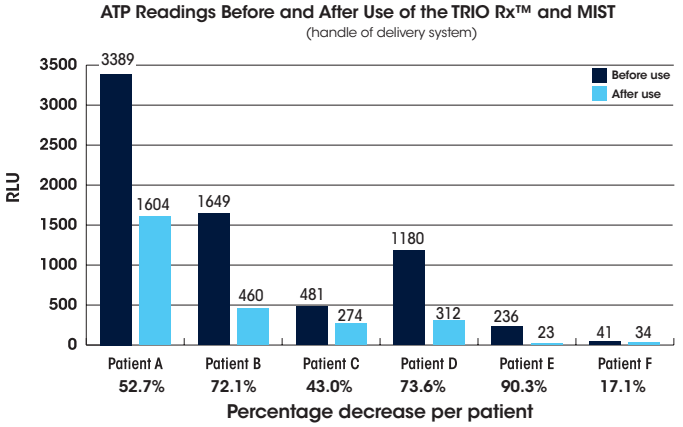
Figure 2.



Discussion:

In this pilot study, the data showed trends of overall bacterial load reduction after the conjunctive use of the ***TRIO Rx™*** and ***MIST*** following a typical aerosol generating dental hygiene procedure. Total bacterial reduction on the plates was not noted due to the natural levels of bacteria in the air. Other contributing factors were likely the number of people occupying the space, the airflow, and having had recent aerosolization in the space. Values from ATP samplings showed trends of decreasing RLUs with every replication, which could imply that a residual effect was taking place with the use of the ***TRIO Rx™*** solution. A dental operatory during an aerosol generating procedure creates a high biomass space. It is presumable that if the ***TRIO Rx™*** and ***MIST*** were able to reduce the bacterial load in a high biomass space, then it would also be effective for low biomass spaces. Depending on the current cleaning and disinfecting systems being used in a practice, the ***GenEon*** devices used conjunctively could also decrease the necessary operatory turnaround time between patients resulting in increased productivity. Limitations in this pilot study included a small sample size. Future studies could include a larger sample size.

Figure 3.



Conclusion:

The findings from this study showed trends of overall reduced bacterial load after the conjunctive use of the ***TRIO Rx™*** and ***MIST*** following a typical hygiene cleaning procedure.

Clinical Evaluator SPOTLIGHT

Dr. Joelle Prose, *Kansas City, MO*

What prompted you to begin a career in dentistry?

I have wanted to be a dentist for as long as I can remember. When I was in middle school in Fenton, MI, I had to write a report about what I wanted to be when I grew up. My mom (who is not a dentist) suggested dentistry because it is a career where I can use my artistic skills while helping people. As I learned more about the profession, through job shadowing in high school, I knew it was a perfect match for my goals, work ethic, and my creative nature.

What was your time like as an intern at DENTAL ADVISOR and did it influence you to become a consultant?

My time working at the DENTAL ADVISOR was absolutely amazing! I started in 2006 while I was a sophomore at the University of Michigan. I was initially working as a volunteer to get more experience in the dental profession and my involvement grew from there. I worked full time during the summers and after college graduation I moved to New York City, but still maintained contact with the team at the DENTAL ADVISOR. When I came back to Ann Arbor for dental school I continued working in the research department during breaks. I was exposed to the different research methodologies that have really given me confidence when choosing materials I use in my practice today. It is crazy to me that 15 years ago I was sitting at the Wednesday board meetings discussing products, while slightly confused by all of the terminology I was still so intrigued (and overwhelmed) by it all. Coming full circle and after practicing for six years I'm excited to be on the other side as a consultant.

Could you elaborate on your time in the military and practicing dentistry abroad?

While applying to dental school I simultaneously applied for the Health Profession Scholarship Program through the US Army. After graduating from the University of Michigan School of Dentistry in 2015, I was selected into the 1-year AEGD residency program at Ft. Campbell, Kentucky. I was then stationed at Ft. Leavenworth, KS and was a dentist for the Commanding General Staff College for 3 years. My final duty station was at Camp Casey, South Korea where I was the Officer in Charge for a 1-year tour. Camp Casey is located about 12 miles from the North Korea border. So not only was my time and attention focused on dentistry but shared with maintaining military readiness. While stationed in South Korea, I was able to travel throughout South East Asia and Japan. The military really encourages you to engage in the host nation culture so weekends and leave were spent exploring Seoul and other cities throughout South Korea.

Describe your current life/practice in Kansas City.

I moved back to the United States in May of 2020, so right in the thick of Covid-19! It was definitely a culture shock coming back to "normal" but everything was shut down. I work in a private practice office in Lenexa, KS but live in Kansas City, MO. We have 2 hygienists, 1 administrative, and 1 dental assistant. Kansas City is, in my opinion, one of the state's best kept secrets. My husband was born and raised here and we met while I was living downtown and stationed at Ft. Leavenworth. He was able to move to S. Korea with me and it was a no-brainer to move back to KC after my military separation. Kansas Citians have so much pride in their city (and Chiefs football) that we are excited to be a part of. Working on the Kansas side of the city was my first choice as it's more residential and has a broader scope of patients, including families and children.

Dr. Joelle Prose's Command photo while stationed in South Korea.

Camp Casey Dental Clinic, South Korea where Dr. Prose was the Officer in Charge.

Dr. Joelle Prose with her husband, Andrew Johnson, at her practice in Lenexa, Kansas.

SPECIAL THANKS TO:

Select Senior Clinical Evaluators (Over 20 years):

R. Fisher, OH · E. Katkow, MD · J. Lockwood, MI · G. Poy, MI · R. Trushkowsky, NY · P. Yaman, MI · K. Baker, TX · F. Berman, PA · J. Bostic, OH · L. Brimhall, MT · M. Briskin, NY · W. Brownscombe, MI · R. Ciccone, MI · C. Colbert, MI · M. Conrad, PA R. Dost, VA · J. Doueck, NY · M. Eannaccone, NY · K. Fairbanks, MI · M. Feinberg, NY · K. Fischer, IN · G. Franco, NY · N. Garlisi, OH · S. Graber, IL · P. Grandsire, NY · E. Gutman, NY · D. Haas, Ontario · K. Hamlett, TX G. Hart, OH R. Herwig, KS · J. Kaminski, MI · R. Kaprielian, NJ · M. Kastner, OH · D. Keren, NY · M. LaMarche, WA · J. Leitner, MI · S. Lever, MD · R. Lezell, MI · M. Man, NY · B. Manne, FL · N. Mansour, MI · N. Markarian, CA · C. McLaren, MI · J.W. Mikesell, IL R. Mizrahi, NY · G. Mosso, PA · E. Mosso, PA · J. Nash, MI · A. Nazarian, MI · R. Oshrain, NY · J. Paris, TX · D. Parris, GA · M. Patel, MI · D. Peterson, MD · T. Pieper, WY · D. Pitak, MI · V. Plaisted, NY · D. Qualliotine, NC · G. Raichelson, Ontario G. Reskakis, NY · K. Schwartz, FL · J. Shea, MO · B. Shumaker, NJ · B. Sims, NY · P. Symeonides, NY · H. Tetalman, OH · C. Trubschenck, CA · S. Ura, NH · W. Walcott, MI · M. Waranowicz, MI · L. Wee, MI H.Yeung, CA · P. Zanetti, MI · S. Zimmer, MI

Clinical Evaluators (19 years or less):

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Laboratory Consultants: Apex Dental Milling, MI