Minimally Invasive Dentistry Can Be Win-Win!

Gordon and Paul’s Clinical Bottom Line: Minimally invasive concepts are not often considered to be exciting or income producing. With proper planning and delegation they can be both interesting and revenue producing! Patients appreciate conservative procedures and feel comfortable knowing that more aggressive procedures can always be done later if necessary. Delegation of appropriate procedures to staff is easy, relatively inexpensive, and they enjoy being the primary clinician. We have some great suggestions for you!

Do typical dental patients trust dentists? In recent years, our profession has dropped in public trust as reported by the Gallup poll. Over-promotion of esthetic dentistry procedures has blurred the division between needed dentistry and elective procedures. The move from “need” dentistry to “want” dentistry has confused patients and caused frequent over treatment. During treatment planning, patients should be advised of the alternatives for treatment including the minimal ones. After such discussion and patient agreement on the treatment, you have satisfied “informed consent” requirements. Don’t be surprised at how many patients choose minimal procedures!

IPS e.max CAD (Lithium Disilicate): A New All-Ceramic Alternative?

Gordon and Paul’s Clinical Bottom Line: All-ceramic zirconia-based single and multiple-unit restorations have received emphasis in recent years. Monolithic (one material) lithium disilicate, although, not a new material, has continued to receive positive research reports for single crowns and is now competing for the all-ceramic market. Lithium disilicate has been reported to exhibit fewer failures than the current generation of zirconia supported layered restorations. Commercial emphasis from the parent company, Ivoclar Vivadent, and from laboratories continues to emphasize lithium disilicate.

IPS e.max is an all-ceramic system consisting of several types of materials for indirect restorative use. It contains materials for both the 1) press and 2) CAD/CAM processing techniques as well as a universal, fluorapatite feldspathic porcelain for the layering technique. The entire IPS e.max system can be used for single restorations, including veneers, inlays, onlays, and zirconia-based bridges.

Performance Evaluation of Chairside CAD/CAM Milling Units

Gordon and Paul’s Clinical Bottom Line: About ten percent of general dentists in North America (~11,000) have elected to incorporate digital impressions and in-office milling into their offices, with acceptance ranging from excellent to frustrated rejection of the concept. Research shows that in-office milling can work well, that restoration margins can be as good as restorations made manually, that the materials used may be superior to lab made restorations, and that the esthetic result can be acceptable with practice. There are two strong competitors in the market, the long present CEREC and the newcomer E4D. Both concepts are working well. How do their milling devices compare?

Milling crowns and restorations is now routine in dental labs with the successful integration of the CEREC MCXL mill in over 1,000 labs in addition to other new and effective milling units. Many dentists may not even recognize that the “all-ceramic” crown they prescribed was actually milled instead of hand-layered or pressed. Using CAD/CAM to fabricate crowns is rapidly becoming the new model because of the decreased cost and simplicity for the lab.

CEREC will be celebrating their 25th anniversary next year while E4D will have been available for over two years. Both have satisfied clinicians and patients; both require a significant amount of time, effort, and resources to master. Many new and improved materials are being introduced (i.e. IPS e.max CAD) while the Vita Mark II block (Vident) has been a predictable and successful mainstay for CEREC users for over two decades. The chairside CAD/CAM concept is now a reality and has opened the doors to a proven technology that will only excel in the years to come. Expect increased competition; more material choices; improvements in imaging, design, and milling; and, hopefully, a reduced expense.

Evaluator Reports and Clinical Tips

Cervitec Plus: Innovative varnish for immediate relief of cervical sensitivity (Page 4)

AEU-7000E-70V Implant Surgical Motor: Proven and accepted implant, oral surgery, and endo electric motor and handpiece (Page 4)
Minimally Invasive Dentistry Can Be Win-Win! (Continued from page 1)

**Minimally Invasive Procedures Compared To More Aggressive Procedures**

The following are representative examples of minimally invasive procedures.

1. **Onlays and inlays vs. crowns**
   Many teeth requiring large, tooth-colored restorations can be treated with onlays instead of full-crowns. Usually, the facial and lingual walls of tooth structure are preserved, the tooth color is maintained through the service life of the restoration (bleached or non-bleached), the tooth still appears to be normal without a disagreeable margin showing when the gingiva recedes, research supports their service potential, third parties are now paying for onlays if one or more cusps are covered, and most patients prefer the more conservative procedure. Patients are served well with onlays vs. crowns, and the income to the practice is nearly identical.

2. **Small (mini) diameter implants vs. conventional diameter implants**
   Root form implants less than 3 mm in diameter are minimally invasive, easy to place, gaining strong research support when placed properly, and serve patients who could not have conventional implants for anatomic or health reasons or simply cannot afford bone grafting or other expensive surgical procedures. Small diameter implants are a classic example of minimally invasive procedures that still bring in adequate revenue.

3. **Bleaching/whitening teeth vs. crowns or veneers**
   Many dentists agree that too many veneers are placed when conservative orthodontic therapy, bleaching, a few composite restorations, and/or incisal recontouring would have satisfied the desired change in esthetics. Bleaching is a simple procedure, whether accomplished at home or in-office, and is a staff-oriented procedure. Revenue production is good and almost all patients appreciate the conservative approach.

4. **Conservative periodontal therapy vs. surgery**
   Conventional periodontal surgery procedures are often painful and esthetically compromising. Minor to moderate periodontal disease can be controlled by use of conservative therapy including frequent root planing (2–3 month intervals), sub-systemic antibiotics (Periostat by Galderma Labs), local antibiotics (Arestin by OraPharma; Arrides by Tolmar, PerioChip by Dexcel Pharma), rinses (Perixide by 3M ESPE, Crest Pro-Health by Procter & Gamble, Listerine by McNeil-PPC, Tooth and Gums Tonic by Dental Herb Company), tongue cleaning (Oxihex by Oxihex Advantage) and other treatment options (Perio Tray by PerioProtect). These relatively simple procedures can be delegated to staff persons, thus producing adequate revenue, stimulating practice activity, and exciting staff.

5. **Repairing defectivecrowns and fixed prostheses restorations vs. redoing crowns**
   Crown repairs can be made relatively simply using fluoride containing resin-modified glass ionomer such as Fuji Filling or Fuji II LC from GC or Ketac Nano from 3M ESPE. Usually crown repairs are not difficult in the posterior part of the mouth and in some anterior tooth situations. Revenue production comparing the restorations as composites can be acceptable.

6. **Direct resin-based composite veneers vs. ceramic veneers**
   Resin veneers placed with Filtek Supreme Plus (3M ESPE), Durafill VS (Henkus Kaida), Renamal Microfill (Cosmedent), or Estelite Sigma (Tokuyama) produce beautiful direct resin veneers that remain smooth during service in the mouth. When the lab bill is considered and the time is compared, direct veneers are more conservative, provide adequate practice revenue, and can be redone several times without destroying the teeth. Many feel that too many veneers are being done and that many veneer tooth preparations cut away too much tooth structure. Conservative veneer prep and occasionally no prep for ceramic veneers, incisal recontouring, bleaching, and gingival recontouring and shaping are excellent conservative procedures.

7. **Preventive procedures vs. restorative dentistry**
   It is estimated that about 10% of the patients in typical general practices need comprehensive caries preventive therapy. Some of the preventive procedures are 5000 ppm fluoride in custom trays, ACP application, remineralization techniques, varnishes, etc. Consider the following persons who need preventive therapy: geriatric patients; caries active young patients; bulimics; chemotherapy and radiation therapy patients; patients taking medications that cause dry mouth syndrome; and “meth” mouth patients. This therapy can be a win-win financial situation for patients and dentists if qualified staff persons are used to provide the preventive services.

8. **Small tooth preparations, bonding, resin restorations, and sealants vs. conventional tooth preparations**
   The so-called G V Black preparations served very well for many years. Newer concepts such as acid etching of teeth and dentin and enamel bonding have allowed extremely small, conservative tooth preparation or no tooth preparation in some situations such as sealants. Air abrasion units or small burs such as the “Fissurotomy” burs from SS White can produce very small tooth preparations for small tooth defects. Third party payers reimburse as well for restorations placed in small tooth preparations as in larger preparations, and small restorations are easier to place, finish, and maintain. Practitioners should be looking for and restoring smaller carious lesions. The procedures are relatively easy and the revenue is good.

### Comparison of Minimally Invasive vs. Conventional Treatment*

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Patient Acceptance</th>
<th>Time Compared to Conventional</th>
<th>Income per Minute†</th>
<th>Longevity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Onlay vs. Crown</td>
<td>Onlay better</td>
<td>Same</td>
<td>Same</td>
<td>Same</td>
</tr>
<tr>
<td>2. Small (mini) vs. Conventional Implants</td>
<td>Small (mini) better</td>
<td>Small (mini) less</td>
<td>Same (2 mini = 1 conventional)</td>
<td>Under investigation</td>
</tr>
<tr>
<td>3. Bleach vs. Crowns</td>
<td>Bleach better</td>
<td>Bleach—none (auxiliary time)</td>
<td>Bleach more (auxiliary)</td>
<td>Crowns may last longer</td>
</tr>
<tr>
<td>4. Conservative vs. Conventional Periodontal</td>
<td>Conservative</td>
<td>Conservative—none (auxiliary time)</td>
<td>Conservative less</td>
<td>Same</td>
</tr>
<tr>
<td>5. Repair vs. New Crown</td>
<td>Repair better</td>
<td>Repair less</td>
<td>Variable</td>
<td>Variable</td>
</tr>
<tr>
<td>6. Direct Resin vs. Indirect Ceramic Veneer</td>
<td>Direct may be better</td>
<td>Direct less</td>
<td>Variable</td>
<td>Ceramic may be better</td>
</tr>
<tr>
<td>7. Preventive vs. Conventional Treatment</td>
<td>Preventive better</td>
<td>Preventive—none (auxiliary time)</td>
<td>Preventive more (auxiliary)</td>
<td>Preventive better</td>
</tr>
<tr>
<td>8. Small Prep vs. Conventional Prep</td>
<td>Small better</td>
<td>Small prep less</td>
<td>Small prep more because faster</td>
<td>Small prep better</td>
</tr>
</tbody>
</table>

*As estimated by CR Staff and Evaluators †Estimates assume practice has full patient load

**CR Conclusions:** Minimally invasive procedures should be one of the options offered to patients when initial treatment plans are presented. Because the treatment result of aggressive procedures may be more esthetically pleasing, some patients still prefer to have conventional treatment. However, many prefer conservative procedures. When minimally invasive concepts are available versus more invasive ones, dentists should consider the conservative options seriously. The revenue potential of minimally invasive procedures is comparable to the more invasive procedures, and more invasive procedures can almost always be done later in the patient’s life.
IPS e.max CAD (Lithium Disilicate): A New All-Ceramic Alternative? (Continued from page 1)

Lithium Disilicate—The Material

IPS e.max CAD is a lithium disilicate glass ceramic that is used in a monolithic form (does not require any layering material unlike presently available zirconia-based restorations and PFMs). Lithium disilicate used as a dental ceramic is not a new ceramic as it has been available in previous formulations, i.e. IPS Empress 2 and others. It is available in various formulations and forms (that may require layering) from other companies. Lithium disilicate restorations fabricated via the CAD/CAM milling procedure (in office or lab) must be fully crystallized in a dental furnace (20–25 minutes). The processing of the material is technique sensitive and the manufacturers recommendations must be followed. The blue color is indicative of its partially-crystallized form, lithium meta-silicate. Full crystallization of the material improves the strength by approximately 300% and changes from a blue color to the desired color of the restoration.

Advantages of IPS e.max CAD

- Improved strength over any other ceramic
- Monolithic homogenous material
- Simple in-office or laboratory milling
- Easy staining or cut-back and layering for esthetics
- Highly esthetic with multiple levels of translucency
- Very little shrinkage after crystallization in furnace (0.2%)
- In-vitro studies demonstrating high durability

Limitations of IPS e.max CAD

- Not yet indicated for bridges
- Not indicated for bruxism or severely worn dentitions
- Long-term clinical use data is still needed
- Processing is very technique sensitive
- Requires a furnace with vacuum for crystallization
- Extra time is required for crystallization compared to other chairside milled ceramics

Laboratory Evaluation

A total of 400 bars of IPS e.max CAD and IPS Empress CAD (control) were milled with the CEREC MCXL and the E4D mills. Three-point flexural strength was measured after the material was subjected to the ISO standard protocol as well as a variety of clinical conditions, i.e. hand polishing, and/or glazing. Manufacturers’ recommendations were followed for all maintenance and bur changes.

Clinical Tips

Preparation guidelines: Avoid sharp edges or angles; heavy or moderate chamfers; minimum thickness of 1.0–1.5 mm for crowns and inlays/onlays, and 0.3–0.6 mm for veneers.

Milling: IPS e.max CAD faster than recommended may decrease the strength of the material or cause chipping.

Finishing and Polishing: the restoration in the pre-crystallized (blue) state should be kept to a minimum while the computer aided design portion of the restoration should be optimized to minimize post-milling adjustments and potential decreased strength.

Crystallization: in the furnace should not be altered by decreasing the time or altering the firing parameters.

Glazing: IPS Empress CAD is highly recommended due to the increased strength.

Cementation: HF acid-etch of internal aspect of restoration followed by silanation is recommended. Conventional or self-adhesive cementation should only be used with retentive crown preparations; use of a self-etching adhesive dual-cure resin cement results in higher bond strengths and should be used with all inlays, onlays, veneers, and non-retentive crowns.

Pressing: The pressed version of lithium disilicate IPS e.max is reportedly stronger by approximately 40 MPa, however many labs and most chairside CAD/CAM dentists are using the milled version due to its simpler and faster processing.

CR Conclusions: IPS e.max CAD for single restorations demonstrates higher in-vitro strength values than any other conventional monolithic and polycrystalline ceramic materials (i.e IPS Empress CAD or zirconia-based). Its ease of fabrication and increased strength provide promise for an alternative to other restorative materials; however, long-term clinical success needs to be established. When IPS e.max CAD was milled with the E4D Dentist mill, the strength values measured were higher by an average of 9%. When milled with the CEREC MCXL, IPS e.max CAD was milled an average of 36% faster.
### Performance Evaluation of Chairside CAD/CAM Milling Units (Continued from page 1)

#### Pricing Options for Chairside CAD/CAM

<table>
<thead>
<tr>
<th>CEREC AC</th>
<th>E4D</th>
</tr>
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<tbody>
<tr>
<td><strong>Full System</strong></td>
<td><strong>E4D Dentist and Mill</strong> = $116,500</td>
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<tr>
<td>(imaging, design, and mill)</td>
<td>(imaging, design, and mill)</td>
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<tr>
<td>AC + MC XL = $119,995</td>
<td>E4D Dentist Mill = $77,995</td>
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<tr>
<td>AC + Compact MC L = $89,995</td>
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<tr>
<td><strong>Mills</strong></td>
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<tr>
<td>MC XL = $66,000</td>
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<tr>
<td>Compact MC L = $56,000</td>
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<tr>
<td><strong>Imaging Only</strong></td>
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<tr>
<td>AC = $23,995 (optional purchase of mill or send to lab for design and milling)</td>
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<tr>
<td><strong>Imaging and Design Only</strong></td>
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<td>AC = $23,995 (optional purchase of mill or send to lab for design and milling)</td>
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<tr>
<td><strong>Other Options</strong></td>
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<tr>
<td>Pay As You Go*</td>
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<tr>
<td>a system whereby the owner purchases the entry level acquisition unit</td>
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<tr>
<td>1. AC CEREC Connect (unlimited impressions) = $53,995 total</td>
<td></td>
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<tr>
<td>2. Fee per impression =</td>
<td></td>
</tr>
<tr>
<td>a. AC = $23,995 + $24.95/per impression</td>
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<tr>
<td>3. Fee per mill =</td>
<td></td>
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<tr>
<td>a. AC + MC XL = $89,995 + $24.95/mill</td>
<td></td>
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<tr>
<td>b. AC + Compact MC L = $59,995 + $24.95/mill</td>
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<tr>
<td><strong>Lab Options</strong></td>
<td></td>
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<tr>
<td>intLAB MCXL mill, inEOS scanner, etc.</td>
<td></td>
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<tr>
<td><strong>Warranty, Training, and Support?</strong></td>
<td></td>
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<tr>
<td>• 2-year parts and labor warranty; 2-day training course at one of 34 locations; $500 merchandise credit for travel expenses towards training; 1-year free membership to ceredoctors.com; $1,000 advanced training voucher; $2,000 merchandise credit for CAD/CAM consumables; starter kit with 45 blocks; Patterson support</td>
<td></td>
</tr>
<tr>
<td>• Cerec Club (optional $219/month): free software updates and upgrades, annual preventative maintenance, discounted pricing on hardware upgrades, extended 3-year warranty</td>
<td></td>
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<tr>
<td><strong>E4D</strong></td>
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<tr>
<td><strong>E4D Studio</strong></td>
<td></td>
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<tr>
<td>Remote design center (computer and software) for both labs and dentists to design restorations in another room or area of the office or lab = $7,995</td>
<td></td>
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<tr>
<td><strong>E4D Labworks</strong></td>
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<tr>
<td>System designed for dental laboratories to scan casts or impressions, design restorations, and mill = $89,995</td>
<td></td>
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<tr>
<td><strong>CR Conclusions:</strong></td>
<td></td>
</tr>
<tr>
<td>New and more affordable options are available for clinicians to start using chairside CAD/CAM technology. Both CEREC and E4D are excellent options for clinicians and labs. Please see the enclosed Special Edition Clinicians Report for a detailed comparison of the two mills.</td>
<td></td>
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</tbody>
</table>

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### Innovative Varnish for Immediate Relief of Cervical Sensitivity

Clear, thin, varnish protection for high caries risk patients, with exposed root surfaces and/or sensitive teeth. One dose is enough to cover several teeth for most patients. Contains 1% chlorhexidine and 1% thymol. Not indicated for use prior to adhesives. Clinical tips: clean tooth surfaces before application for best adhesion and effect; wait one hour before eating or drinking.

#### Advantages:
- Easy, painless application and dries quickly
- Immediate relief from sensitivity for most
- Nice packaging, applicator and holder
- Did not burn/irritate soft tissues
- No film after application

#### Limitations:
- Unpleasant flavor for some and ethanol smell
- Long-term desensitizing varied by patient, but lasted several weeks to months

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### Proven and Accepted Implant, Oral Surgery, and Endo Electric Motor and Handpiece

Hybrid electric handpiece for implant, oral surgery (third molar removal, sectioning teeth, avoiding air embolism, etc.), and may also be used for endo. Device includes surgical water delivery, control box, and foot pedal/control. Unit tested with the AHP-85MB-C handpiece attachment.

#### Advantages:
- Ideal for implants, surgery, and can be used for endo
- Pre-programmed settings and easily programmable custom settings
- Sleek, attractive design/excellent manufacturing, Footprint not too large
- Internal diagnostics to troubleshoot various parts
- DVD training is excellent, and technical support is available
- Easily calibrates speed and torque
- Quiet operation
- Accepts various handpieces

#### Main Limitation:
- Cost

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### Cervitec Plus

#### Ivoclar Vivadent

175 Pineview Drive, Amherst, NY 14228
800-533-6825 • 716-691-0010
Fax: 716-691-2285 • www.ivoclarvivadent.com

$149.97/20 free-stand, single dose ($7.50/dose)

Also available in 7 gm multi-dose tube

#### CR Conclusions:
63% of 24 CR Evaluators stated they would purchase Cervitec Plus. 79% rated it excellent or good and worthy of trial by colleagues.

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### AEU-7000E-70V Implant Surgical Motor

#### Aseptico

8333-216th Street SE, Woodinville, WA 98072
800-426-5913 • 425-487-3157
Fax: 360-668-8722 • www.aseptico.com

$1495/AHP-85MB-C attachment
$3995 for motor/control box

#### CR Conclusions:
100% of evaluators stated they would incorporate AEU-7000E-70V Implant Surgical Motor into their practice. 100% rated it excellent or good and worthy of trial by colleagues.
1. **Indirect ceramic onlays qualify for acceptable payment from most third-party payers if how many cusps are covered by the restoration?**
   - A. One
   - B. Two
   - C. Three
   - D. Must cover all cusps to be considered and onlay

2. It is estimated that about ____ percent of patients in a typical general practice require extensive caries preventive treatment which can be administered by staff.
   - A. 50
   - B. 30
   - C. 20
   - D. 10

3. One of the best preventive restorative materials for crown repair is
   - A. Resin-based composite
   - B. Resin-modified glass ionomer
   - C. Resin cement
   - D. None of the above

4. Lithium disilicate restorations fabricated via the CAD/CAM milling procedure:
   - A. Exhibits a higher reported strength value than the pressed version
   - B. Are milled in the fully crystallized form
   - C. Must be fully crystallized in a dental furnace
   - D. Requires a layering material similar to zirconia-based restorations and PFMs

5. Which of the following is _not_ an advantage of IPS e.max CAD?
   - A. Not yet indicated for bridges
   - B. Highly esthetic with multiple levels of translucency
   - C. Simple in-office or laboratory milling
   - D. Monolithic homogenous material

6. When handling lithium disilicate, which of the following should be followed?
   - A. Use a self-etch or total-etch adhesive dual-cure cement for inlays, onlays, and all non-retentive crowns.
   - B. Hand polishing in the partially-crystallized form (blue stage) should be kept to a minimum, while optimizing the computer aided design portion.
   - C. Crystallization should be accomplished only at the recommended firing parameters.
   - D. All of the above.

See the Special Report October 2009 for the following four questions.

7. Which of the following statements is _true_ for the CEREC MCXL milling unit?
   - A. Has poor response to mill interruptions
   - B. Has shorter bur life expectancy in slow milling
   - C. Experiences low bur breaks
   - D. None of the above

8. Which of the following statements is _true_ for the E4D Dentist milling unit?
   - A. Provides accurate and consistent milling time
   - B. Has excellent response to mill interruptions
   - C. Has faster milling times
   - D. None of the above

9. Which of the two chairside milling units compared in this report provides continuous real-time feedback to operator on mill and bur conditions?
   - A. CEREC MCXL
   - B. E4D DENTIST
   - C. Both CEREC MCXL and E4D Dentist
   - D. None of the above

10. Which of the following is _true_ regarding mill interruptions?
    - A. A mill interruption that is unplanned is more beneficial to the dentist than a planned interruption
    - B. Mill interruptions save time, materials and money
    - C. CEREC MCXL provides excellent response to mill interruptions
    - D. E4D Dentist provides excellent response to mill interruptions
Join Gordon, Rella, and Paul* for a fast-paced, information-packed course highlighting the best dental products and techniques for 2009.

Presented by:

Gordon J. Christensen, DDS, MSD, PhD
Rella Christensen, PhD
Paul L. Child Jr., DMD, CDT

Register Today!

Upcoming Course Locations

Boston, Massachusetts
Friday, October 16, 2009
Hilton Boston / Woburn

Las Vegas, Nevada
Friday, October 30, 2009
The Venetian Resort–Hotel–Casino

Chicago, Illinois
Friday, November 6, 2009
Donald E. Stephens Convention Center Rosemont

Kansas City, Kansas
Friday, December 4, 2009
Overland Park Marriott

Course features at least 25 topics, including:

• The latest clinical findings on zirconia-based restorations
• The best resin cements and their most appropriate uses
• Conventional implants vs. small diameter implants
• The easiest and best implant abutments
• Comparing endodontic sealers
• Is “cone-beam” radiography here?
• Foolproof impressions for fixed and removable prosthodontics
• Comparing resin restorative techniques and materials
• New surgical and medical concepts
• How do fluoride varnishes compare to 5000ppm fluoride?
• Cutting off and through zirconia-based restorations
• Digital impressions
• High-tech—practical vs. hype
• Many other timely topics

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Front office skills for business personnel at all levels—from beginners to veteran office managers
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For more information or to register for a course,
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