

THE DENTAL ADVISORTM

Improving Patient Care Through Research & Education



Infection Control

Personal Protective Equipment

Dental healthcare professionals (DHCP) and their patients are exposed to a variety of bacteria, viruses and mycotic organisms via blood, aerosolized, and contact secretions during the course of treatment. In order to break the “chain of infection” resulting from these occupational exposures, mandated standards and recommendations from public health agencies call for a series of practice controls to reduce potential risks. A fundamental component of all infection control programs is the routine use of Personal Protective Equipment (PPE). PPEs have the primary function of preventing initial occupational exposure. Since PPEs are essential for reducing cross contamination and cross infection risks between treatment providers and their patients, their use is mandated by the Occupational Safety and Health Administration (OSHA).

This issue of THE DENTAL ADVISOR discusses health professional protection through the use of patient care gloves, masks, protective eyewear, and protective clothing and recommends representative products.

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RATINGS:

Excellent + + + + +
Very Good + + + +
Good + + +

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Guest Editorial

John A. Molinari, Ph.D.



John A. Molinari, Ph.D.

The continued development of effective infection control strategies requires a major commitment from both healthcare professionals and industry. Numerous advances in equipment, instruments, barriers, and chemical technologies have been introduced during the past few decades, a credit to the ingenuity and efforts of many manufacturers. The willingness of healthcare providers to respond to information concerning infectious disease risks and evidence-based recommendations to prevent occupational exposures has been crucial for this evolution of infection control. One only needs to use the example of protective equipment to illustrate their cooperative efforts. It was only a couple of decades ago when few dentists, hygienists, and assistants wore latex gloves, masks, or protective eyewear during patient care. When you consider how far technology and the profession have come since that time, you can get a sense of the multiple advances dentistry and medical professionals have available to them.

It is our pleasure to provide you with the following update on personal protective equipment (PPE). We have attempted to reinforce basic criteria and principles for you to consider when selecting products, which hopefully allows you to use the information as an educational update. THE DENTAL ADVISOR has also been able to evaluate a variety of PPE products over the years, and information from those studies is provided. Since my arrival at THE DENTAL ADVISOR four years ago, our infection control research efforts have continued to expand to include new testing protocols to evaluate emerging technologies. Peri and I are now able to conduct microbiological evaluations on many categories of infection control products. We hope you find our article informative and valuable. Please visit our Infection Control Corner on THE DENTAL ADVISOR website to access more detailed information.



Peri Nelson, B.S.

Personal Protective Equipment Patient Care Gloves

Properly fitting gloves protect DHCPs from direct exposure through cuts and abrasions, which are often visually undetectable. The most recent comprehensive CDC infection control recommendations for dentistry continue to reinforce routine glove use: "Wear a new pair of medical gloves for each patient, remove them promptly after use, and wash hands immediately to avoid transfer of microorganisms to other patients or environments." The incidence of many occupational infections (i.e., herpetic whitlow, staphylococcal pyoderma, hepatitis B virus infection) have been dramatically reduced as a result of professional adoption and adaptation to gloves, further reinforcing the importance of this fundamental safety precaution.

Glove types worn during patient treatment can be comprised of latex, nitrile, vinyl, or chloroprene. The most frequently worn gloves during patient treatment are non-sterile, disposable patient examination gloves. They provide an effective barrier as well as a comfortable fit and tactility. The use of sterile latex or other treatment glove materials is indicated when surgical procedures are performed.

Characteristics of Gloves

- Prevent microbial penetration through defects in epithelial tissue barriers
- Effective alternative materials available to latex
- Non-sterile disposable gloves appropriate for examinations and other non-surgical procedures
- Single-use
- Utility gloves are puncture- and chemical-resistant - appropriate for instrument reprocessing and clean up procedures

Latex and Non-Latex Gloves

Latex gloves are manufactured in many sizes and specifications (e.g., ambidextrous, right or left hand, low powder, powder free, low protein) (**Diamond Grip Plus Powder Free Latex Gloves**, Microflex Corp.; **Cyntek Powder Free Latex Exam Gloves**, Cranberry USA; **Aurelia Refresh Latex Powder Free Mint Examination Gloves**, Supermax Inc.; **Ultra Plus Latex Gloves**, Crosstex International). The documented incidence of latex hypersensitivity reactions in health professionals and the general population in the 1980s and 1990s, however, caused many health professionals to adopt alternative nitrile, medical vinyl, and chloroprene gloves.

Protection from Latex Hypersensitivity Reactions

The controversy surrounding routine use of latex product in health care facilities also has led many governmental, manufacturing, and healthcare organizations to undertake initiatives to protect treatment providers and their patients from potentially serious latex hypersensitivity reactions. These initiatives include the following →

- Nitrile, vinyl, neoprene, and other non-latex gloves may be worn for patient treatment by sensitive DHCP. Many brands of prophylaxis cups and orthodontic elastic bands also are now manufactured "latex free."
- DHCP should be aware of other developing technologies concerning manufacture of non-latex gloves and be able to devise special precautions for latex allergic patients (e.g., schedule them as the first patient of the day to minimize exposure to aerosolized latex particles, set up specific treatment areas with minimal presence of items containing latex). U.S. Food and Drug Administration (FDA) regulations in effect as of September 1998 disallowed the use of the misleading term hypoallergenic to describe latex gloves and required all natural rubber latex (NRL) containing medical devices to be labeled as such, including a cautionary statement warning of the potential of NRL to cause allergic reactions.

Non-latex Gloves

Advances in technology continue to provide clinicians with non-latex gloves that offer high levels of tactile sensitivity.

- **Xceed Powder Free Nitrile Examination Gloves**, Microflex Corp.
- **Ultraform Powder Free Nitrile Examination Gloves**, Microflex Corp.
- **LUV Nitrile Powder-Free Exam Gloves**, Cranberry USA
- **AquaSource Nitrile Powder-Free Exam Gloves**, Cranberry USA
- **Revo200 Nitrile Powder-Free Exam Gloves**, Cranberry USA
- **Purple Nitrile Patient Exam Gloves**, Kimberly-Clark
- **Le-Soothe Polychloroprene Exam Gloves**, SmartPractice
- **Aurelia Quest Powder Free Nitrile Gloves**, Supermax Inc.

Right Handed and Left Handed Fitted Gloves

Latex and non-latex gloves are also available as right handed and left handed fitted items and offer clinicians excellent tactility, comfort, and dexterity.

- **Curve Fitted Powder Free Nitrile Gloves**, Cranberry USA
- **Reflection Powder Free Nitrile Gloves**, Smarthealth
- **Left and Right Fitted Nitrile Gloves**, Crosstex International



Quality Control

Quality control has also improved to assist clinicians in glove selection, such that gloves currently manufactured for health-care purposes are subject to FDA evaluation and clearance. Even though the FDA identified levels of maximum defects allowed for glove manufacturers, intact gloves eventually fail with exposure to mechanical (e.g., sharps, fingernails, or jewelry) and chemical (e.g., dimethacrylates) hazards over time. Gloves used during the provision of patient care are single use items and are not to be used on another patient or washed for reuse.

Leakage rates vary by glove material (e.g., latex, vinyl, and nitrile), duration of use, and type of procedure performed, as well as by manufacturer. Newer generations of vinyl gloves are far superior to earlier ones with regard to fit, elasticity, and in-use life expectancy (**Synthetic Powder Vinyl Exam Gloves**, Kimberly-Clark), and DHCPs should be assured that as long as they use patient care gloves appropriately, the potential for occupational infection from bacterial, viral, and mycotic pathogens will be greatly reduced.

"Gloves used during the provision of patient care are single use items and are not to be used on another patient or washed for reuse."

Q: Are there differences between powdered and non-powdered latex gloves?

A: The presence or absence of cornstarch powder does not affect the tested integrity of a manufactured latex glove. That property is determined by a series of FDA-regulated pinhole/defect analyses. Powder on gloves primarily allows people to don the gloves more easily after hand washing. Manufacturers have gradually reduced the powder concentration, to where most latex gloves are either lightly powdered or powder free. Currently, The National Institute for Occupational Health and Safety (NIOSH) recommends that if latex gloves are chosen, the healthcare facility provide personnel with reduced protein, powder free gloves. Usage problems can arise even with this type of glove. With powder-free gloves, some healthcare workers notice that they can have either more hand perspiration, or there isn't powder to absorb the accumulation. However, they do have less of a problem with hand dermatitis traced back to residual powder remaining after hand washing. An important consideration to keep in mind if a person is considering using powder-free gloves is that the hands **MUST** be completely dry before donning them. Moisture left on the hands from improper drying will make it very difficult to put the gloves on.

AquaSource Nitrile Powder-Free Exam Gloves

Cranberry USA
(888) 811-6839
www.cranberryusa.com



Product Description: NEW *AquaSource Nitrile Powder-Free Exam Gloves* will soon be the favorite choice for nitrile gloves in your practice. Micro-coated with *Cranberry's* proprietary *NuSoft™* Lanolin and Vitamin E formulation, and created with our softest Nitrile formulation yet, *AquaSource* helps to improve skin health and minimize dry skin irritation. The tactile sensitivity and flexibility you will experience with *AquaSource* is unmatched. *AquaSource* is packaged in our economical and space-saving 200-count box, and is a soothing Aqua color. Available in XS-XL.

Utility Gloves

Hu-Friedy Lilac Utility Gloves

Hu-Friedy
(800) 483-7433
www.hu-friedy.com



Product Description: Lilac gloves are for use in the sterilization area and during disinfection processes in the operatory.

- Flocklined nitrile, lilac utility gloves do not contain latex and stand out as the color of dental hygiene
- Puncture resistant for improved protection against sharps injuries
- Molded texture improves tactile feel and grip
- Can be autoclaved up to 250°F/121°C up to 5 times

Non-medical, reusable utility gloves are not suitable for intraoral use; however, their puncture resistance and chemical resistance make them excellent personal barriers for handling and cleaning contaminated instruments, cleaning the operatory area, and performing environmental surface cleaning and disinfection procedures. Their puncture and chemical resistance properties allow utility gloves to withstand multiple cleaning and disinfection exposures. They are usually comprised of nitrile or neoprene and some can even withstand repeated heat sterilization cycles in an autoclave (*Hu-Friedy Lilac Utility Gloves*, *Hu-Friedy Mfg.*; *Ansell Sol-Vex Utility Gloves*, *Ansell*). Utility gloves should be routinely inspected and replaced if tears, cracks, or other signs of deterioration occur.

Masks

DHCPs are exposed to high concentrations of aerosols and spatter during various treatment procedures involving: the use of a handpiece, ultrasonic scaler, or air/water spray; while grinding items contaminated with oral secretions; or while cleaning contaminated instruments. The rationale for routine wearing of masks continues to expand as evidence accumulates concerning potentially infectious microorganisms in aerosols (i.e., staphylococci, streptococci, tubercle bacilli, herpesviruses, influenza viruses, rhinoviruses (i.e. "common cold" viruses), and gonococci).

Masks that cover the mouth and nose can reduce inhalation of potentially infectious aerosol particles and also protect the mucous membranes of the mouth and nose from direct contamination via spatter, splashes, or sprays of blood and other potentially infectious materials. Clinicians should understand properties of an ideal face mask when selecting one for their own use.

"It is also recommended that a new mask be worn for each patient."

ASTM Standards for Masks

The American Society for Testing Materials (ASTM) is responsible for “medical face mask” performance classification, and defines terms used to describe the key features. Tested and approved information uses the terms bacterial filtration efficiency (BFE) and particle filtration efficiency (PFE). BFE is measured by using viable particles (bacteria) that range in size from 1 μm – 5 μm . PFE is measured by using nonviable particles fixed in size from 0.1 μm – 1 μm . This latter feature refers to the filtration of smaller particles, thereby translating into better protection.

	ASTM Level 1	ASTM Level 2	ASTM Level 3
Fluid Resistance, mmHg	80	120	160
BFE	$\geq 95\%$	$\geq 98\%$	$\geq 98\%$
PFE, @0.1 micron	$\geq 95\%$	$> 98\%$	$> 98\%$
Delta p, mmH ₂ O/cm ²	< 4.0	< 5.0	< 5.0
Flame Spread	Class 1	Class 1	Class 1
BARRIER	LOW	MODERATE	HIGH

Masks are now designed to meet almost any condition routinely encountered in dentistry. They must be worn whenever aerosols or spatter may be generated, and as such their use remains a standard of practice. Multiple masks are available that meet the ASTM criteria. Examples include:

LEVEL 1

KC Procedure Mask, Kimberly-Clark
Isofluid® Plus Earloop Mask, Crosstex International
Isofluid FogFree® Earloopw/SecureFit Mask, Crosstex International
Safe + Mask, Medicom
Com-Fit Easy Breathe Face Mask, Sultan Healthcare

LEVEL 2

Technol The Protector Splash Resistant Procedure Mask, Kimberly-Clark
Procedural Earloop w/SecureFit® Mask, Crosstex International
Surgical Tie On Mask, Crosstex International

LEVEL 3

Tecnol Fluidshield Fog-Free Procedure Mask, Kimberly-Clark
Repel 4-Ply Face Mask, Cranberry USA
SecureFit Face Mask, Crosstex International
Ultra Sensitive SecureFit® Mask, Crosstex International
Com-Fit Super Sensitive High Filtration Face Mask, Sultan Healthcare

Specialized Masks

With the reemergence of tuberculosis (TB) as a major public health and health professional concern, specialized masks (N-95) also have been developed to protect a DHCP's respiratory system from infectious TB droplet nuclei. These particulate respirators, which are designed to provide a tighter face seal than regular masks, can filter out greater than 99% of particles less than 0.1 μm in diameter. They are appropriate for health care workers who require extraordinary respiratory protection.

N-95 masks:

Isolator Plus Particulate Respirator, Crosstex International; Technol Fluidshield PFR95 N95 Particulate Respirator and Surgical Mask, Kimberly-Clark; N95 Particulate Respirator Safe + Mask, Medicom.

Masks worn longer than 20 minutes in an aerosol environment can lose their protective quality and allow microorganisms to penetrate through wet material by a process called “wicking.” Thus, masks should be changed every 20 minutes during procedures that generate heavy fluid exposure. It is also recommended that a new mask be worn for each patient.

Properties for Mask Selection:

- Able to prevent penetration of aerosolized particles generated during the procedure for which the mask is worn
- Does not come into contact with the wearer's nostrils or lips
- Has a high bacterial filtration efficiency (BFE) rate
- Fits snugly around the entire periphery of the mask
- Does not cause fogging of eyewear
- Easy to put on and remove
- Fabric that does not irritate skin or induce allergic reactions
- Fabric does not collapse during wear or when wet

Protective Eyewear

Googles Professional

TotalCare
800-841-1428
TotalCareProtects.com



Product Description: *Googles Professional* eyewear delivers a high level of safety with style. *Googles Professional* combines a sleek, stylish, re-usable frame with disposable optical grade plastic lenses that will help minimize the transmission of infectious materials. The stylish design keeps the product looking modern while the lenses wrap around enough to provide side protection. They are available in 4 different frame colors: Cobalt Blue, Pearl White, Pearlescent Pink and Composite Gray. Now, the cost-effective choice to go disposable doesn't have to be uncomfortable or look cheap. Effectively minimize cross contamination and turnover the patient room effortlessly with *Googles Professional*.

The eyes and other surrounding tissues of DHCPs can be exposed to a variety of macroscopic (e.g., tooth fragments, amalgam, and surgical tissue debris) and microscopic particles, which can cause mechanical trauma, chemical injury from splashing, or infection (i.e., conjunctivitis caused by staphylococci, gonococci, or herpes simplex viruses). Also, HBV was shown years ago to be infectious in susceptible primates through the conjunctiva. Protective eyewear (i.e., goggles, glasses with side shields, or face shields) are to be used during procedures in which aerosol generation or splash or spatter is anticipated and should meet American National Standards Institute (ANSI) Occupational and Educational Eye and Face Protection criteria for impact resistance.

Eyewear that affords the best protection has side shields and is large enough to adequately protect the wearer's eyes from macroscopic and microscopic injury (*IC Protective Eyewear*, *Crosstex International*; *Asept-all Safety Glasses*, *Sultan Healthcare*; *Tour Guard III Protective Eyewear*, *3M*, and *Virtual Slim Protective Eyewear*, *3M*). Some models are made to fit over regular corrective eyeglasses (*Googles Professional*, *TotalCare*; *Safe + Mask Protective Eyewear*, *Medicom*). It is also important to note that personal eyeglasses are NOT considered appropriate PPE.

Because both respiratory and ocular protection is fundamentally important for infection control, a facemask should be used in conjunction with an eye protection device, even if the device is a face shield (*Vista-Tec Faceshields*, *Polydentia*; *Face Shield*, *Crosstex International*). This reduces contamination through the nasal and oral portals of bacterial entry. Fortunately, masks are available which contain an additional attached protective eye shield (*Ultra Sensitive FogFree Earloop w/Shield w/SecureFit Mask*, *Crosstex International*).

Protective Clothing

Prescribed types and use of disposable gowns, laboratory coats, and clinic jackets were included in the December 6, 1991 OSHA Bloodborne Pathogens Standard. These regulations require sleeves to be long enough to protect the forearms when the gown is worn as PPE in order to protect exposed skin when splattering and spraying of blood, saliva, or other potentially infectious material to the forearms is anticipated. For routine dental procedures, cotton or cotton/polyester laboratory coats or clinic jackets with elastic or stocking net cuffs are satisfactory (*Medelita Advanced Dual Action Dental Lab Coat*, *Medelita*; *Defend Plus Disposable Jackets*, *Mydent International*). Garment material does not have to be fluid-impervious to meet OSHA standards, but must prevent contamination of skin and underlying clothing. DHCPs should change protective clothing when it becomes visibly soiled, and as soon as feasible if it has been penetrated by blood or other potentially infectious fluids. The outer protective garment should be removed before leaving treatment areas of the dental clinic.

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Jennifer Ireland, Lecture Coordinator
(734) 665-2020 ext. 107
jennifer@dentaladvisor.com

Model Simplicity: A New Concept for Digital Dentistry

Introduction: Digital impression systems and impression scanners are creating virtual models of patient's mouths. While restoration design is now accomplished with software, a physical model is still used to check margins and contacts. 3D printing of the virtual model sounds like an ideal solution. However, printed models require very specific settings for the model/die interface, the removal of support material after printing and matching of working dies to the appropriate model. It introduces additional complexity into a process that isn't entirely necessary with today's monolithic laboratory-milled restorations. The following is an example of a simple new model concept that addresses these issues and was produced using an *Eden 260V* (Objet Ltd.) printer.

Clinical Presentation:

The patient presented for treatment on the lower right quadrant, including a full-coverage crown on tooth #30. Full-contour zirconia was chosen as the crown material, based on its high strength and ability to provide the tooth-colored appearance that the patient desired. The tooth was prepared (Figure 1), and *iTero* (Align Technology, Inc.) was used to scan the operative quadrant, the opposing quadrant and the patient's bite. The resulting virtual model was evaluated on the monitor to ensure complete capture of data.

Laboratory

Dental Designer (3Shape) program was used to enter the case identifying a crown for tooth #30, and both a sectioned model and an un-sectioned model. The *iTero* digital impression was imported and the model virtually constructed with the *Model Builder* (3Shape) software. Files were generated for each model part: un-sectioned operative arch, opposing arch and the die. The crown was designed, milled and sintered overnight according to the material manufacturer's recommendations. The un-sectioned model and detachable die files were imported into an industrial CAD software program. A small rectangular shape was created to bridge the space between the two parts (Figure 2). The new arch file was saved and sent to the *Eden 260V* for printing with other cases. After printing, the crown margins were finished to the detachable die and the contacts were adjusted to the adjacent teeth on the un-sectioned model (Figure 3). The crown was stained and glazed, contacts checked again, and delivered to the doctor for seating.

Restoration Seating:

The zirconia crown was received from the milling center and evaluated on the model. The fit of the crown on the die was perfect, and the margins were undetectable. Interproximal contacts on the solid model were broad and firm. Try-in of the crown in the mouth revealed margins that were undetectable, and contacts were firm, as represented on the solid model. Minimal occlusal adjustment was needed. The crown was bonded with an adhesive resin cement (Figure 4).

Conclusions:

The new model concept presented offers an innovative solution for laboratories and milling centers adopting 3D printing technology. A detached die for margin finishing with the un-sectioned arch for contacts, all on a single model, is ideal for today's monolithic milled or pressed restorations. In the case presented, the accuracy of the new model concept was confirmed by the fit of the crown in the patient's mouth. Models can now be produced quickly, efficiently and accurately with high-resolution 3D printers such as the *Eden 260V* (Objet Ltd.).



Figure 1. Crown preparation of tooth #30.

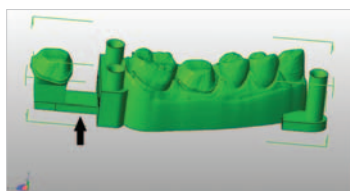


Figure 2. New solid model arch with detached die.



Figure 3. Crown contacts on solid model.



Figure 4. Restoration placed.

View the full report on our website at www.dentaladvisor.com

TheraCal™ LC

Bisco Dental Products
(800) 247-3368, (847) 534-6000 | www.bisco.com

Description

TheraCal LC is a light-cured, resin-modified calcium silicate material that performs as a barrier and protectant to the dental pulpal complex. It is indicated for direct and indirect pulp capping and as a protective base/liner under restorative materials including composite, amalgam and cements. The formulation consists of tricalcium silicate particles in a hydrophilic monomer that stimulates hydroxyapatite and secondary dentin bridge formation through calcium release and an alkaline pH. **TheraCal LC** is white in color and is radiopaque. It is supplied in a 1 g syringes. The kit contains 4 syringes of **TheraCal LC** with disposable application tips. **TheraCal LC** was evaluated by 20 consultants in 438 uses. It received a 96% clinical rating.

Suggested Retail Cost	
Kit	\$99.00
Single Syringe	\$30.00

Clinical Observations

Packaging/Instructions

TheraCal LC is packaged in syringes that may be stored at room temperature, making it possible to keep the product in the operatory. The syringes are familiar to handle and accept universal twist-on applicator tips. Complete instructions accompany **TheraCal LC**, and a laminated technique card offers a pictorial guide for use in direct and indirect pulp capping. The product is so simple to use that the cards were not needed after consultants gained an initial familiarity with **TheraCal LC**.

Dispensing/Application

Precise, conservative placement was possible with the provided 22 gauge dispensing tips.

Clinical Procedure

Following cavity preparation, **TheraCal LC** is applied to the clean, dry tooth in layers of 1 mm or less. Light curing time is 20 seconds. In the case of a direct pulp cap, bleeding must be controlled by applying a cotton pellet dampened with sterile saline over the exposure. **TheraCal LC** must extend 1 mm beyond the exposure onto sound dentin. Restoration of the tooth with the clinician's choice of materials may follow.

Handling

TheraCal LC has a creamy, spreadable consistency that is easy to move around yet stays in place when undisturbed. It clings to axial walls without running. Most consultants used the syringe tip, an explorer, a perio probe or a ball-tipped applicator to direct the material. The lack of bubbles was rated very good to excellent for this flowable material. Many consultants would have preferred the material to have a little more flow.

Adherence to Tooth

After light curing, **TheraCal LC** has a hard surface and adheres to the dentin. If excess material is present after light curing, it can be removed with a fine diamond. Filling materials can be placed immediately without disturbing the liner.

Post-operative Sensitivity

Lack of post-operative sensitivity during the evaluation period was the highest rated category. Consultants rated this excellent and will continue to monitor patients.

+++++



Consultants' Comments
"I would switch - I love this product!"
"No mixing required and it's a one-step application."
"It was not as messy as other liners and it's simple."
"Light-cure feature is a great advantage."
"I like this product; however, I found it difficult to manipulate."

Appearance/Radiopacity

TheraCal LC is an opaque, white material that is very effective in masking stained dentin. Since it is used in deeper areas of the tooth, there is no negative effect on the esthetics of the final restoration. Post-operative images confirm that **TheraCal LC** is radiopaque, making it readily apparent.

Summary

TheraCal LC provides an easy-to-use material for pulpal protection. The material integrates well into the clinical procedure, handling much like a flowable composite. Consultants were optimistic about the potential regenerative properties of **TheraCal LC** and found the short-term lack of sensitivity to be excellent. All consultants who evaluated **TheraCal LC** were currently using a traditional calcium hydroxide paste or glass ionomer liner. Ninety percent of consultants rated **TheraCal LC** better than their current pulp capping and base/liner material and 5% rated it equivalent. Ninety percent would switch to **TheraCal LC** and 100% would recommend it to a colleague.

Clinical Tips

- Use a small tip applicator or instrument for tight spots.
- Use in 1 mm increments. ■

EFFICA E1

L&R Ultrasonics

(201) 991-5330 | www.lrultrasonics.com

Description

The **EFFICA™ E1 Ultrasonic Cleaning System** is a one-gallon capacity ultrasonic unit indicated for the cleaning of dental instruments prior to sterilization. It has a unique hinged cover that is removable if necessary. The **EFFICA E1** is also available with an optional locking cover to help ensure instruments are cleaned for an uninterrupted cleaning cycle. The **EFFICA E1** is designed for quiet operation and comes equipped with a custom basket for increased energy flow. The interior dimensions are 11.25" x 5.5" x 3.5". The unit has an enlarged drain line, enabling faster tank draining than with conventional drains. Cycle times of 6, 12, 20, 30 and 60 minutes may be selected on the front of the unit. Fourteen consultants evaluated both **EFFICA E1** models (the locking cover and the non-locking cover) in over 1400 uses. This ultrasonic cleaner received an 86% clinical rating.

Equipment Features

EFFICA E1 has a contemporary design with a white plastic housing that is easy to maintain. The digital touchpad is simple and easy to use by selecting one of the five pre-set cycle time options. After the cover is closed and the time selected, the cover locks until the cleaning cycle is finished. This feature ensures that instruments are thoroughly cleaned for proper sterilization. Consultants would have liked to see a countdown timer to indicate cycle time remaining. The unit effectively cleaned instruments and performed well during the evaluation period. The basket fit nicely in the unit and had sturdy

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Consultants' Comments

"Locking cover is a great feature."

"Tank drains quickly."

"Cleans instruments very well."

"Small instruments can slip through holes in the corners of the basket."

handles for removal. Twenty-nine percent of consultants rated **EFFICA E1** better than other ultrasonic cleaners they had used, and 57% rated it equivalent. Fifty percent of consultants would switch to **EFFICA E1** and 79% would recommend it.

Clinical Tips

- Check under-cabinet clearance for the unit with the hinged cover open. ■



Editors' Note

EFFICA E1 is only available in this size unit at the present time. An optional accessory kit is available for cleaning dentures and burs.

N'Durance Dimer Core

Septodont

(800) 872-8305 | www.septodontusa.com

Description

N'Durance Dimer Core is a dual-cured, composite core material supplied in an automix syringe. The resin matrix is filled 58% (by weight) with radiopaque glass and ceramic particles ranging from nanosize to 13 microns. **N'Durance Dimer Core** has a working time of 2:30. Using a minimum 400 mW/cm² curing light, **N'Durance Dimer Core** should be light cured for 40 seconds. Depth of cure for bulk placement is 3.6 mm; self-curing beyond this depth occurs in four minutes. It is available in shades *Natural* and *Bleach White* and is packaged in kits containing two, 9 g syringes; 20 mixing tips; and 20 angled intraoral tips. **N'Durance Dimer Core** was used by 31 consultants who placed 578 cores. This core material received a 91% clinical rating.

Suggested Retail Cost \$125.99/kit

Product Features

N'Durance Dimer Core is easy to dispense from the automix syringe directly into the tooth. The material flows and adapts well to pins, posts and undercuts while maintaining enough body to avoid slumping in thin layers. Greater volumes of material should be cured incrementally or contained within a matrix. Working time is adequate, and the tooth may be prepared immediately after light curing the core material. **N'Durance Dimer Core**

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Consultants' Comments

"Cuts similar to dentin."

"Adapts well to cavity walls with no bubbles or voids."

"I use it for post cementation and core build-up in one step."

"The instructions do not indicate whether a light- or dual-cured bonding agent should be used."

"I would like some narrow intraoral tips for use in post preparations."

has a feel slightly softer than dentin and does not readily gouge or ditch during preparation. The white shade provides contrast to dentin, and the natural shade blends well for use under esthetic restorations. Fifty-five percent of consultants rated **N'Durance Dimer Core** better than other composite core materials they have used and 42% rated it equivalent. Eighty-one percent would switch to **N'Durance Dimer Core** and 94% would recommend it. ■

NeoBurr

Microcopy
(800) 235-1863 | www.neodiamond.com

Description

NeoBurr is a line of carbide burs that are sterilized and individually packaged. **NeoBurr 12-Blade Trimming and Finishing** carbide burs are indicated for use on all restorative materials. The surface of the bur is gold-plated over a tungsten carbide head and stainless steel shank. The brazed/welded joint at the base of the neck (as opposed to the base of the head) is designed to minimize breakage. **NeoBurrs** are available in boxes of 10 or 25 burs in 26 shapes in various sizes. Twenty-six consultants evaluated egg-flame- and needle-shaped **NeoBurr 12-Blade Trimming and Finishing** carbide burs in over 700 uses. These carbide burs received a 91% clinical rating.

Suggested Retail Cost	
Box of 10	\$59.50
Box of 25	\$131.25

Product Features

NeoBurr has sharp flutes and requires little pressure to effectively trim and finish restorative materials. The burs are well made, rotating with no vibration or chatter. **NeoBurr** leaves the restorative material surfaces smooth and free of scratches. The stainless steel shank allows autoclaving without corrosion. Consultants were very enthusiastic about the number of times

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Consultants' Comments

- "Pre-sterilized burs make a lot of sense."
- "Cuts well after repeated uses and sterilization cycles."
- "Gold color is easy to identify."
- "The needle shape is great for interproximal trimming."
- "Smooth finish means less time needed to polish."
- "Flutes do not clog with debris."
- "The pointed tips of the needle- and flame-shaped burs lost their cutting ability quickly."

they were able to use these burs. The individual packaging is well labeled and allows convenient storage without the need to sterilize the bur before use. Fifty percent of consultants rated **NeoBurr** better than other finishing carbides and 39% rated them equivalent. Eighty-five percent of consultants would switch to **NeoBurr** and 92% would recommend them.

Clinical Tips

- Use a light amount of pressure to avoid over-trimming.
- Use the flame-shaped finishing bur to define ridges and grooves. ■

PowerDent Pulse

PowerDent
(888) 725-7656 | www.powerdentpulse.com

Description

The **PowerDent Pulse** power brush is designed specifically to provide the power necessary to clean complete and partial dentures as well as oral appliances such as sports guards, bite splints, orthodontic aligners, retainers, night guards, whitening trays, and snore guards. Patented "Pulse Technology" removes plaque, debris, stains and tartar from oral appliances, which the manufacturer states promotes healthier tissues and fresher breath for patients. The brush comes with two AA batteries. Two versions of the brush are available. **PowerDent Pulse denture brush** is intended to clean complete and partial dentures, whereas **PowerDent Pulse Multi** is indicated for use on oral appliances. **PowerDent Pulse denture brush** and **PowerDent Pulse Multi** were evaluated by 16 consultants and 48 patients. This product received an 86% clinical rating.

Suggested Retail Cost	
Brush	\$19.99
2 replacement heads	\$12.99

Product Features

PowerDent Pulse has dual heads and strong bristles that effectively remove debris and stains from oral appliances and prostheses. One head contains flat bristles for outer surfaces, and one head has a compact dome of bristles for inner surfaces. Both versions of the brush function the same as one another,

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Patients' Comments

- "This brush does a great job keeping my retainers clean."
- "Quick, effective cleaning."
- "Removes stain and debris."
- "Faster cleaning than soaking my dentures."
- "I would prefer a rechargeable brush."
- "Battery enclosure needs a better seal."

but have different packaging. Forty-two percent of patients evaluated the denture brush and 58% evaluated the appliance brush. Patients who used the **PowerDent Pulse Multi** found it to be effective on all types of oral appliances except delicate whitening trays. **PowerDent Pulse denture brush** was highly rated by denture wearers who typically have few options for cleaning their prostheses. The large handle is easy to grip, and the rounded bristles clean well without scratching. Eighty-five percent of patients would be at least somewhat likely to recommend **PowerDent Pulse** to a friend.

Clinical Tip

- Do not immerse handle in water. ■

Integrity Multi-Cure

DENTSPLY Caulk

(800) 532-2855 | www.caulk.com

Description

Integrity® Multi-Cure temporary crown and bridge material is a dual-cured bis-acryl material with increased strength that is intended for short- or long-term provisional restorations. **Integrity Multi-Cure** has a working time of 45 seconds and an initial setting time of 90 seconds after start of mix. After removal from the mouth, final curing is 5 minutes if self-cured or 20 seconds if light cured. **Integrity Multi-Cure** is available in a 76 g, 10:1 black cartridge in five shades: A1, A2, A3.5, B1, and BW. The introductory kit includes one A2 cartridge of **Integrity Multi-Cure** material with 15 mixing tips and a dispenser plus **Integrity® TempGrip®** temporary crown and bridge cement. **Integrity Multi-Cure** was evaluated by 11 consultants in 197 uses. This provisional material received an 86% clinical rating.

Suggested Retail Cost

Introductory Kit	\$415.75
Refill Cartridge	\$227.10

Product Features

The light-curing option of **Integrity Multi-Cure** allows the clinician to trim and polish the provisional restoration without waiting for self-cured setting. After curing, the material sets very hard and can be trimmed without chipping margins. Shade selection is adequate for most cases. The esthetics of the provisional restorations is influenced by the translucency of the material, which can be an advantage or a disadvantage depending on the particular



Consultants' Comments

- "Strong material for bridges."
- "I like the quick setting with the light-cured option."
- "Nice temporary material."
- "Polishes to a smooth finish."
- "Material is quite translucent."
- "Sticks to core material."

case. **Integrity Multi-Cure** dispenses uniformly through the mixing tip. An air-inhibited layer must be wiped from the provisional restoration and the adjacent teeth after removal of the provisional from the mouth. Consultants noted some shrinkage of temporary crowns and bridges during setting. Twenty-seven percent of consultants found **Integrity Multi-Cure** to be better than other provisional materials they had used; 46% found it to be equivalent. Thirty-six percent would switch to **Integrity Multi-Cure** and 64% would recommend it.

Clinical Tips

- Do not light cure the material in the mouth. The material sets very hard and may lock into undercuts and embrasures.
- Use flowable composite for repairs. ■

iBarrier

Crosstex

(888) 276-7783, (631) 582-6777 | www.crosstex.com

Description

iBarrier is a single-use, disposable tablet sleeve designed to reduce cross-contamination on electronic devices such as tablet computers including the *iPad* (Apple Inc.). **iBarrier** is touch sensitive, does not impede tablet operation and can be used while wearing gloves. The plastic sleeve is clear on one side and printed with the name of the product on the back. After inserting the device, the plastic may be wrapped to the backside and secured with the adhesive strip. **iBarrier** is available in a 100-count box. **iBarrier** was used by 12 consultants in 186 uses. It received an 86% clinical rating.

Suggested Retail Cost \$19.99/box of 100

Product Features

With the integration of technology into the dental operatories, infection control products are necessary to reduce the risk of cross contamination. Many dental offices are utilizing tablet-size computers for patient education, x-ray image viewing, medical history entry and more. All consultants who evaluated **iBarrier** used it with an *iPad*. **iBarrier** fit more loosely on the newer, smaller versions of the *iPad*. **iBarrier** provides a means of keeping the electronic device free of smudges and splatter and eliminating the need to wipe it with disinfectant, which could cause damage. The plastic has a



Consultants' Comments

- "Good quality product."
- "Great touch sensitivity."
- "No fingerprints on the screen."
- "A nice presentation to the patient."
- "Blocks some of the sound from the speaker."
- "Does not work with a tablet that is in a case."
- "Creates more waste."
- "A barrier that is recyclable or biodegradable would make it more appealing."

textured surface that enhances the touch response with gloved fingers. Most consultants used protective cases for their *iPad*, and they found that the **iBarrier** did not fit over the cases. Forty-two percent of consultants found **iBarrier** better than their current method of infection control and 42% found it to be equivalent. Fifty percent of consultants would switch to **iBarrier** and 75% would recommend it to a colleague. ■

D-Lux

DiaDent Group International

(877) 342-3368, (604) 451-8851 | www.diadent.com

Description

D-Lux is a cordless, high-powered LED curing light. The unit has an aluminum housing and docks onto a charging base. **D-Lux** produces a light intensity of 1600 mW/cm² in the range of 420-490 nm. An 11 mm light guide is included. The LED display panel indicates curing mode and battery life and acts as a rocker switch to change modes and activate the light.

D-Lux has a fast charging system, requiring only 90 minutes. Five curing modes include 5-second Max, 10-second Max, 20-second *Mid*, 20-second Soft and 20-second *Pulse*. **D-Lux** was used by 15 consultants in over 600 uses. This curing light received an 87% clinical rating.

Suggested Retail Cost

\$720.00/unit

Equipment Features

D-Lux is a lightweight, portable curing light. The high intensity allows quick curing of dental materials when desired. The Mid setting is useful when curing next to the gingiva, as less heat is generated. Consultants found the Soft mode tack cured resin cements to a gel state in 2-3 seconds. The LED panel on the unit acts as an on/off switch for activation of the light and the means of changing modes. Pressing the end of the panel closest to the light guide activates the unit; pressing on the end of the panel closest to battery changes modes. There is no tactile distinction between the two functions and users often changed modes inadvertently during use instead of turning on the light. The LED readout was rated excellent for clarity. Thirty-three percent of consultants rated **D-Lux** better than other curing lights they had used and 20% rated it to be equivalent. Forty percent of consultants would switch to **D-Lux** and 53% would recommend it to a colleague. ■

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Consultants' Comments

"Quick curing!"

"So easy to change modes."

"LED readout is clear and simple to understand."

"Smooth surface is easy to clean."

"Light docks loosely in the base."

"The light guide should be longer and have a greater angle of bend to reach posterior teeth."

"Create two separate buttons for activation and mode."

"Design a flat side to the unit so it does not roll off of the countertop."

"Seal the button to prevent moisture and debris from entering unit."

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