

DENTAL ITEMS OF SIGNIFICANCE 69

September 2003

TABLE OF CONTENTS

ADMINISTRATION

- 69-01 Dental Infection Control and Safety Course
- 69-02 2003 USAF Dental Infection Control Survey

QUESTIONS & ANSWERS

- 69-03 Hepatitis B Vaccine and Testing
- 69-04 "Soft-start" Polymerization of Resin-Composite Restorations
- 69-05 Microscopes for Endodontics: A Steep Learning Curve
- 69-06 Resin - LED Curing Light Incompatibilities
- 69-07 Postexposure Prophylaxis Following an Occupational Exposure Incident
- 69-08 Antibiotic Prophylaxis for Patients with Prosthetic Joints
- 69-09 Status of Digital Radiology

WHAT'S NEW?

TwinzVPS
Dash AloePRO Latex Gloves
Dash Nitrile PF with Aloe Gloves
AdheSE
Brush&Bond
GC Temp Advantage
IMS Lilac Utility Gloves
SweepZone Ag Ultrasonic Cleaning System
Hydent
4 Seasons
1SHOT Safety Syringe
TempBond
Trimax
Googles Full FaceShield
PERFECTemp II
Dentaport ZX
PureTube BR 360
Wingers
DentaPure DP365
Aloetouch Exam Gloves
SaniTyze
VioNexus No Rinse Spray Antiseptic Handwash
DetecTar
EXL-M40

FROM THE LITERATURE

CONTAMINATION OF COMPUTER KEYBOARDS
HOME VS. IN-OFFICE BLEACHING: WHICH ONE IS BEST?
HAND ANTISEPSIS WITH AN ALCOHOL-SPRAYER SYSTEM
SURGICAL GLOVES
ENVIRONMENTAL SURFACE CONTAMINATION DURING HANDWASHING
STANDARD PRECAUTIONS
FEELING THE HEAT?
DENTAL RADIOLOGY INFECTION CONTROL
CDC PUBLISHES UPDATED ENVIRONMENTAL INFECTION CONTROL GUIDELINES
FLOWABLES AS LINERS
PUTTING CEMENTS TO THE TEST
DISINFECTANT PRODUCTS AND DENTAL UNIT WATERLINES
NEEDLESTICK INJURIES
HIV/HCV TRANSMISSION VIA NONCONTACT SKIN
DENTAL MONOMERS AND GLOVES

GENERAL DENTISTRY

69-10 Tempit Ultra
69-11 Linkmax Paste Pak Dual-Cure Adhesive Cement
69-12 SensiTemp Resin Temporary Cement
69-13 L.E.Demetron 1
69-14 iBond
69-15 HEM-907 IntelliSense Digital Blood Pressure Monitor
69-16 UltraTemp Temporary Polycarboxylate Cement
69-17 Fuji Triage
69-18 EG9000B Dental Operator Stool
69-19 EG9020BR/L Dental Assistant Stool

LABORATORY

69-20 SENSit Laboratory Chair

INFECTION CONTROL

69-21 Sterisil PureTube BR Cartridge
69-22 Synopsis of Dental Unit Water Quality Testing Products

ADMINISTRATION

69-01 Dental Infection Control and Safety Course

The next co-sponsored Organization for Safety and Asepsis Procedures (OSAP)/Federal Services Dental Infection Control course is scheduled for Tuesday, 27 January Friday, 30 January 2004 in Atlanta, Ga. We will be covering a broad range of topics and have guest speakers from the Centers for Disease Control and Prevention, dental schools, and the Federal Services again this year. As in previous years, OSAP will handle registration issues. There will be a limited number of USAF command sponsored quotas that will be handled by your respective Command Dental Surgeon. The course is not scheduled to end until 1615 on Friday, 30 January 2004; travel arrangements should be made accordingly. The course schedule and registration information can be found by visiting www.osap.org. For additional information, the USAF DIS point of contact is Lt Col Jennifer Harte at DSN 792-7668, commercial (847) 688-7668, or jennifer.harte@ndri.med.navy.mil

69-02 2003 USAF Dental Infection Control Survey

The USAF Dental Investigation Service is gathering information on dental infection-control practices in USAF dental clinics. A survey was sent to every USAF dental clinic in August. If you did not receive a survey, please let us know. The questionnaire will provide information on current dental infection-control practices at USAF dental clinics, and assist DIS with updating, educating, and disseminating new product ideas and practices. The DIS point of contact is Lt Col Jennifer Harte at DSN 792-7668, commercial (847) 688-7668, or jennifer.harte@ndri.med.navy.mil

Please return the surveys no later than **30 September 2003** via FAX or mail to:

Lt Col Jennifer A. Harte
USAF Dental Investigation Service
Detachment 1, USAFSAM
310C B Street, Building 1H
Great Lakes, IL 60088-5259
DSN FAX 792-7667 or Commercial FAX (847) 688-7667

Thank you in advance for your participation in this survey.

QUESTIONS & ANSWERS

"Questions & Answers" is a feature in which we present and answer some of the questions we have recently received from the field. Should you want more information about a particular topic, please contact the individual whose name follows the specific answer in which you are interested. If you have a question about a topic not discussed in this issue, feel free to call DIS at DSN 792-7676.

69-03 Hepatitis B Vaccine and Testing

Question: Should I be tested for antibodies to hepatitis B after I complete the hepatitis B vaccine? Are boosters for the hepatitis B vaccine indicated?

Answer: Dental health-care personnel who perform tasks involving contact with blood, blood-contaminated body fluids, other body fluids, or sharps should receive the hepatitis B vaccination. Vaccination should be completed before any contact with blood; it will protect both dental personnel and patients from hepatitis B virus infection.

Dental health-care personnel should be tested for antibody to hepatitis B surface antigen (anti-HBs) one to two months after completing the 3-dose vaccine. Knowledge of antibody response aids in determining appropriate post-exposure prophylaxis or need for revaccination. Persons who do not respond adequately to the vaccine should complete a second 3-dose series or be evaluated to determine if they are hepatitis B surface antigen positive. Revaccinated persons should be retested after completing the second vaccine series. Individuals who do not respond to an initial 3-dose vaccine series have a 30-50% chance of responding to a second 3-dose series. If a protective antibody response (>10mIU/ml) develops after vaccination, vaccinated persons are considered completely protected against clinical illness. The Centers for Disease Control and Prevention does not currently recommend booster doses of hepatitis B vaccine and periodic serologic testing to monitor antibody concentrations after completing the vaccine series. As additional information becomes available, possible need for booster doses will be evaluated.

References

CDC. Hepatitis B virus: a comprehensive strategy for eliminating transmission in the United States through universal childhood vaccination. MMWR 1991;40(No.RR-13).

CDC. Immunization of health-care workers: recommendations of the Advisory Committee on Immunization Practices (ACIP) and the Hospital Infection Control Practices Advisory Committee (HICPAC). MMWR 1997;46(No. RR-18).

CDC. Recommended Infection-Control Practices for Dentistry, 1993. MMWR 1993;41(RR-8):1-12.

CDC. Updated U.S. Public Health Service guidelines for the management of occupational exposures to HBV, HCV, and HIV and recommendations for postexposure prophylaxis. MMWR 2001;50(No.RR-11).

69-04 "Soft-start" Polymerization of Resin-Composite Restorations

Question: What can you tell me about "soft-start" polymerization?

Answer: Soft-start polymerization is a method recently advocated to reduce polymerization contraction stresses in resin-composite restorations. During early polymerization, the resin composite cross-linking network is relatively weak - allowing flow to fairly easily accommodate for stresses and prevent damage to adhesive bonds. With further polymerization, contraction and flow decrease, while stiffness and stress increase. This may cause adhesive failure. The bond strength must exceed the contraction stress to provide a stable marginal adaptation.¹ "Soft-start" polymerization proposes that a slower rate of conversion will allow better flow of resin with a decrease in contraction stress. "Soft-start" polymerization may be divided into three separate techniques: stepped, ramped, or pulse-delay. A stepped program emits a low irradiance for 10 seconds and then increases immediately to a maximum value for the duration of the exposure. In a ramped program, the irradiance gradually increases from a low value to maximum intensity over a 10-second period, after which it remains constant for the duration of the exposure. Pulse delay uses a short low-level burst, a delay for polishing, and finally a long exposure at full intensity. The majority of laboratory research suggests that soft-start polymerization may be beneficial,²⁻¹⁷ but several studies have found no difference.¹⁸⁻²³ Also, the limited clinical trials available have shown no significant difference between the soft-start technique and conventional cure.^{24,25} More *in vivo* research is desperately needed to substantiate the potential benefits of this concept.

References

1. Davidson CL, de Gee AJ. Relaxation of polymerization contraction stress by flow in dental composites. *J Dent Res* 1984;63:146.
2. Bouschlicher MR, Rueggeberg FA. Effect of ramped light intensity on polymerization force and conversion in a photoactivated composite. *J Esthet Dent* 2000;12:328-339.
3. Bouschlicher MR, Vargas MA, Boyer DB. Effect of composite type, light intensity, configuration factor and laser polymerization on polymerization contraction forces. *Amer J Dent* 1997;10:88-96.
4. Bouschlicher MR, Rueggeberg FA, Boyer DB. Effect of stepped light intensity on polymerization force and conversion in a photoactivated composite. *J Esthet Dent* 2000;12:23-32.
5. Mehl A, Hickel R, Kunzelmann KH. Physical properties and gap formation of light-cured composites with and without softstart-polymerization. *J Dent* 1997;25:321-330.
6. Unterbrink GL, Muessner R. Influence of light intensity on two restorative systems. *J Dent* 1995;23:183-189.
7. Yoshikawa T, Burrow MF, Tagami J. A light curing method for improving marginal sealing and cavity wall adaptation of resin composite restorations. *Dent Mater* 2001;17:359-366.
8. Feilzer AJ, Dooren LH, de Gee AJ, Davidson CL. Influence of light intensity on polymerization shrinkage and integrity of restoration-cavity interface. *Eur J Oral Sci* 1995;103:322-326.
9. Uno S, Asmussen E. Marginal adaptation of a restorative resin polymerized at reduced rate. *Scand J Dent Res* 1991;99:440-444.
10. Sakaguchi RL, Berge HX. Reduced light energy density decreases post-gel contraction while maintaining degree of conversion in composites. *J Dent* 1998;26:695-700.
11. Kanca J, Suh BI. Pulse activation: reducing resin-based composite contraction stresses at the enamel cavosurface margins. *Am J Dent* 1999;12:107-112.
12. Silikas N, Eliades G, Watts DC. Light intensity effects on resin-composite degree of conversion and shrinkage strain. *Dent Mat* 2000;16:292-296.

13. Koran P, Kurschner R. Effect of sequential versus continuous irradiation of a light-cured resin composite on shrinkage, viscosity, adhesion, and degree of polymerization. *Am J Dent* 1998;10:17-22.
14. Goracci G, Mori G, Casa de Martinis L. Curing light intensity and marginal leakage of resin composite restorations. *Quint Int* 1996;27:355-362.
15. Suh BI, Feng L, Wang Y, Cripe C, Cincione F, de Rjik W. The effect of the pulse-delay cure technique on residual strain in composites. *Compend Contin Educ Dent* 1999;20:4-12.
16. Lim BS, Ferracane JL, Sakaguchi RL, Condon JR. Reduction of polymerization contraction stress for dental composites by two-step light-activation. *Dent Mater* 2002;18:436-444.
17. Sahafi A, Peutzfeldt A, Asmussen E. Effect of pulse-delay curing on *in vitro* wall-to-wall contraction of composite in dentin cavity preparations. *Am J Dent* 2001;14:295-296.
18. Friedl KH, Schmalz G, Hiller KA, Markl A. Marginal adaptation of Class V restorations with and without softstart-polymerization. *Oper Dent* 2000;25:26-32.
19. Hasegawa T, Itoh K, Yukitani W, Wakumoto S, Hisamitsu H. Effects of soft-start irradiation on the depth of cure and marginal adaptation of dentin. *Oper Dent* 2001;26:389-395.
20. Sahafi A, Peutzfeldt A, Asmussen E. Soft-start polymerization and marginal gap formation *in vitro*. *Amer J Dent* 2001;14:145-147.
21. Yap AU, Soh MS, Siow KS. Post-gel shrinkage with pulse activation and soft-start polymerization. *Oper Dent* 2002;81-87.
22. Muangmingsuk A, Senawongse P, Yudhasaraprasithi S. Influence of different softstart polymerization techniques on marginal adaptation of Class V restorations. *Am J Dent* 2003;16:117-119.
23. Hofmann N, Siebrecht C, Hugo B, Kläiber B. Influence of curing methods and materials on the marginal seal of Class V composite restorations *in vitro*. *Oper Dent* 2003;28:160-167.
24. Oberlander H, Friedl KH, Schmalz G, Hiller KA, Kopp A. Clinical performance of polyacid-modified resin restorations using softstart-polymerization. *Clin Oral Investig* 1999;3:55-66.
25. Brackett WW, Covey DA, St. Germain HA, Jr. One-year clinical performance of a self-etching adhesive in class V resin composites cured by two methods. *Oper Dent* 2002;27:218-222.

(Col Vandewalle)

69-05 Microscopes for Endodontics: A Steep Learning Curve

Question: Do you have any information on microscopes for use by general dentists to perform endodontic procedures.

Answer: The two main microscope dealers used primarily by endodontists are Carl Zeiss (Thornwood, NY) or Global (St Louis, MO). Global is typically less expensive and has a government contract. I have used Global with great results. I use it on every patient and perform much higher quality work with it. Unfortunately there is a steep learning curve to using a microscope. If you are not trained properly, it is extremely easy to get disoriented and you could actually do the patient more harm than good. Without having someone available for training it may lead to perforations and misdirection. It may take several months before you can become comfortable and proficient with the instrument. You have to relearn internal anatomy and orientation when using the scope, and delineate between primary/secondary dentin and bone. At first, providers may get frustrated, and go back to loupes because it will initially take much longer to perform procedures until you develop a comfort level. So, if a clinic is looking to purchase the microscope so that a general dentist can try to use the equipment for endodontic procedures and learn as he or she goes along, frustration may set in, and the scope may be put aside. If the clinic has an endodontist, then he or she should have a good knowledge of what they want to purchase and the expertise to train providers interested in using the microscope.

(Lt Col Harkacz)

69-06 Resin - LED Curing Light Incompatibilities

Question: I tried to cure a bonding agent with my new LED curing light and it failed to polymerize? What happened?

Answer: Light-emitting diode (LED) curing lights have a narrow spectral emission of light and may not polymerize all dental resin materials. Conventional halogen lights have a much wider emission spectrum and do not have this problem. The typical LED curing light produces light in a very narrow wavelength with peaks around 440 to 470 nanometers (nm), depending on the brand. This is ideal for the most common photoinitiator, camphoroquinone (CQ), which has an absorption peak around 468 nm, but is less effective for other photoinitiators that have peaks below 440 nm, such as phenyl-propane dione (PPD). Camphoroquinone is yellow in color. New photoinitiators were developed to provide less yellow intensity, especially for translucent shades. Fortunately there are only a few resin products that use other photoinitiators. Clinical Research Associates (CRA) recently published a listing of products that may not polymerize adequately with many LED curing lights. Not all available resin materials were tested, but the products identified so far were Biscover (Bisco, Schaumburg, IL); Cabrio (Discus Dental, Culver City, CA); Panavia F (Kuraray, New York, NY); Principle (Dentsply Caulk, Milford, DE); Pyramid, Neutral and Translucent (Bisco, Schaumburg, IL); and Touch and Bond (Parkell, Farmingdale, NY).¹ Some companies have attempted to shift the emission spectrum of LED lights slightly to initiate multiple photoinitiators. However, a new LED light, Ultra-Lume LED 5 (Ultradent Products, South Jordan, UT), contains two different diodes with spectral-emission peaks near 400 and 450 nm. See *DIS* 68. This allowed the new LED curing light to cure all the problematic materials listed above.

The potential advantages of the new LED curing lights were outlined in a previous *DIS* newsletter. See *DIS* 62. Less power is necessary to operate LED curing units because of their unfiltered, narrow emission spectrum. Consequently they may be powered with rechargeable batteries, making them available in lightweight, cordless units. The diodes have a potential lifetime of several thousand hours instead of less than a hundred with halogen systems. Ninety-nine percent of the original energy emitted from a halogen light is useless energy that must be filtered out. Noisy fans are required to help eliminate this unwanted heat. LED units produce little wasted energy and require minimal cooling.

DIS is testing many new LED curing lights and the results will be continually reported. The first-generation LED lights suffered from low irradiance and high cost.^{2,3} See *DIS* 63-66. The second generation of LED curing lights have much higher irradiance and competitive government pricing. See *DIS* 68 and 69. However, providers not using conventional halogen lights are advised to confirm the cure of their photo-initiated resin materials with their curing lights before they are used clinically.

References

1. CRA staff. Curing light - resin compatibility problems. *CRA Newsletter* 2003;27(6):1.
2. Leonard DL, Charlton DG, Roberts HW, Cohen ME. Polymerization efficiency of LED curing lights. *J Esthet Restor Dent* 2002;14:286-295.
3. Dunn WJ, Bush AC. A comparison of polymerization by light-emitting diode and halogen-based light-curing units. *J Am Dent Assoc* 2002;133:335-341.

(Col Vandewalle)

69-07 Postexposure Prophylaxis Following an Occupational Exposure Incident

Question: What are the correct procedures following an exposure to blood or other potentially infectious materials?

Answer: An exposure can be defined as a percutaneous injury (e.g., needlestick or cut with a sharp object) or contact of mucous membrane or non-intact skin (e.g., exposed skin that is chapped, abraded,

or afflicted with dermatitis) with blood, saliva, tissue, or other body fluids that are potentially infectious. Exposure incidents might place dental health-care personnel at risk for hepatitis B virus (HBV), hepatitis C virus (HCV), or human immunodeficiency virus (HIV) infection, and therefore should be evaluated immediately following treatment of the exposure site by a qualified health-care professional.

The following steps are recommended by the Centers for Disease Control and Prevention (CDC) for postexposure prophylaxis (PEP). The CDC provides an HIV PEP treatment hot line if questions about treatment or advice are needed. Call 1-888-448-4911, if desired.

1. Provide immediate care to the exposure site.

- Wash wounds and skin with soap and water.
- Flush mucous membranes (e.g., eyes, nose, mouth) with water.
- No evidence exists that using antiseptics for wound care or expressing fluid by squeezing the wound further reduces the risk of bloodborne pathogen transmission.

2. Complete the exposure report and refer to the qualified healthcare professional for evaluation and follow-up. The exposure report should include:

<ul style="list-style-type: none"> - date and time of exposure - details of the procedure being performed - details of the exposure (e.g., percutaneous injury, skin or mucosa contact, nonintact skin) 	<ul style="list-style-type: none"> - details about the exposure source (e.g., HBV, HCV, HIV status) - details about the exposed person (e.g., hepatitis B vaccination and vaccine-response status)
--	--

3. Follow Public Health Service/CDC guidelines for postexposure testing and management.

- Evaluate the exposure source (if known and permitted by law).
 - For unknown sources, assess risk of exposure to HBV, HCV, or HIV infection.
 - Do not test discarded needles or syringes for virus contamination.
- Evaluate the exposed individual.

4. Give postexposure prophylaxis (PEP)* for exposures posing risk of infection transmission, perform follow-up testing, and provide counseling.

HBV	HCV	HIV
<ul style="list-style-type: none"> - Give PEP as soon as possible, preferably within 24 hours - Test for anti-HBs 1-2 months after last dose of vaccine if only vaccine given. - Follow-up not indicated if exposed person immune to HBV or received hepatitis B immunoglobulin. 	<ul style="list-style-type: none"> - PEP not recommended - Perform testing for anti-HCV and ALT 4-6 months after exposure. - Perform HCV RNA testing at 4-6 weeks if earlier diagnosis of HCV desired. - Confirm repeatedly reactive anti-HCV enzyme immunoassays with supplemental tests. 	<ul style="list-style-type: none"> - Initiate PEP within hours of exposure. - Evaluate exposed persons taking PEP within 72 hours after exposure and monitor for drug toxicity for at least 2 weeks. - Administer PEP for 4 weeks if tolerated. - Perform HIV-antibody testing for at least 6 months postexposure (e.g., baseline, 6 weeks, 3 months, and 6 months). - Perform HIV antibody testing for illness compatible with an acute retroviral syndrome occurs. - Advise exposed persons to use precautions to prevent secondary transmission during the follow-up period.

* A complete description of PEP for HBV, HCV, and HIV can be found in CDC. Updated U.S. Public Health Service guidelines for the management of occupational exposures to HBV, HCV, and HIV and recommendations for postexposure prophylaxis. MMWR R 2001;50(No. RR-11): 1-52. Available at: www.cdc.gov/ncidod/hip/Guide/guide.htm. Accessed September 2003.

69-08 Antibiotic Prophylaxis for Patients with Prosthetic Joints

Question: Has there been an update to the recommendations for antibiotic prophylaxis for dental patients with prosthetic joints?

Answer: In 1997, an expert consultant panel consisting of dentists, orthopaedic surgeons and infectious disease specialists led by the American Dental Association (ADA) and the American Academy of Orthopaedic Surgeons (AAOS) convened to publish their first Advisory Statement on Antibiotic Prophylaxis for Dental Patients with Prosthetic Joints. In 2003, the panel reconvened and published the first periodic update of the 1997 statement. In addition, they created a new patient handout for dentists to share with their patients. The 2003 statement includes some modifications of the classification of patients at potential risk and of the incidence stratification of bacteremic dental procedures, but no changes in terms of suggested antibiotics and antibiotic regimens.¹ Antibiotic prophylaxis is not indicated for dental patients with pins, plates, or screws, nor is it routinely indicated for most dental patients with total joint replacements.^{1,2,3,4} It is advisable to consider premedication in a small number of patients who may be at potential increased risk of experiencing hematogenous total joint infection.

The 2003 Advisory Statement encourages dentists to consult with the patient's physician if the physician recommends a regimen that is not consistent with the current guidelines. The perceived potential benefits of antibiotic prophylaxis must be weighed against the known risks of antibiotic toxicity; allergy; and development, selection and transmission of microbial resistance. After consulting with the physician, the dentist may decide to follow the physician's recommendation or, if in the dentist's professional judgement antibiotic prophylaxis is not indicated, may decide to proceed without antibiotic prophylaxis. However, the Advisory Statement reminds practitioners that the dentist is ultimately responsible for making treatment recommendations for his or her patients based on the dentist's professional judgement.¹

The updated statement and recommendations of the ADA, AAOS, and the expert panel can be found in the July 2003 issue of the Journal of the American Dental Association.¹ ADA members can access the article online by visiting www.ada.org/prof/pubs/jada/index.asp.

References:

1. American Dental Association; American Academy of Orthopaedic Surgeons. Advisory Statement: Antibiotic prophylaxis for dental patients with total joint replacements. J Am Dent Assoc 2003;134:895 - 899.
2. Council on Dental Therapeutics. Management of dental patients with prosthetic joints. J Am Dent Assoc 1990;121:537 - 538.
3. Eskinazi D, Rathburn W. Is systemic antimicrobial prophylaxis justified in dental patients with prosthetic joints? Oral Surg Oral Med Oral Pathol 1988;66:430- 431.
4. Cawson RA. Antibiotic prophylaxis for dental treatment: for hearts but not for prosthetic joints. Br Dent J 1992;304:933- 934.

(Lt Col Harte)

69-09 Status of Digital Radiology

Question: What is the current status of digital radiography in USAF dental clinics?

Answer: Digital radiography is slowly making its way into Air Force dental clinics. Currently, the predominate use is represented by stand-alone work centers in support of endodontics. However, central systems for clinic-wide use are being introduced. Future clinic design/construction projects will incorporate digital radiography whenever possible. Eventually, digital radiography will be a part of the digital dental record in CHCS II. Currently there is no push for clinics to convert their existing conventional film processing to digital. Conversion to digital imaging is not a small undertaking. Any clinic desiring to make the conversion to digital must carefully plan out all details prior to any hardware/software purchases. Plans should be coordinated with the USAF Oral and Maxillofacial Radiology Consultant (Maj Ender Ozgul) and Dental Investigation Service. Maj Ozgul recently spearheaded production of a document that provides guidelines to help a clinic implement digital radiography. The document, entitled Implementation Plan for a Digital Imaging System and a Picture Archiving Communication System (PACS) can be downloaded (PDF format) by clicking [here](#).

(Col Browning)

WHAT'S NEW?

"WHAT'S NEW?" features recently-marketed dental equipment and materials. New and innovative products are marketed each month and DIS is unable to evaluate all of them. This section of the newsletter brings these products to your attention. Because DIS has not had the opportunity to evaluate these products, we cannot confirm manufacturers' claims about them. If you would like additional information about the products or are interested in evaluating them, please contact DIS.

TwinzVPS, from Bisco, is a new addition silicone (vinyl polysiloxane) impression material that comes in a myriad of viscosities and working/setting times. Five viscosities are available (Xtra-Lite, Lite, Monophase, Heavy, and Putty), and three of the five come in what

Bisco calls Fast Track versions which have considerably shorter intraoral setting times. The viscosities have contrasting colors which are reported to make it easier to read margins and other critical areas of the impression. Other advantages claimed for TwinzVPS include: unsurpassed accuracy, detail, and dimensional stability; high tear strength; and high hydrophilicity. The product is also available in bite registration form. All viscosities are packaged separately as are the gun dispenser and tray adhesive. For pricing and ordering information, please contact Bisco at (800) 247-3368, (847) 534-6000, (847) 959-9550 FAX, or www.bisco.com.

(Col Charlton)

Dash AloePRO Latex Gloves have an aloe inner-surface coating. The manufacturer claims AloePRO gloves are designed to help moisturize and soften your hands while you work and the fully-textured outside of the gloves help gives you a firm grip on instruments. Gloves are available in 5 sizes: XS, S, M, L, and XL. The product is available by the case (10 boxes, 100 gloves per box) for \$66.90 (retail) or \$49.00 (government). Prices include shipping and handling. AloePRO gloves are available from DASH Medical Gloves at (800) 523-2055, (800) 523-7795 FAX, or www.dashmedical.com.

(Lt Col Harte)

Dash Nitrile PF with Aloe Gloves are puncture resistant, protein-free, and powder-free gloves with an aloe-coated inner surface. The manufacturer claims that while the durable green nitrile protects your hands from outside contact, the aloe interior coating soothes dry, overworked hands by holding in the skin's moisture. The gloves are fully textured for an enhanced grip. Gloves are available in 4 sizes: S, M, L, and XL. The product is available by the case (10 boxes, 100 gloves per box) for \$90.90 (retail) or \$71.50 (government). Prices include shipping and handling. Nitrile PF with Aloe gloves are available from DASH Medical Gloves at (800) 523-2055, (800) 523-7795 FAX, or www.dashmedical.com.

(Lt Col Harte)

AdheSE is a new light-cured, two-step, self-etching bonding agent by Ivoclar Vivadent for use with all direct resin restorations. Self-etching adhesives, the company claims, save time by eliminating the separate etching and rinsing procedures. The patented monomer purportedly eliminates hydrolysis of the components and increases self-life. The demineralization of the tooth surface and the infiltration of the demineralized areas as with monomers reportedly take place simultaneously and potentially reduce post-operative sensitivity. AdheSE is available from Ivoclar Vivadent in an introductory pack (item #573690)

containing two 5-gm bottles, mixing well and applicators for \$105.00 (retail) and \$52.50 (government). For further information call (800) 533-6825, (716) 691-0010, (716) 691-2285 FAX, or www.ivoclarna.com.
(Col Vandewalle)

Brush&Bond is a new, one-solution, self-etching bonding product. The product joins other similar adhesives such as Adper Prompt L-Pop (3M ESPE), One-Up Bond F (Tokuyama/J. Morita), and Touch & Bond (Parkell). Parkell claims that Brush&Bond is a cousin to Touch & Bond, but requires significantly less time to apply. Unlike Touch & Bond, Brush&Bond is capable of being light cured by all types of currently-available light units (e.g., LED, halogen, laser, plasma arc). Like Touch & Bond, the product uses one solution to etch, prime, and bond to dentin and prepared/roughened enamel. It is also packaged similarly to Touch & Bond in that it consists of a single solution that is activated at time of use with a chemical-containing brush applicator. Parkell reports that Brush&Bond forms an extremely thin hybridizing film (i.e., 9 microns), which should make it possible to use with resin cements for luting indirect restorations. Parkell claims that the product is tough enough to be used to treat hypersensitive cervical tooth structure. Brush&Bond is applied, allowed to remain undisturbed for 20 seconds, air dried for 5 to 10 seconds, and light cured for 3 to 5 seconds. A total application time of 37 seconds is claimed. A box of Brush&Bond (stock number S284) contains a 3-mL bottle of the liquid and 100 activator MicroBrushes. It costs \$99.00 (retail and government) and is available from Parkell at (800) 243-7446, (631) 249-1134, (631) 249-1242 FAX, or www.parkell.com.

(Col Charlton)

GC Temp Advantage is a recently-marketed eugenol-free product for the cementation of temporary crowns, inlays, and onlays. Many of the advantages claimed for the product by its manufacturer (GC America) are based on the cement's components. For example, it contains fluoride for remineralization, chlorhexidine for an antimicrobial effect, and potassium nitrate for desensitization. The cement is packaged in an automix syringe with mixing tips. GC claims it has a working time of at least 2 minutes, and a post-insertion setting time of 1 minute. It is also reported to provide a good seal and be easy to clean up after placement. A Basic Package of GC Temp Advantage contains a 7.5-g syringe of the cement and 10 mixing tips. It is available for \$18.50 (retail) and \$11.10 (government) from GC America at (800) 323-7063, (708) 597-0900, (708) 371-5103 FAX, or www.gcamerica.com.

(Col Charlton)

IMS Lilac Utility Gloves by Hu-Friedy enhance safety in the sterilization area and during disinfection processes in the operatory. The heavy-duty nitrile material resists chemicals, is puncture resistant for improved protection against sharps injuries, and does not contain latex. The manufacturer claims that the molded texture on the fingertip and palm areas of the utility gloves provides improved tactile feel and grip while handling instruments. The gloves can be autoclaved up to 250°F/121°C. The IMS Lilac Utility Gloves are available for \$15.00/3 pair (retail) or \$11.30/3 pair (government). More information can be obtained by contacting Hu-Friedy at (800) 729-3743, (773) 975-6100, (800) 729-1299 FAX or www.hu-friedy.com.

(Lt Col Harte)

L & R's new **SweepZone Ag Ultrasonic Cleaning System** is constructed with silver-ion (AgION) antimicrobial-coated stainless-steel wrappers. The manufacturer claims that the AgION coating allows the release of silver ions impeding microbe growth on contact. As humidity increases and the environment becomes ideal for bacteria to grow, more silver is released slowly and steadily. This controlled release of silver ions provides a continuous antimicrobial shield, keeping the equipment clean and as safe as possible. The coating also reportedly helps the machines remain fingerprint and stain resistant. The

manufacturer also claims the use of a special cleaning wave of +/- 2-KHz energy sweeping back and forth through the tank provides complete cavitation and aggressive cleaning action.

Pricing for the SweepZone Ag Ultrasonic Cleaners is given below. All units include a stainless-steel cover, timer and drain; a heater is optional.

Model Number	Overall Dimensions (inches)	Retail Price	Government Price
Ag140	10-3/8 x 6-3/8 x 8- 1/4	\$635.00	\$444.50
Ag200	12-5/8 x 6-7/8 x 8- 1/4	\$679.00	\$475.30
Ag310	16-1/2 x 10 x 12	\$1692.00	\$1184.40
Ag650	21-3/4 x 13-3/4 x 13-1/2	\$2139.00	\$1497.30

More information can be obtained by contacting L & R Ultrasonics at (201) 991-5330, (201) 991-5870 FAX, or www.lrultrasonics.com.

(Lt Col Harte)

Hydent is a new high-spot indicating paste for dentures by Pascal Company, Inc. The aerosol is said to provide a uniform layer of paste that is quick, easy, and accurate to apply without any mixing. Hydent is simply sprayed onto a dry denture surface and seated into place with moderate finger pressure. The denture is then removed and adjusted in the areas where the paste has been displaced. Hydent can be removed from the denture using soap and water. The manufacturer states one 30-gram container of Hydent provides 400-metered sprays. The cost of a 30-gm container (stock number 05-100) is \$14.50 (retail) and \$8.70 (government). Bulk orders of 24-47 containers are \$8.00 (government) each, and quantities of 48 or more are \$7.25 (government) each. For ordering contact Pascal Company, Inc. at (800) 426-8051, (425) 827-4694, (425) 827-6893 FAX, or www.pascal dental.com.

(MSgt Osborn)

4 Seasons is a new microhybrid resin composite by Ivoclar Vivadent suitable for all classes of restorations. Forty shades are available in dentin, enamel and specialty shades and matched to the Vita shade guide. 4 seasons restorations may be placed using a traditional layering technique or a simplified anatomical technique by overlaying a highly chromatic dentin shade with one of three new value shades. The non-sticky, non-slumping microhybrid, the company claims, provides high strength and wear resistance while enhancing polishability. 4 Seasons is available from Ivoclar Vivadent in compules or syringes. The Cavifil System Pack (item #572865) comes complete with 168 compules in 40 shades with a dentin and enamel shade guide for \$537.00 (retail) and \$289.29 (government). For further information call (800) 533-6825, (716) 691-0010, (716) 691-2285 FAX, or www.ivoclama.com.

(Col Vandewalle)

The **1SHOT Safety Syringe** from Sultan Safety is a one-handed, single-use, disposable syringe injector for the delivery of dental anesthetics. The manufacturer claims the syringe is designed to provide significant protection from the needle before, during and after the injection. This safety syringe allows you to sheathe the needle before the injection and safely re-sheathe it after several times for one patient if necessary - all with one hand. It uses standard dental needles and allows visualization of the cartridge contents when aspirating. The O-ring plunger allows you to change anesthetic carpules safely, reducing the possibility of injury inherent in a harpoon plunger. The 1SHOT single-use syringe and protective sheathe is disposable; the plunger assembly is autoclavable and reusable. Pricing for the 1SHOT Safety Syringe is listed below. For more information, contact Sultan Safety at (800) 637-8582, (201) 871-1232, FAX (201) 871-0321, or www.sultanchemists.com.

Item	Retail Price	Government Price	Government Price Per Unit
30 1SHOT!" Safety Syringes and 1 Autoclavable Plunger	\$440.00 (Case of 8)	\$264.00 (Case of 8)	\$1.10 each
100 1SHOT!" Safety Syringes and 1 Autoclavable Plunger	\$600.00 (Case of 4)	\$360.00 (Case of 4)	90 cents each
30 Autoclavable Plungers	\$250.00	\$150.00	\$5.00 each

(Lt Col Harte)

Kerr Dental has recently released a unit-dose version of **TempBond**, a zinc-oxide and eugenol temporary cement for luting provisionals. The unit-dose packet, the company claims, contains the ideal ratio of base to activator for a perfect mix and minimal waste. Also, the price per use is purportedly the same as TempBond in tubes, so there is no extra charge for the single-patient packaging. The temporary cement is said to have a 2-minute working time and a 4-minute setting time for quick and trouble-free seating of restorations. TempBond is available from Kerr Dental in a box of 50 packets for \$30.50 (retail) and \$16.63 (government). For further information, contact Kerr Dental at (800) 537-7123, (714) 516-7400, (714) 516-7633 FAX, or www.KerrDental.com.

(Col Vandewalle)

Trimax is a new composite instrument by Addent, Inc. designed to assist the dentist in achieving ideal proximal contact areas in light-cured posterior composite restorations. Disposable light guides are placed in an autoclavable instrument handle. The instrument is pushed into a resin composite placed in the proximal box of a posterior preparation and torqued toward the matrix band and the proximal tooth. After light curing, the instrument is removed and the remainder of the preparation is filled. The light guides come in three different sizes and the double-ended instrument handle is angle for mesial or distal placement. The kit (item number 110001) comes complete with 2 sterilizable handles and 60 disposable light guides (20 premolar, 20 molar and 20 large molar) and can be purchased for \$79.00 (retail and government) at (203) 778-0200, (203) 792-2275 FAX, or www.addent.com.

(Col Vandewalle)

Googles Full FaceShield by Dental Disposables International is a disposable faceshield. The manufacturer claims the reusable visor eliminates overhead glare and the lightweight disposable faceshield allows you to wear loops and prescription eyewear. An office pack consisting of 3 visors and 15 clear shields is available, as well as replacement packs of 50 shields. For more information on the faceshield or other disposable products contact Dental Disposables International at (800) 825-5727, (732) 780-8865 FAX or www.dentaldisposables.com. For pricing information contact your local dental supplier.

(Lt Col Harte)

PERFECTemp II, a bis-acrylic temporary resin material by Discus Dental, is now available in 5-mL syringes. Each syringe contains enough material for up to 20 units. PERFECTemp II reportedly

autocures in 90 seconds intraorally or six minutes extraorally. The provisional material, the company claims, generates minimal heat and provides excellent polishability and marginal adaptation with minimal shrinkage (0.45%). PERFECTemp II is available in a new Operatory Pack (item number CR1045) containing 5 shades (A1, A2, A3.5, B1 and Bleach Shade) for \$60.00 retail and \$45.00 government. For further information, call (800) 422-9448, (310) 845-8260, (310) 845-1537 FAX, or www.discusdental.com.
(Col Vandewalle)

The **Dentaport ZX** is the latest endodontic product from J. Morita USA.. Patterned after the Root ZX, the Dentaport ZX combines the functionality of an electronic apex locator and a low-speed endodontic handpiece. The Dentaport ZX is marketed not only to measure the length of the root canal but also to clean and shape the canals and prepare the upper portion of the root canal. The electronic apex locator is based on Root ZX technology which purportedly allows accurate apex location with adjustable sound tones that provides clinician feedback and lengths displayed on a large, LCD screen. The handpiece is said to allow eight speed settings that range from 50-400 rpms with 11 torque settings. The handpiece's micromotor is advertised to offer an automatic torque-reverse function that reverses file rotation when a pre-set torque level is reached. Also, an auto-start feature is available that automatically starts file rotation when the file is inserted into the canal and stops when it is removed. Furthermore, file rotation is programmed to automatically slow as the apex is approached and will reverse and/or stop rotation when the apex length is achieved. The Dentaport ZX is available for \$2400.00 retail and \$1800.00 government. For further information, call (888) 566-7482, (949) 581-9600, (949) 465-1095 FAX, or www.jmoritausa.com

(Col Roberts)

Sterisil recently introduced **PureTube BR360**, an improved version of the PureTube BR continuous water treatment system. The PureTube BR360 is packaged with an antimicrobial-coated water bottle to eliminate the need for periodic sterilization of the water reservoir. Sterisil claims the PureTube BR360 and antimicrobial bottle will last for 1 year of service with the use of distilled water. The PureTube BR360 cartridge and antimicrobial-coated water bottle are available for \$340.00 (retail) and \$187.00 (government). For more information, contact Sterisil at (877) 755-PURE, (719) 481-0937, or www.sterisil.com.

(Lt Col Harte)

Wingers are disposable positioning holders made by Steri-Shield for digital radiography sensors. Each piece is available in small and large sizes corresponding to the #1 and #2 sensors. Wingers can be held with a hemostat or slide quickly into Steri-Shield's Aimer-Ring and Bar. The manufacturer claims Wingers are made of a specially formulated, super soft plastic that fits comfortably in the mouth. They are designed to fit all popular systems including Trophy, Schick, Dexis, Gendex, Sens-A-Ray, Sigma, Quickray, Dixi and others. Wingers are single-use disposable items designed to be used over a disposable barrier. The Aimer-Ring and Bar are heat sterilizable. Pricing and additional information for Wingers and associated accessories can be obtained by contacting Steri-Shield at (800) 699-7220, (805) 692-4972, (805) 692-4992 FAX, or www.steri-shield.com or your local dental supplier.

(Lt Col Harte)

The **DentaPure DP365** water purification cartridge manufactured by DentaPure is designed to be installed in or near the junction box of dental units connected to municipal water systems. The manufacturer claims that with the DentaPure DP365 dental unit water purification cartridge in place there is no need for line cleaning, no need to cut into expensive dynamic instrument tubing, and no need for complicated installation or maintenance. The cartridge elutes 2-6 parts per million of iodine into the water in the dental waterlines which reduces biofilm and leaves effluent water at less than 200 CFU/ml. The

iodine ingested by patients is less than the minimum adult daily requirement for iodine. The manufacturer recommends changing the cartridge after 365 calendar days, or if days of use records are kept, after 220 days of use. The DentaPure DP365 water purification cartridge (including installation kit) is available for \$674.95 (retail) or \$214.99 (government). For more information contact DentaPure at (800) 972-3543, (218) 739-2222, (218) 736-3241 FAX, or www.dentapure.com.

(Lt Col Harte)

Aloetouch Powder-Free Latex Exam Gloves are coated with aloe vera to help moisturize and soothe dry, chapped hands. Medline industries claim these strong, durable, natural-rubber latex gloves provide superior barrier protection and are powder-free to minimize skin irritation. The fully-textured surface gives you a sure grip on instruments. **Aloetouch Powder-Free Nitrile Exam Gloves** are free of latex and latex allergens. The manufacturer claims this powder-free nitrile exam glove offers excellent barrier protection, superb abrasion resistance and superior resistance to solvents, oil, and grease. **Aloetouch Ultra Powder-Free Vinyl Synthetic Exam Gloves** provide the benefits of aloe while eliminating exposure to latex. Medline Industries claims Aloetouch Powder-Free Ultra advanced formulation stretch vinyl gloves offer a better fit at the fingers, hands and wrists than standard vinyl and soften your skin. Aloetouch gloves are available in 5 sizes (XS, S, M, L, and XL) and by the case (10 boxes, 100 gloves per box) from Medline Industries, Inc. at (800) 633-5463, (847) 643-3292, (847) 643-3295 FAX, or www.medline.com

Product	Retail Price	Government Price
Aloetouch powder-free latex exam gloves	\$80.00	\$49.00
Aloetouch powder-free nitrile exam gloves	\$123.33	\$65.00
Aloetouch Ultra Powder-Free Vinyl Synthetic Exam Gloves	\$80.00	\$53.57

(Lt Col Harte)

SaniTyze waterless antimicrobial gel from Crosstex is formulated with 61% ethyl alcohol. The manufacturer claims it will kill 99% of bacteria in as little as 15 seconds and does not require water or towels. It contains emollients as well as dimethicone, aloe vera, and vitamin E to moisturize, condition, and soften skin. The manufacturer also claims that SaniTyz is free of petroleum-based products and completely compatible with latex. SaniTyz is available in a wall-mounted one-touch dispensing system, 4-ounce bottles, and 18-ounce dispenser pumps. For more information, contact Crosstex at (888) 276-7783, (631) 582-6777, (631) 582-1726 FAX, or www.crosstex.com. Contact your local dental supplier for pricing.

(Lt Col Harte)

VioNexus No Rinse Spray Antiseptic Handwash is a moisturizing, waterless, skin sanitizer. The manufacturer claims this 66% ethanol, 0.08% benzalkonium-chloride formula contains emollients and with

repeated applications antimicrobial effects are enhanced while moisturizing and soothing the skin. Water and towels are not needed, which eliminates cross-contamination. Metrex claims the product is latex compatible. For product information, contact Metrex at (800) 841-1428, (800) 638-7390 FAX or www.metrex.com. Contact your local dental supplier for pricing. Government pricing is available from Shilog, Inc. at (800) 574-4868.

Catalog Number	Product Description	Packaging	Government Price (Shilog, Inc.)
10-1802	VioNexus!™ No Rinse Spray Antiseptic Handwash 2 ounce	48/case	\$164.60
10-1800	VioNexus!™ No Rinse Spray Antiseptic Handwash 1 liter	6/case	114.30
10-1810	No-Touch Dispenser	each	\$71.45

(Lt Col Harte)

Ultradent Products recently introduced **DetecTar**, a new calculus detector. DetecTar uses a probe that emits high energy in a low infra-red wavelength from a light-emitting diode (LED). Light that reflects off the calculus is sensed by an optical fiber and converted into an electrical signal to be analyzed. A computer-processing algorithm determines whether the DetecTar probe has encountered calculus. When calculus is detected, a light at the juncture of the probe and the handle lights up, and the unit emits a sound signal. Ultradent claims that this new modality offers reproducible detection with a 91% accuracy rate as compared to the 28% accuracy of traditional tactile methods. The device is activated with a foot pedal and the autoclavable, graduated probes are the same dimension as periodontal probes and used in a very similar manner. DetecTar purportedly locates and identifies the specific signature of calculus, regardless of its color or location and is not, the company claims, affected by the presence of blood, saliva, or water. DetecTar is available for \$2999.95 (retail) and \$2549.95 (government) from Ultradent at (800) 552-5512, (800) 842-9024 FAX, or www.ultradent.com.

(Col Vandewalle)

The **EXL-M40** is a new electric laboratory handpiece from Osada Inc. The system comes complete with the EXL-M40 power console, LHP12 handpiece with L12M brushless micromotor, and MVFP foot pedal. The brushless micromotor is completely sealed and purported to be virtually maintenance-free. The handpiece is variable speed (1,000 to 40,000 RPM) and said to deliver high torque/low speed operations with quiet, smooth, vibration-free performance. The handpiece is equipped with a lever-type chuck release for one-handed bur changing. The EXL-M40 comes with the standard dental bur-shank chuck (2.35mm). Also available are the friction-grip (1.6mm) and the industrial bur-shank (3.0mm) chucks. The new MVFP foot control can be operated in either variable-speed or constant-mode. The benchtop power console is compact at 4 x 4 x 7 inches. Included features on the control panel of the console are on/off switch, forward/reverse button, manual/foot mode switch, and a large variable-speed dial located in the center. The variable-speed dial also has a blue light to indicate the current RPMs of the micromotor. The EXL-M40 is available in 120 or 220 volts. The cost of the EXL-M40 is \$1390.00 (retail) and \$1251.00 (government). Contact your local dental products dealer for the best price available. For additional information contact Osada Inc. at (800) 426-7232, (323) 651-0711, (323) 651-4691 FAX, or www.osadausa.com.

(MSgt Osborn)

FROM THE LITERATURE

Periodically, articles appear in the literature that present clinically useful information or evaluate the performance of a material or piece of equipment. Because DIS believes that this type of research is of value to clinicians, we present a brief description of these articles to make you aware of them. The complete citation is provided so you can obtain the article if you are interested in reading it in its entirety.

CONTAMINATION OF COMPUTER KEYBOARDS

Bacterial contamination of computer keyboards in a teaching hospital. Schultz M, Gill J, Zubairi S, Huber R, Gordin F. *Infect Control Hosp Epidemiol* 2003;24:302-303.

Recently computers have become more prevalent in the health-care settings. This study was undertaken to evaluate the extent of contamination on computer keyboards in the acute care, ambulatory care, and long-term care areas of a Veterans Affairs Medical Center. Of 100 cultures performed, 95 had growth of one or more microorganisms. Most were positive for skin organisms (e.g., coagulase-negative *Staphylococcus*, *Bacillus* species, *Corynebacterium* species). Five percent were positive for pathogens known to be associated with nosocomial transmission. Computer equipment must be kept clean so it does not become another vehicle for transmission of pathogens to patients.

DIS Comment: The introduction of computers in dental treatment areas presents unique infection control challenges. Avoiding contamination is important because many items cannot be properly cleaned and disinfected or sterilized. Before touching any office equipment, ensure your hands are clean, and if wearing gloves select a powder-free brand. A computer keyboard and mouse are excellent examples of difficult, if not impossible, equipment to clean. They should be covered with a barrier when contamination is likely, and changed between patients. If a reusable form-fitted barrier is used, it should be cleaned and disinfected between patients.

HOME VS. IN-OFFICE BLEACHING: WHICH ONE IS BEST?

Clinical Evaluation of In-Office and At-Home Bleaching Treatments. Zekonis R, Matis BA, Cochran MA, Al Shetri SE, Eckert GJ, Carlson TJ. *Oper Dent* 2003;28:105-112.

Both in-office and at-home vital tooth bleaching have been popular and successful methods of lightening discolored teeth. Until now, there has been no clinical studies available in the literature directly comparing these two treatment modalities. The purpose of this study was to evaluate the degree of color change of teeth, color relapse and tooth and gingival sensitivity associated with ADA-accepted in-office and at-home whitening agents. After receiving a prophylaxis by a licensed hygienist, twenty subjects were fitted with a custom bleaching tray that was cut in half between teeth #8 and #9. At-home bleaching was accomplished with 10% carbamide peroxide (Opalescence, Ultradent Products, South Jordan, UT) for two weeks using the split-mouth maxillary bleaching tray. In-office bleaching was performed on the opposite side of the arch with 35% hydrogen peroxide (StarBrite, Interdent, Los Angeles, CA). A rubber dam was placed and the gel was placed for three 10-minute applications at two separate appointments for a total of sixty minutes of in-office bleaching time. Color evaluation using a shade guide (Trubyte, Dentsply, Milford DE), slide photographs, and a colorimeter (Chroma Meter CR 321, Minolta, Ramsey, NJ) was completed at baseline, one, two, three, six and 12 weeks. Subjects completed a questionnaire on tooth and gingival sensitivity they experienced during the two weeks of treatment and for seven days after treatment. **All of the colorimeter, shade guide and clinical slide data showed a significantly greater increase in lightness with the at-home whitening treatment compared to the in-office regimen. The at-home treatment had significantly higher gingival sensitivity than in-office treatment. Tooth sensitivity, however, did not reach a statistical significance difference between the two techniques. Color**

stabilized by six weeks for both at-home and in-office treatments. Subjectively, eighty-four percent of the patients reported at-home treatment to be superior in tooth whitening than the in-office procedure.

DIS Comment: This clinical study supports statements that were only made anecdotally in the past - night-guard vital bleaching at home may be more effective than bleaching in the office. The authors report claims by various manufacturers that the higher concentrations of hydrogen peroxide used in the office are more efficacious than the lower concentrations used at home. However, the greatly increased contact time the teeth receive at home with the bleaching agent apparently compensates for the lower concentration. In spite of these findings, some patients may still prefer the speed and convenience of supervised application offered in the dental office.

HAND ANTISEPSIS WITH AN ALCOHOL-SPRAYER SYSTEM

Hand antiseptis: evaluation of a sprayer system for alcohol distribution. Barrau K, Rovey C, Drancourt M, Brouqui P. *Infect Control Hosp Epidemiol* 2003;24:180-183.

This observational study evaluated the usefulness of a new alcohol-based hand-rub sprayer system by comparing it with an individual bottle of an alcohol-based hand rub. It also evaluated patterns of use and perceptions among health-care personnel for the two products. **The sprayer was used more frequently than the individual bottle. The sprayer system was also easier to use, more hygienic, and faster, with a better tolerance than the individual bottle.**

DIS Comment: The authors felt the alcohol-sprayer system could improve rapid-hand antiseptis. As discussed in InControl #21, careful evaluation is indicated before deciding to purchase any new product(s), including evaluation of the product-dispenser system. Before introducing an alcohol-based hand rub or any new hand-hygiene product into your practice, consult with your infection-control committee and consider factors that can affect the overall efficacy and acceptance of such products including:

- *Current hand-hygiene practices and compliance.*
- *The relative efficacy of antiseptic agents against various pathogens.*
- *Input from the staff regarding the feel, fragrance, and skin tolerance of any products under consideration (i.e., products that are not well-accepted by personnel can be a deterrent to frequent handwashing).*
- *Ensuring dispenser systems function adequately and deliver an appropriate volume of product.*
- *Information from manufacturers regarding any known interactions between products used to clean hands, skin-care products, and the types of gloves used in your practice (e.g., petroleum-based lotion formulations can weaken latex gloves; certain alcohol hand rubs may interact with residual powder from gloves on the hands of personnel, resulting in a gritty feeling on the hands).*

SURGICAL GLOVES

A laboratory-based study to assess the performance of surgical gloves. Korniewicz DM, El-Masri MM, Broyles JM, Martin CD, O'Connell KP. *AORN J* 2003;77:772- 779.

The increased incidence of latex allergy has led to increased use of nonlatex surgical gloves, however the effectiveness of these gloves as a barrier to infection has not been examined thoroughly. This laboratory-based study compared the performance of latex and nonlatex surgical gloves in a simulated-stress protocol. **The propensity of surgical gloves to fail was dependent on glove material, manufacturer, and stress. Nonlatex neoprene and nitrile gloves were comparable to latex and can provide a good alternative to latex for allergic patients and health-care workers. In this study, isoprene was found to be inferior to latex and other nonlatex materials. The presence or absence of glove powder had no significant influence on the probability of glove failure.**

DIS Comment: Latex has been the traditional material of choice for surgical gloves, protecting both health-care personnel (HCP) and patients from the transmission of bloodborne infections. However, increased use of latex gloves has been accompanied by more reports of allergic reactions to natural-rubber latex between HCP and patients. The Food and Drug Administration (FDA) regulates the medical-glove industry, which includes gloves marketed as sterile surgical or non-sterile examination. More rigorous standards are applied to surgical than to examination gloves. The FDA has identified failure rates for glove manufacturers, but gloves eventually fail with exposure to mechanical (e.g., sharps, fingernails, jewelry) and chemical (e.g., dimethacrylates) hazards and over time. These variables can be controlled, ultimately optimizing glove performance, by: 1) maintaining short fingernails; 2) minimizing or eliminating hand jewelry; and 3) properly using engineering and work practice controls to avoid injuries with sharps. The authors recognized that this study had several limitations. The study was a laboratory simulation; therefore it was limited by the number of gloves tested and the 30-minute stress protocol. Also, the study was limited to gloves from six manufacturers and did not include gloves from all available manufacturers. Glove material, manufacturer, and the use of a stress protocol or actual use in surgery are all factors that must be considered when evaluating the effectiveness of glove barrier quality.

ENVIRONMENTAL SURFACE CONTAMINATION DURING HANDWASHING

Environmental surface cleanliness and the potential for contamination during handwashing. Griffith CJ, Makik R, Looker N, Michaels B. *Am J Infect Control* 2003;31:93- 96.

Effective handwashing is important in infection control. The ability of the various stages of handwashing to decrease skin-surface microbial counts has been documented. However, an important element, environmental surface cleanliness, and the potential for contamination of the hands during the process has not been well studied or quantified. The purpose of this study was to determine the general organic, microbial, and staphylococcal load on 3 categories of contact surfaces (i.e., faucet handles, liquid-soap dispensers, paper-towel dispenser exits) in hospital wards that could be touched by hands during the handwashing process and to evaluate the data within the context of hand-mediated cross-infection. **There were no statistically significant differences between the types of surfaces sampled and their location in the ward. However, overall faucet handles were more likely to be contaminated and be in excess of benchmark values than paper-towel dispenser exits.**

DIS Comment: Contamination of hand-contact surfaces could be implicated in the spread of infections, could act as a reservoir for microorganisms, and could contribute to hand contamination during or after handwashing. Faucet handles have long been identified as a possible site for cross-contamination because they are touched early in the hand hygiene process with contaminated hands and are more likely to be wet. For these reasons, it is frequently suggested to use automatic faucets or to use a paper towel to turn off the faucet after drying your hands. However, the study noted that even though 60% of the faucet handles were lever arm, patients and health-care personnel frequently ignored the no-touch hand contact instructions. Although, the paper-towel dispenser exits were less contaminated in this study, it is still a concern as they are the final surface that may be touched and the authors noted this required further investigation. The article is also a good review of five interrelated components of hand hygiene:

- 1. The hands should be hygienic with short, clean nails, and free from dermatologic disruption and jewelry.*
- 2. Compliance - getting health-care personnel to wash their hands at appropriate times.*
- 3. Effective washing of the hands.*
- 4. Thorough hand drying aids the removal of soil, loose skin, and microorganisms by application of kinetic/frictional energy. Remaining moisture can enhance the pick up and deposition of any remaining microorganisms.*
- 5. Prevention of hand contamination at any time during the whole process.*

STANDARD PRECAUTIONS

Infection control: Its evolution to the current standard precautions. Molinari JA. J Am Dent Assoc 2003;134:569- 574.

The use of appropriate infection control precautions to protect against transmission of bloodborne and other occupational microbial pathogens has become a routine component of healthcare provision. Guidelines designed to protect dental professionals and their patients have focused on bloodborne pathogens since the first published American Dental Association (ADA) recommendations in the 1970s. Subsequent statements developed by the Centers for Disease Control and Prevention (CDC), the ADA and other organizations during the past 30 years also have addressed prevention of other infections, transmitted by either direct or indirect contact with a variety of potentially infectious body fluids. The success of long-standing universal precautions (UP) against bloodborne infection has been augmented with the incorporation of body substance isolation (BSI) practices into the infection control protocol designated standard precautions. Combination of the major tenets of UP with the BSI systems routinely employed in acute care facilities affords all health-care professionals the means of preventing a spectrum of bloodborne, respiratory, contact and other potential exposures during provision of patient care.

DIS Comment: Standard Precautions is the primary strategy for successful infection control for all patients and clinical situations. Standard Precautions replaces the term Universal Precautions as they are more inclusive and apply to contact with 1) blood; 2) all body fluids, secretions, and excretions except sweat, regardless of whether they contain blood; 3) non-intact skin; and 4) mucous membranes. Standard Precautions should be used in the care of all patients, regardless of their infection status. For some patients, however, precautions in addition to the Standard Precautions may be advised. These additional precautions, Transmission-Based Precautions (i.e. Airborne, Droplet, or Contact) are used to interrupt the potential spread of those diseases (e.g., tuberculosis, influenza, and chicken pox) that are transmitted by air, droplets, or indirect or direct contact with contaminated sources. These precautions are used for patients known or suspected to be infected with epidemiologically important pathogens transmitted in these manners.

Reference

Garner JS. Guideline for isolation precautions in hospitals. The Hospital Infection Control Practices Advisory Committee. Infect Control Hosp Epidemiol 1996;17:53- 80.

FEELING THE HEAT?

Thermal emission by different light-curing units. Yap AUJ, Soh MS. Oper Dent 2003;28:260-266.

Few studies have been published comparing the amount of heat generated by new light-emitting diode (LED) curing units to that of halogen units. Many manufacturers of LED units claim this as an advantage of their products. The authors in this study chose three LED units (Elipar Freelight, 3M ESPE; GC e-Light, GC America; CoolBlu, Dental Systems) and three halogen units (Max, Dentsply/Caulk; Elipar Trilight, 3M ESPE; Astralis 10, Ivoclar Vivadent) to measure. The thermal emission of each unit was measured using a K-type thermocouple and a digital thermometer at distances of 3 mm and 6 mm from the end of the curing tip. Measurements were made operating the units using their different curing modes. Temperature profiles and mean maximum temperature changes were recorded using a sample size of seven. The average maximum temperature ranges measured during the study are presented in the following table.

Type of Unit	At 3-mm Distance	At 6-mm Distance
LED	4.1 C - 12.9 C	2.4 C - 7.5 C
Halogen	17.4 C - 46.4 C	12.7 C - 25.5 C

Based on statistical testing, the authors concluded that the LED units tested emitted significantly less heat at both distances than did the halogen units. Based on curing mode, temperature changes differed significantly for each unit as well as between LED and halogen units.

DIS Comment: LED curing lights have become popular because of their many advantages compared to halogen lights. These include being smaller, more portable, and quieter. One purported benefit is that LED units produce less heat at the end of their curing wands than do halogen units. The reason that we want to use lights that produce less heat is because excessive heat can be harmful to pulpal tissues. The primary difficulty in relating these findings to the clinical situation is that temperature rise has to be measured in the pulpal tissues to determine if the heat is excessive. This, of course, can only be simulated, and will be affected by remaining dentin thickness, thickness of the light-activated material being placed, and distance of the light wand from the tooth. The finding of this study that LED units produce less heat than halogen units needs to be qualified, however. First, the LED and halogen lights in this study were used in the various curing modes for the times recommended by their manufacturers. Because many of the initial LED units had a lower irradiance than halogen units, it is not surprising that they generate less heat. DIS has found, however, that longer exposure times need to be used with some of the first-generation LED units to adequately cure certain resins. If used in this way, the LED lights may produce more heat. Therefore, the findings of this study apply only to the tested lights and only when used for the exposure times and in the curing modes described. As the irradiance increases with each new generation of LED curing lights, future studies may find no real significant difference in heat emitted from the light tip between LED and halogen curing lights.

DENTAL RADIOLOGY INFECTION CONTROL

Infection control practices in dental radiology. Bartoloni JA, Charlton DG, Flint DJ. Gen Dent 2003;51:264-271.

The authors of this article state that the potential for cross-contamination in dental radiology is extremely high, especially if aseptic technique is not practiced while intraoral radiographs are exposed and processed. This article describes specific infection-control practices that are recommended to decrease the potential for cross-contamination in dental radiology and reduce the likelihood of disease transmission.

DIS Comment: Although there is no direct evidence dental radiographic procedures are a major cause of disease transmission, infection-control practices cannot be ignored in dental radiology. This article summarizes basic infection control practices for intra- and extraoral dental radiology procedures and provides practical easy-to-use checklists. The use of personal protective equipment, techniques for aseptic transport of the exposed films to the developing area, environmental surface cleaning and disinfection recommendations, including the use of disposable surface barriers, and sterilization of dental radiographic equipment are reviewed.

CDC PUBLISHES UPDATED ENVIRONMENTAL INFECTION CONTROL GUIDELINES

Centers for Disease Control and Prevention. Guidelines for environmental infection control in health-care facilities: recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC). MMWR 2003;52 (No. RR-10):1-44.

The health-care facility environment is rarely implicated in disease transmission, except among patients who are immunocompromised. Nonetheless, inadvertent exposures to environmental pathogens (e.g., *Aspergillus* spp. and *Legionella* spp.) or airborne pathogens (e.g., *Mycobacterium tuberculosis* and varicella-zoster virus) can result in adverse patient outcomes and cause illness among health-care workers. Environmental infection-control strategies and engineering controls can effectively prevent these infections. The incidence of health-care-associated infections and pseudo-outbreaks can be minimized by 1) appropriate use of cleaners and disinfectants; 2) appropriate maintenance of medical equipment; 3) adherence to water-quality standards for hemodialysis, and to ventilation standards for specialized care

environments (e.g., airborne infection isolation rooms, protective environments, or operating rooms); and 4) prompt management of water intrusion into the facility. Routine environmental sampling is not usually advised, except for water quality determinations in hemodialysis settings and other situations where sampling is directed by epidemiologic principles, and results can be applied directly to infection-control decisions.

DIS Comment: This report reviews previous guidelines and strategies for preventing environment-associated infections in health-care facilities and offers recommendations. The forthcoming CDC Guideline for Infection Control in Dental Health-Care Settings, 2003 will discuss and offer environmental infection control recommendations specifically for dental health-care settings. However, since most USAF dental clinics are associated with a medical treatment facility, dental infection control officers should review and be familiar with these general environmental infection-control recommendations. The recommendations can be found by visiting <http://www.cdc.gov/ncidod/hip/enviro/guide.htm>. The complete four-part environmental infection-control guidelines, including the scientific background, will be available at the same Web site in the future.

FLOWABLES AS LINERS

Contraction stress of flowable composite materials and their efficacy as stress-relieving liners. Braga RR, Hilton TJ, Ferracane JL. JADA 2003;134:721-728.

Due to shrinkage, dental resin composites induce stresses upon polymerization. The stresses generated may be a threat to marginal integrity. Low-viscosity (flowable) resin composites have been recommended as a liner under nonflowable materials. The lower filler content of flowable resin composites reduces its elastic modulus and may possibly reduce the stress buildup and help maintain marginal seal. The purpose of this study was to determine whether flowable resin composites produce lower polymerization contraction stress than do nonflowable resin composites and to determine if the use of a precured layer of flowable resin composite material can significantly reduce the contraction stress generated by a subsequent increment of nonflowable resin composite material. First, four flowable and six nonflowable resin composite materials were tested in a tensiometer. Second, a layer of flowable resin composite was precured before the nonflowable resin composite was placed. **The authors found no significant differences in stress between the flowable and nonflowable resin composites. Regarding the effect of a precured layer of resin composite on contraction stress, the authors observed significant reductions only with one of the flowable materials.**

DIS Comment: The results of the study do not provide enough evidence to support the general use of a precured intermediate layer of flowable resin composite as a means of significantly relieving the contraction stress produced by a subsequent increment of a nonflowable resin composite. The decrease in filler content in flowable resin composites is responsible for an increase in polymerization shrinkage and may offset any benefits seen with the reduced elastic modulus resulting in similar polymerization stress levels to that of nonflowable resin composites. Also, microleakage studies comparing flowable resin composites with nonflowable resin composites seem equivocal, with some authors showing a benefit¹⁻² and others showing no benefit.³⁻⁵

References:

1. Tung FF, Estafan D, Scherer W. Microleakage of a condensable resin composite: an *in vitro* investigation. Quintessence Int 2000;31:430-434.
2. Leevailoj C, Cochran MA, Matis BA, Moore BK, Platt JA. Microleakage of posterior packable resin composites with and without flowable liners. Oper Dent 2001;26:302-307.
3. Chuang S, Liu J, Chao C, Liao F, Chen YM. Effects of flowable composite lining and operator experience on microleakage and internal voids in Class II composite restorations. J Prosthet Dent 2001;85:177-183.
4. Jain P, Belcher M. Microleakage of Class II resin-based composite restorations with flowable composite in the proximal box. Am J Dent 2000;13:235-238.

5. Wibowo G, Stockton L. Microleakage of Class II composite restorations. Am J Dent 2001;14:177-185.

PUTTING CEMENTS TO THE TEST

The retention of complete crowns prepared with three different tapers and luted with four different cements. Zidan O, Ferguson GC. J Prosthet Dent 2003;89:565-571.

The purpose of this study was to evaluate the retention of full crowns prepared with three different tapers and cemented with four different cements. Full veneer crown preparations were completed on human molar teeth at 6, 12 and 24 degree tapers. Impressions were made, dies were poured in stone and crowns were cast in a high noble alloy. The crowns were cemented with zinc phosphate (Fleck s, Mizzy Inc, Cherry Hill, NJ), a conventional glass ionomer (Ketac Cem, 3M ESPE, Norristown, PA) and resin cements (C&B Metabond, Parkell, Farmington, NY; Panavia, Kuraray, New York, NY). Retention was measured by separating the cemented crowns from the prepared teeth under tension on a universal testing machine. **The mean strength values of the zinc phosphate and glass ionomer were significantly lower than the mean retentive strength values of both resin cements. Retention was not affected by increasing the taper from 6-degrees to 12-degrees. Increasing the taper to 24-degrees decreased the retention of the crowns significantly. Crowns luted with resin cements demonstrated significantly greater bond strengths for preparations with taper greater than 12 degrees.**

DIS comment: This study suggests that the type of cement is not critical if the teeth are prepared with ideal taper (less than 12 degrees). On the other hand, the authors recommend that preparations with compromised taper (greater than 12 degrees), be bonded with resin cement to improve the chances of crown retention and clinical success. However, every effort should be made to provide ideal contours. Resin cements are much more technique sensitive and expensive. Also, tensile forces are not the only type of forces generated and the forces necessary to remove the crowns may have exceeded the maximum force levels possible intraorally. This study should have included a resin-modified glass ionomer cement as an additional group. None the less, this study does support the occasional use of a resin cement in those cases where ideal taper is not possible.

DISINFECTANT PRODUCTS AND DENTAL UNIT WATERLINES

Microbiological evaluation of a range of disinfectant products to control mixed-species biofilm contamination in a laboratory model of a dental unit water system. Walker JT, Bradshaw DJ, Fulford MR, Marsh PD. Appl Environ Microbiol 2003;69:3327- 3332.

Dental unit waterline (DUWL) tubing harbors complex multispecies biofilms that are responsible for high microbial levels at the distal outlet. The purpose of this study was to use an established biofilm laboratory model to simulate biofouling of DUWL to evaluate practical, cost-effective, and evidence-based methods of microbial decontamination. Reproducible biofilms were developed in the model over 14 days; decontamination was assessed using total viable counts and microscopic-image analysis techniques to view the inner surface of the tubing. **The study demonstrated that while many disinfectants achieve a sufficient reduction in total viable counts they may not necessarily remove unwanted biofilm from the tubing surface as tested in this laboratory-controlled biofilm model.**

DIS Comment: This study evaluated a variety of DUWL disinfectant products and suggested that weekly treatment protocols may not be sufficient to reduce microbial counts to levels that comply with acceptable standards of dental water quality. The authors suggested that daily or continuous treatment of dental unit water might be more appropriate. At the present time, no universal treatment protocol can be recommended. A combination of approaches may offer the best available assurance of high-quality dental treatment water. In addition, periodic monitoring methods should be performed to assess compliance with recommended protocols and identify technique errors or noncompliance. Two options are currently available. Water can be submitted to the microbiology lab or the bioenvironmental engineers

for culturing using method 9215 (heterotrophic plate count) as described in *Standard Methods for the Evaluation of Water and Wastewater*¹ or an in-office self-contained system that is equivalent to method 9215 can be used.

Reference:

1. American Public Health Association, American Water Works Association, Water Environment Foundation. In: Eaton RD, Clesceri LS, Greenberg AE, editors. *Standard methods for the examination of water and wastewater*. Washington DC: American Public Health Association, 1999:9-1; 9-41.

NEEDLESTICK INJURIES

Needlestick injuries among medical students. Patterson JM, Novak CB, Mackinnon SE, Ellis RA. *Am J Infect Control* 2003;31:226- 230.

This study evaluated needlestick injuries and practices regarding the use of protective strategies against bloodborne pathogens in medical students using a questionnaire. Of 224 students, 146 students responded (64%). Forty-three (30%) reported needlestick injuries that most commonly occurred in the operating room; 86% of students reported always using double gloves in the operating room; 90% reported always wearing eye protection, and all but one student had been vaccinated against hepatitis B. A concern about contracting a bloodborne pathogen through work was noted in 125 students, although they usually reported that this concern only slightly influenced their decision regarding a career subspecialty. **Medical students have a high risk for needlestick injuries, and attention should be directed to protection strategies against bloodborne pathogens.**

DIS Comment: Methods used to prevent occupational exposures in health-care settings include standard precautions, engineering and work practice controls, and the use of personal protective equipment. The authors of the study reported that 86% of the medical students always wore double gloves in the operating room. Most studies among medical and dental personnel have shown a lower frequency of inner glove perforation and visible blood on the surgeon's hands when double gloves are worn however the effectiveness of wearing two pairs of gloves in preventing disease transmission has not been demonstrated.¹⁻⁸ In one study evaluating double gloves during oral surgical and dental hygiene procedures, the perforation of outer latex gloves was greater during longer (more than 45 minutes) than shorter procedures, with the highest rate, 10%, found during oral surgery procedures.⁴ Double gloving does not appear to significantly reduce either manual dexterity or tactile sensitivity⁹⁻¹¹ Based upon these studies, double gloving may provide additional protection from occupational blood contact.¹²

Studies indicate that percutaneous injuries have decreased in frequency since the mid-1980s and that injuries among general dentists occur less frequently than among surgeons.¹³⁻¹⁷ This decline has been attributed to safer work practices, safer instrumentation or design, and continued worker education.^{18,19} Percutaneous injuries among dental personnel generally occur outside the patient's mouth, thereby posing less of a risk for recontact with patient tissues, involve small amounts of blood, and are caused by burs, syringe needles, laboratory knives, and other sharp instruments. Injuries among oral surgeons may occur more frequently during fracture reductions using wires.^{14-17,19-22} Experience, as measured by years in practice, does not appear to affect the risk of injury among general dentists or oral surgeons.^{15,19,22}

References:

1. Burke FJ, Baggett FJ, Lomax AM. Assessment of the risk of glove puncture during oral surgery procedures. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1996;82:18 - 21.
2. Avery CM, Hjort A, Walsh S, Johnson PA. Glove perforation during surgical extraction of wisdom teeth. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1998;86:23 - 25.
3. Schwimmer A, Massoumi M, Barr CE. Efficacy of double gloving to prevent inner glove perforation during outpatient oral surgical procedures. *J Am Dent Assoc* 1994;125:196-198.
4. Patton LL, Campbell TL, Evers SP. Prevalence of glove perforations during double-gloving for dental procedures. *Gen Dent* 1995;43:22 - 26.

5. Klein RC, Party E, Gershey EL. Virus penetration of examination gloves. *Biotechniques* 1990;9:196 - 199.
6. Gani JS, Anseline PF, Bissett RL. Efficacy of double versus single gloving in protecting the operating team. *Aust NZ J Surg* 1990;60:171- 175.
7. Short LJ, Bell DM. Risk of occupational infection with blood-borne pathogens in operating and delivery room settings. *Am J Infect Control* 1993;21:343-350.
8. Tokars JI, Culver DH, Mendelson MH, et al. Skin and mucous membrane contacts with blood during surgical procedures: risk and prevention. *Infect Control Hosp Epidemiol* 1995;16:703-71.
9. Webb JM, Pentlow BD. Double gloving and surgical technique. *Ann R Coll Surg Engl* 1993;75:291- 292.
10. Watts D, Tassler PL, Dellon AL. The effect of double gloving on cutaneous sensibility, skin compliance and suture identification. *Contemp Surg* 1994;44:289- 292.
11. Wilson SJ, Sellu D, Uy A, Jaffer MA. Subjective effects of double gloves on surgical performance. *Ann R Coll Surg Engl* 1996;78:20- 22.
12. Tanner J, Parkinson H. Double gloving to reduce surgical cross-infection (Cochrane Review) In: *The Cochrane Library*, 2003, Issue 2.
13. Klein RS, Phelan JA, Freeman K, et al. Low occupational risk of human immunodeficiency virus infection among dental professionals. *N Engl J Med* 1988;318:8- 90.
14. Gruninger SE, Siew C, Chang SB, et al. Human immunodeficiency virus type I. Infection among dentists. *J Am Dent Assoc* 1992;123:59- 64.
15. Siew C, Gruninger SE, Miaw C, Neidle EA. Percutaneous injuries in practicing dentists. A prospective study using a 20-day diary. *J Am Dent Assoc* 1995;126:1227- 1234.
16. Cleveland JL, Lockwood SA, Gooch B, et al. Percutaneous injuries in dentistry: an observational study. *J Am Dent Assoc* 1995;126:74- 751.
17. Ram os-Gomez F, Ellison J, Greenspan D, Bird W, Lowe S, Gerberding JL. Accidental exposures to blood and body fluids among health care workers in dental teaching clinics: a prospective study. *J Am Dent Assoc* 1997;128(9):1253- 1261.
18. Cleveland JL, Gooch BF, Lockwood SA. Occupational blood exposure in dentistry: a decade in review. *Infect Control Hosp Epidemiol* 1997;18:717-721.
19. Gooch BF, Siew C, Cleveland JL, Gruninger SE, Lockwood SA, Joy ED. Occupational blood exposure and HIV infection among oral and maxillofacial surgeons. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1998;85:128- 134.
20. Gooch BF, Cardo DM, Marcus R, et al. Percutaneous exposures to HIV infected blood among dental workers enrolled in the CDC Needlestick Study. *J Am Dent Assoc* 1995;126:1237- 1242.
21. Younai FS, Murphy DC, Kotelchuck D. Occupational exposures to blood in a dental teaching environment: results of a ten-year surveillance study. *J Dent Educ* 2001;65:436- 438.
22. Carlton JE, Dodson TB, Cleveland JL, Lockwood SA. Percutaneous injuries during oral and maxillofacial surgery procedures. *J Oral Maxillofac Surg* 1997;55:553- 556.

HIV/HCV TRANSMISSION VIA NONIN TACT SKIN

Transmission of HIV and hepatitis C virus from a nursing home patient to a health care worker. Beltrami EM, Kozak A, Williams IT, Saekhou AM, Kalish ML, Nainan OV, Stramer SL, Fucci MH, Frederickson D, Cardo DM. *Am J Infect Control* 2003;31:168 - 175.

This article reports a case of simultaneous HIV and hepatitis C virus (HCV) transmission from a nursing home patient to a health-care worker (HCW) whose HIV and HCV infections were diagnosed during routine blood-donor screening. The HCW, a nursing-home aide, had no nonoccupational risk factors for HIV or HCV infection but provided care for an HIV-infected patient with dementia and urinary and fecal incontinence. The HCW had numerous exposures to the patient's emesis, feces and urine to unprotected chapped and abraded hands. Testing showed that the HCW's and patient's viruses were very closely related. **HIV and HCV transmission from the patient to the HCW appears to have occurred through nonin tact skin exposure. Bloodborne pathogen transmission may have been prevented in this situation by consistent, un failing use of barrier precautions.**

DIS Comment: Exposure to bloodborne pathogens poses a serious risk to health-care personnel. Simultaneous transmission of HIV and HCV has been reported after needlestick injury and mucous membrane exposure in health-care settings. Although transmission of HIV and HCV through occupational exposure does occur, HIV and HCV are not transmitted efficiently in this setting. The average risk of HIV transmission after a percutaneous exposure to HIV-infected blood has been estimated to be approximately 0.3%.¹ The average risk of anti-HCV seroconversion after a percutaneous exposure to HCV-infected blood is 1.8%.²⁻⁵ Episodes of HIV transmission after nonintact skin exposure have been documented,⁶ but the average risk for transmission by this route is estimated to be less than 0.09%.⁷ This case report is the first documenting HCV transmission after nonintact skin exposure (e.g., skin that is abraded, chapped).

Gloves protect dental health-care personnel from direct exposure through cuts and abrasions, which can be often visually undetected on the hands. However, gloves often have small, unapparent defects or may be torn during use, or hands become contaminated during their removal.⁸⁻¹⁹ Also, gloves fail with exposure to mechanical (e.g., sharps, fingernails, jewelry) and chemical (e.g., dimethylacrylates) hazards and over time. Several studies have shown that medical and dental health-care personnel are frequently unaware of small tears in gloves that occur during use.^{18, 20-22} Healthy intact skin is the primary defense against infection and transmission of pathogens. Therefore, in addition to wearing gloves, it is important to practice proper hand hygiene and maintain healthy intact skin on the hands.

Prevention of blood exposures is the primary way to prevent occupational HIV and HCV infection. Exposure control plans should include education on Standard Precautions, provision of personal protective equipment for employees at risk for blood and body fluids, and the routine use of engineering and work practice controls to eliminate percutaneous injuries. In addition, personnel should be encouraged to report all occupational exposures. Postexposure management is an important component of an infection control program to prevent infection after an occupational exposure incident.

References:

1. Bell DM. Occupational risk of human immunodeficiency virus infection in health-care personnel: an overview. *Am J Med* 1997;102(suppl 5B):9 - 15.
2. Alter MJ. The epidemiology of acute and chronic hepatitis C. *Clin Liver Dis* 1997;1:559 -568.
3. Lanphear BP, Linnemann CC Jr, Cannon CG, DeRonde MM, Pandy L, Kerley LM. Hepatitis C virus infection in healthcare workers: risk of exposure and infection. *Infect Control Hosp Epidemiol* 1994;15:745 - 750.
4. Puro V, Petrosillo N, Ippolito G. Risk of hepatitis C seroconversion after occupational exposures in health care workers. Italian Study Group on Occupational Risk of HIV and Other Bloodborne Infections. *Am J Infect Control* 1995;23:273 - 277.
5. Mitsui T, Iwano K, Masuko K, et al. Hepatitis C virus infection in medical personnel after needlestick accident. *Hepatology* 1992;16:1109 - 1114.
6. CDC. Update: human immunodeficiency virus infections in health-care workers exposed to blood of infected patients. *MMWR* 1987;36:285 - 289.
7. Fahey GJ, Koziol DE, Banks SM, Henderson DK. Frequency of nonparenteral occupational exposures to blood and body fluids before and after Universal Precautions training. *Am J Med* 1991;90:145 - 153.
8. Larson EL. APIC guideline for handwashing and hand antisepsis in health care settings. *Am J Infect Control* 1995;23:251 - 269.
9. DeGroot-Kosolcharoen J, Jones JM. Permeability of latex and vinyl gloves to water and blood. *Am J Infect Control* 1989;17:196 - 201.
10. Korniewicz DM, Laughon BE, Butz A, Larson E. Integrity of vinyl and latex procedure gloves. *Nurs Res* 1989;38:144 - 146.
11. Olsen RJ, Lynch P, Coyle MB, Cummings J, Bokete T, Stamm WE. Examination gloves as barriers to hand contamination in clinical practice. *JAMA* 1993;270:350 - 353.
12. Murray CA, Burke FJT, McHugh S. An assessment of the incidence of punctures in latex and non-latex dental examination gloves in routine clinical practice. *Br Dent J* 2001;190:377 - 380.

13. Burke FJ, Baggett FJ, Lomax AM. Assessment of the risk of glove puncture during oral surgery procedures. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1996;82:1- 21.
14. Burke FJ, Wilson NH. The incidence of undiagnosed punctures in non-sterile gloves. *Br Dent J* 1990;168:67 - 71.
15. Nikawa H, Hamada T, Tamamoto M, Abekura H. Perforation and proteinaceous contamination of dental gloves during prosthodontic treatments. *Int J Prosthodont* 1994;7:559 - 566.
16. Nikawa H, Hamada T, Tamamoto M, Abekura H, Murata H. Perforation of dental gloves during prosthodontic treatments as assessed by the conductivity and water inflation tests. *Int J Prosthodont* 1996;9:362 - 366.
17. Avery CM, Hjort A, Walsh S, Johnson PA. Glove perforation during surgical extraction of wisdom teeth. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1998;86:23 - 25.
18. Otis LL, Cottone JA. Prevalence of perforations in disposable latex gloves during routine dental treatment. *J Am Dent Assoc* 1989;118:321- 324.
19. Kotilainen HR, Brinker JP, Avato JL, Gantz NM. Latex and vinyl examination gloves. Quality control procedures and implications for health care workers. *Arch Intern Med* 1989;149:2749 - 2753.
20. Albin MS, Bunegin L, Duke ES, Ritter RR, Page CP. Anatomy of a defective barrier: sequential glove leakage detection in a surgical and dental environment. *Crit Care Med* 1992;20:170 - 184.
21. Merchant VA, Molinari JA, Pickett T. Microbial penetration of gloves following usage in routine dental procedures. *Am J Dent* 1992;5:95 - 96.
22. Gerberding JL, Littell C, Tarkington A, Brown A, Schechter WP. Risk of exposure of surgical personnel to patients' blood during surgery at San Francisco General Hospital. *N Engl J Med* 1990;322:1788 - 1793.

DENTAL MONOMERS AND GLOVES

Monomer permeability of disposable dental gloves. Nakamura M, Oshima H, Hashimoto Y. *J Prosthet Dent* 2003;90: 81 - 85.

This study examined the permeability of six kinds of dental monomers (MMA, HEMA, TEGDMA, EGDMA, UDMA, Bis-GMA) through five kinds of gloves (latex, powder-free latex, coated latex, polychloroprene, and polyvinyl chloride) for up to 180 minutes at 37 C. Four of the monomers tested (MMA, HEMA, TEGDMA, and EGDMA) permeated the gloves in the study, whereas two (UDMA and Bis-GMA) did not. The polyvinyl chloride glove showed the greatest monomer permeability. Two-way analysis of variance showed significant correlations between MMA, HEMA, EGDMA or TEGDMA and UDMA or Bis-GMA ($P < .01$). Statistical significance was shown between polyvinyl chloride and latex, powder-free latex, coated latex or polychloroprene ($P < .01$). However, there was no significant relation between any kind of dental monomer and any kind of dental glove. **Within the limitations of this study, four of the monomers tested permeated all of the gloves tested. The protection afforded by gloves is incomplete and depends on the properties of the gloves.**

DIS Comment: Dental health-care personnel (DHCP) wear gloves to provide a protective barrier and to prevent contamination of their hands when touching mucous membranes, blood, saliva, or other potentially infectious materials. During dental procedures, gloves commonly contact many types of chemicals and materials (e.g., disinfectants, composite resins, bonding agents) that may compromise the integrity of latex as well as vinyl, nitrile, and other synthetic glove materials. Education about potential monomer permeation of gloves is necessary for DHCP, including dental lab technicians, as well as the importance taking precautions to avoid direct contact with these materials. Also, it's important to remember that in addition to causing glove degradation, repeated contact with these chemicals can lead to allergic contact dermatitis.

Selected References

Hamann C, Rodgers PA, Sullivan K. Allergic contact dermatitis in dental professionals. *J Am Dent Assoc* 2003;134:185-194.

GENERAL DENTISTRY

69-10 Tempit Ultra

(Project 02-43)

Tempit Ultra is a noneugenol, visible-light-activated, single-component material for the temporary restoration of teeth. According to its manufacturer (Centrix), it is a diurethane dimethacrylate resin microfilled to 30% (presumably by weight) with silicon dioxide particles to enhance wear resistance and durability. Centrix claims that temporary restorations made of Tempit Ultra can last for up to a year. The product requires no mixing and is packaged in single-use, unit-dose capsules that should fit most manufacturers composite dispensing guns. Among the advantages claimed for the product are that it is biocompatible, easy to remove with a bur, and less soluble than zinc oxide-eugenol temporary materials. Since it does not contain eugenol, there should be no potential for Tempit Ultra to interfere with the polymerization of subsequently placed resin-based final cements. The Tempit Ultra capsules are provided in a small, plastic jar with a screw-on lid. The product is also available in a fluoride-containing version (Tempit Ultra-F).

Manufacturer:

Centrix Incorporated
770 River Road
Shelton, CT 06484-5458
(800) 235-5862
(203) 929-5582
(203) 929-6804 FAX
www.centrixdental.com

Suggested Retail Price:

\$52.95 Tempit Ultra (REF 310065)
-thirty 0.25-g capsules

Government Price:

\$47.95 As listed above

ADVANTAGES:

- + Quick to place because it sets via light curing.
- + Users gave good ratings to the product's durability.
- + Good consistency for packing into lesion/preparation.
- + Convenient to use because it does not need to be mixed.
- + Unit-dose packaging enhances infection control.
- + Has compressive strength similar to that of IRM.
- + No objectionable odor.
- + Does not contain eugenol.
- + Lot number and expiration date are provided on product container.
- + Provided with a Material Safety Data Sheet (MSDS).

DISADVANTAGES:

- Does not meet manufacturer's claim for 6-mm depth-of-cure.
- Lacks adequate radiopacity.
- Sticks to placement instruments.
- Difficult to distinguish from tooth structure during removal.

SUMMARY AND CONCLUSIONS:

Tempit Ultra generally performed well during the evaluation. Users found it fast to place, durable, and esthetic. Its packaging in pre-loaded capsules and its delivery using a standard composite capsule gun made it convenient to use. Tempit Ultra had a good thickness for packing it into lesions/preparations. While it performed adequately as a temporary material, it did exhibit shortcomings of which potential buyers should be aware. Excessive stickiness, for example, made placement somewhat difficult if the instrument being used was not lightly lubricated with an acceptable separator (e.g., unfilled bonding agent). While its excellent shade match made it very esthetic, it also created problems because clinicians found Tempit Ultra difficult to distinguish from tooth structure during removal. When placing the product, clinicians should use a light exposure time of more than 40 seconds to compensate for the product's somewhat limited depth-of-cure. Laboratory results suggest that the material should be comparable to Intermediate Restorative Material (IRM) in its resistance to fracture. Users should also be aware that it also lacks sufficient radiopacity. **Tempit Ultra** is rated **Acceptable** for use by the federal dental services.
(Col Charlton)

69-11 Linkmax Paste Pak Dual-Cure Adhesive Cement (Project 02-32)

Linkmax Paste Pak is a dual-curing resin cement from GC America. Designed for use with all types of porcelain, composite, and precious and non-precious metal restorations, Linkmax offers ample working time, ease of clean up, and low film thickness. The adhesive cement is dispensed in two pastes from dual-tube cartridges that are inserted into a metal, hand-operated device. It uses a self-etching primer to bond to tooth structure and separately-available primers to bond to prostheses, core build-ups and posts made out of different materials. The company claims the fluoride-releasing resin cement provides high compressive, adhesive, and shear bond strengths. The cement is available in two shades (A3 and clear).

Manufacturer:

GC America
3737 W. 127th Street
Alsip, IL 60803
(800) 323-7063
(708) 597-0900
(708) 371-5103 FAX
www.gcamerica.com

Suggested Retail Price:

\$249.00 Linkmax Paste Pak Starter Package (item number 42001) contains:
-6.0 g (3.0 ml) Paste Pak Cartridge A3
-6.0 g (3.0 ml) Paste Pak Cartridge Clear
-3.0 ml Self-etching primer EP-A
-1.5 ml Self-etching primer EP-B
-50 Pink Micro-tips
-50 Yellow Micro-tips
-One Micro-tip handle
-One mixing dish, 3 well
-One mixing spatula
-Paste Pak Applicator

Government Price

\$102.40 Linkmax Paste Pak Starter Package (item number and contents as listed above)

ADVANTAGES:

- + Paste/paste formulation makes cement easier to dispense and mix than other brands of resin cement.
- + Film thickness is lowest of all resin cements yet evaluated by DIS.

- + One of the more inexpensive resin cements per gram of refill yet evaluated by DIS.
- + Easy to clean up excess cement from the margins.
- + Dispensing system was highly rated.
- + Working time is more than adequate.
- + Adequately radiopaque for detection on radiographs.
- + Expiration dates and lot numbers are provided on cement cartridges.
- + Proper storage conditions listed on product box.
- + No post-treatment sensitivity reported during evaluation.

DISADVANTAGES:

- Kit does not contain all components needed to cement any restorations.
- Ceramic, metal and composite primers must be purchased separately.
- Ceramic etchant is not an available accessory.
- Only two shades available.
- No try-in pastes available.
- Only one viscosity.
- Low bond strength to dentin.
- No long term clinical data.
- Not shipped with a Material Safety Data Sheet.
- Longer setting time (over 5 minutes) than other resin cements evaluated by DIS.

SUMMARY AND CONCLUSIONS:

Linkmax Paste Pak is a dual-curing resin cement designed to lute various types of prostheses to tooth structure. The product's dispensing system and handling characteristics were rated highly. Linkmax has the lowest film thickness of any resin cement yet evaluated by DIS. The working time, setting time, and radiopacity were good to excellent. Refill per gram of resin cement is one of the least expensive among products evaluated by DIS. However, the Starter Package does not contain all materials necessary to cement any restorations. Separate bottles of ceramic, metal, and composite primers must be purchased separately. The single-viscosity cement is available in only two shades and without any try-in pastes. **Linkmax Paste Pak Dual-Cure Resin-Adhesive Cement** is rated **Acceptable** for use by the federal dental services.

(Col Vandewalle)

69-12 SensiTemp Resin Temporary Cement

(Project 03-07)

SensiTemp Resin is a noneugenol-containing, resin-based cement for short- and long-term cementation of provisional restorations, and for permanent cementation of implant-retained crowns. The manufacturer claims that SensiTemp Resin has a two-stage setting reaction that makes it easy to handle. Ninety seconds after mixing, it reportedly enters a rubbery stage when excess cement can be removed. Within 4 to 5 minutes, the cement achieves its final rigidity. Although the cement does not contain eugenol, which can interfere with the polymerization of resin-based materials, it does contain potassium nitrate which Sultan claims will minimize post-operative sensitivity. SensiTemp is available in two packaging forms. It can be purchased preloaded in a 4-mL, hand-held automix syringe that mixes the cement's two pastes using a mixing tip. It is also available in a 25-mL cartridge for use in an automix gun dispenser.

Manufacturer:

Sultan Chemists, Inc
 85 West Forest Ave
 Englewood, NJ 07631
 (800) 637-8582
 (201) 871-1232
 (201) 871-0321 FAX
 www.sultanchemists.com

Suggested Retail Price:

- \$37.00 Hand-held 4-mL syringe kit with 20 mixing tips (item number 70010)
\$185.00 25-mL Cartridge kit with automix dispenser and 30 mixing tips (item number 70015)

Government Price

- \$22.20 Hand-held syringe kit (item number and contents as listed above)
\$111.00 Cartridge kit (item number and contents as listed above)

ADVANTAGES:

- + Easy to mix and dispense.
- + Easy to clean-up excess cement from the margins.
- + Easy to remove provisional at insertion appointment.
- + Working time is adequate.
- + Adequately radiopaque for detection on radiographs.
- + Expiration date and lot number provided on syringe and cartridge.
- + Material Safety Data Sheet provided in kit.
- + Does not contain eugenol.

DISADVANTAGES:

- Relatively expensive.
- Cartridge mixing tips retain relatively more unused cement.
- Longer setting time.
- Relatively high film thickness.
- Removal of residual cement from the preparation may be difficult.

SUMMARY AND CONCLUSIONS:

SensiTemp is a potassium-nitrate-containing, resin-based cement designed to temporarily lute provisional restorations to prepared tooth structure. Clinical evaluators rated SensiTemp as Good to Excellent and would consider its purchase for their clinic. The cement's mixing and dispensing system were appreciated, however, this convenience comes at a higher cost. The working time and radiopacity were acceptable, however, the setting time may be relatively long and the film thickness may be relatively high. The provisionals were easy to remove, but clean-up of residual cement from the prepared surfaces may be more difficult. Most providers preferred the convenience of the syringe system over the cartridge and gun, however, the cartridge system may be slightly more economical. **SensiTemp Resin Temporary Cement** is rated **Acceptable** for use by the federal dental services.

(Col Vandewalle)

69-13 L.E.Demetron 1**(Project 02-40)**

The L.E.Demetron 1 utilizes Light Emitting Diode (LED) technology to cure light-activated dental materials. LED lights generate light in wavelengths that more efficiently mirror the absorption wavelengths of the most common photoinitiator, camphorquinone. Greater efficiency and less power demand purportedly allows the use of battery-powered units. L.E. Demetron 1 features an ergonomic, lightweight, cordless design that reportedly produces constant output for 45 minutes before needing to be recharged. The handpiece presents a digital display of 10-, 20- or 40- second cure times. A spare battery and separate charger are supplied to extend working time. The charger has a built-in battery gauge to monitor charge levels and a radiometer to measure irradiance.

Manufacturer:

SDS/Kerr
21 Commerce Drive
Danbury, Connecticut 06810-4153
(800) 537-7123

(203) 748-0030
(203) 791-8284 FAX

Suggested Retail Price:

\$1200.00 L.E.Demetron 1

- 10 mm curved turbo light guide
- protective light shield
- wall plug-in transformer
- battery charger
- 2 battery packs
- auxillary stand for handpiece
- hardness disc.

Government Price: \$750.00 contents as listed above

ADVANTAGES:

- + Lightweight, slim design.
- + Highest measured irradiance value of any LED unit yet tested by DIS.
- + Wide range of sterilizable curing tips available.
- + Audible time indicator.
- + Adequately cures 2-mm increment of microfill composite in less than 30 seconds.
- + Easy intraoral access.
- + Minimal lateral heat from LED source.
- + Potential of extended bulb life.
- + Very quiet with minimal fan noise.
- + Ergonomically-placed timer controls.
- + Long battery life with no loss of irradiance.
- + Protective eye shield.
- + Built-in radiometer.
- + Two NiMH rechargeable batteries provided.
- + Low-battery warning light.
- + Disposable hardness discs.
- + Competitively priced.
- + CSA certified.

DISADVANTAGES:

- May not polymerize all photoinitiated dental materials.
- Large handle and long shape.
- Periodic battery replacement is necessary.

SUMMARY AND CONCLUSIONS:

The L.E.Demetron 1 is a well designed, easy-to-use, and lightweight light-emitting diode (LED) curing light from SDS/Kerr. The cordless curing light was capable of providing ninety-three 40-second exposures with no loss of irradiance. This should provide plenty of working time for even the busiest practice. Autoclaving the curing tips resulted in minimal loss of light intensity and no deleterious effects on the physical integrity of the tips. The light comes with a protective eye shield and a built-in radiometer. Laboratory testing found it capable of adequately polymerizing a 2-mm increment of microfill in less than 30 seconds, making the L.E.Demetron the most powerful LED unit yet evaluated by DIS. However, the curing light may not polymerize all photoinitiated dental materials due to the limited width of its emission spectrum. All clinical evaluators rated the L.E.Demetron 1 as either Excellent or Good and would recommend it as a replacement for their current curing light. The **L.E.Demetron 1** curing light is rated **Recommended** for use by the federal dental services.

(Col Vandewalle)

69-14 iBond

(Project 02-42)

Until recently, one of the major disadvantages of popular bonding agents was the complexity involved in their multi-step application process. iBond is a new bonding agent that features unit-dose packaging combined with one of the more direct and faster application techniques of currently-marketed products. The product combines the etchant, primer, and adhesive into one component. But, unlike other all-in-one adhesives, iBond requires no mixing, and represents a new step in packaging and application. iBond is an unfilled mixture of UDMA, 4-META, and camphoroquinone dissolved in acetone and water. The bonding agent is not to be used on uncut enamel or with chemical-curing resin composite materials. All self-etching products have a very acidic pH and many will inactivate the self-curing chemistry of the cement or restorative product. iBond is reportedly suitable for bonding composites, compomers, amalgam or porcelain and is available from Heraeus Kulzer in unit-dose capsules or a single 4-mL bottle.

Manufacturer:

Heraeus Kulzer, Inc
99 Business Park Dr
Armonk, NY 10504
(800) 431-1784
(914) 273-8600
(914) 273-9379 FAX
www.Heraeus-Kulzer-US.com

Suggested Retail Prices:

\$130.00 iBond Single-Dose Assortment (item number 66008944), includes:
-40 0.2-mL unit-dose containers of iBond
-50 microbrushes
-instructions

\$100.00 iBond Bottle Assortment (item number 66008943), includes:
-4-mL container of iBond
-50 microbrushes
-application wells
-instructions

Government Prices:

\$70.20 iBond (item number 66008944 as listed above)
\$54.00 iBond (item number 66008943 as listed above)

ADVANTAGES:

- + Requires few steps for application.
- + Is fast to apply with no mixing.
- + No separate etching step is required by instructions.
- + Can be applied to dried tooth structure, which helps standardize application procedure.
- + No reports of post-placement sensitivity.
- + Application process is shown pictorially on laminated card.
- + Recommended storage conditions are provided on instruction sheet and box.
- + Packaged in a small, space-saving box.
- + Packaged in unit-dose capsules.
- + Competitively priced
- + Expiration dates and lot numbers are stamped on individual components.

DISADVANTAGES:

- Dentin shear-bond strength was among the lowest of bonding products yet evaluated by DIS.
- Is not effective on uncut enamel.
- Is incompatible with chemical-activated materials.
- No clinical studies yet available.
- Some patients may object to the product's odor.
- Sclerotic dentin requires separate 30-second phosphoric-acid etch.
- No Material Safety Data Sheet (MSDS) provided with product.

SUMMARY AND CONCLUSIONS:

iBond is an innovative, unit-dose bonding product that is extremely quick to apply and easy to use. Its unit-dose packaging enhances infection control, prevents evaporation of the bonding agents, and makes clean-up easy. Unfortunately, the product has several important disadvantages. iBond's chief disadvantage is its low bond strength: the value was among the lowest of the bonding products yet tested by DIS. Equally problematic is that iBond has limited clinical applications. For example, it can only be used with light-activated materials or dual-activated materials that are adequately cured. Also, because it is incompatible with chemical-activated materials, it can not be used as a dentin/enamel pretreatment prior to luting restorations with chemical-activated resin cements. **iBond** is rated **Marginal** for use by the federal dental services.

(Col Vandewalle)

69-15 HEM-907 IntelliSense Digital Blood Pressure Monitor (Project 01-51)

The HEM-907 IntelliSense Digital Blood Pressure Monitor is a non-invasive blood pressure monitor that is said to use the latest in oscillometric technology to determine accurate blood pressure and pulse. The manufacturer purports blood pressure accuracy to be within three millimeters Hg, and pulse accuracy measuring within five percent of reading. Designed for clinic or other patient point-of-contact environments, the HEM-907 features a streamlined design compared to many current automatic blood pressure machines. Features of the HEM-907 include one-button operation, automatic pressure setting, automatic inflation/deflation, single and average reading modes, an auscultation mode, noiseless operation, and a large easy-to-read LCD screen. Two unique features include Hide and Average mode mechanisms. The Hide mechanism conceals the blood pressure reading from patient view, which is said to help alleviate White Coat syndrome sometimes associated with in-office hypertension screenings. The Average mode averages up to three readings, which is said to provide a more clinically relevant measurement. The HEM-907 includes a small, medium, and large cuff with bladder, AC adapter (120V, 50/60Hz), rechargeable nickel-metal hydride battery pack, instruction manual, and one-meter air tube. Optional accessories include cuff without bladders, additional bladders, 1.3-meter air tube, floor stand, wall-hanging kit, and a pole mounting kit. The latter three all include a cuff storage basket. The device comes with a 5-year limited warranty.

Manufacturer:

Omron Healthcare, Inc.
300 Lakeview Parkway
Vernon Hills, IL 60061
(800) 231-4030
(847) 680-6200
(800) 637-6763 FAX
www.omronhealthcare.com

Suggested Retail Price:

\$1300.00 Includes:
 1-HEM-907 Intellisense BP Monitor
 3-Blood Pressure Cuffs with built-in Bladder
 HEM 907 CL 19 (13-17 arm circumference)
 HEM 907 CR 19 (9-13 arm circumference)
 HEM 907 CS 19 (7-9 arm circumference)
 1-120V 60Hz AC Adapter (Model # HEM-AC-J)
 1-4.8V Rechargeable Nickel-Metal Hydride Battery Pack (HEM-907-PBAT)
 1-1.0m Air Tube (Model # HEM-Tube-100)
 1-Instruction Manual with Product Warranty and Registration Card

Optional Accessories:

Cuffs with built-in Bladder

\$58.00 HEM 907 CL 19 (13-17 arm circumference)
 \$51.00 HEM 907 CR 19 (9-13 arm circumference)
 \$51.00 HEM 907 CS 19 (7-9 arm circumference)

Cuffs without bladder

\$42.00 Large (HEM-907-CUFFL)
 \$38.00 Medium (HEM-907-CUFFM)
 \$33.50 Small (HEM-907-CUFFS)

Blasters

\$6.50 Large (HEM-907-BLDRL)
 \$6.50 Medium (HEM-907-BLDRM)
 \$6.00 Small (HEM-907-BLDRS)

\$140.00 Exclusive Floor Stand (Model # HEM-907-Stand)

\$92.00 Wall-Hanging Kit (Model# HEM-907-WKIT)

\$130.00 Pole-Mounting Kit (Model # HEM-907-PKIT)

\$29.00 120V 60 Hz AC Adapter (Model # HEM-AC-J)

\$40.00 4.8V Rechargeable Nickel-Metal Hydride (Ni-MH) Battery Pack (HEM-907-PBAT)

\$4.00 1.0m Air Tube (Model# HEM-Tube-100)

\$4.00 1.3m Air Tube (HEM-TUBE-130)

\$2.00 Y-Connector (23-049)

Government Price:

Includes items as listed above DPSC Stock # DAPA SP0200-01-H-0038

\$699.00 Includes:
 1-HEM-907 Intellisense BP Monitor
 3-Blood Pressure Cuffs with built-in Bladder
 HEM 907 CL 19 (13-17 arm circumference)
 HEM 907 CR 19 (9-13 arm circumference)
 HEM 907 CS 19 (7-9 arm circumference)
 1-120V 60Hz AC Adapter (Model # HEM-AC-J)
 1-4.8V Rechargeable Nickel-Metal Hydride Battery Pack (HEM-907-PBAT)
 1-1.0m Air Tube (Model # HEM-Tube-100)
 1-Instruction Manual with Product Warranty and Registration Card

Optional Accessories:

Cuffs with built-in Bladder

- \$29.00 HEM 907 CL 19 (13-17 arm circumference)
- \$25.50 HEM 907 CR 19 (9-13 arm circumference)
- \$22.50 HEM 907 CS 19 (7-9 arm circumference)

Cuffs without bladder

- \$22.50 Large (HEM-907-CUFFL)
- \$19.00 Medium (HEM-907-CUFFM)
- \$16.75 Small (HEM-907-CUFFS)

Bladders

- \$3.50 Large (HEM-907-BLDRL)
- \$3.25 Medium (HEM-907-BLDRM)
- \$3.00 Small (HEM-907-BLDRS)

\$70.00 Exclusive Floor Stand (Model # HEM-907-Stand)

\$46.00 Wall-Hanging Kit (Model# HEM-907-WKIT)

\$65.00 Pole-Mounting Kit (Model # HEM-907-PKIT)

\$14.50 120V 60 Hz AC Adapter (Model # HEM-AC-J)

\$20.00 4.8V Rechargeable Nickel-Metal Hydride (Ni-MH) Battery Pack (HEM-907-PBAT)

\$2.00 1.0m Air Tube (Model# HEM-Tube-100)

\$2.00 1.3m Air Tube (HEM-TUBE-130)

\$1.00 Y-Connector (23-049)

ADVANTAGES:

- + Accurately measures blood pressure and pulse.
- + Provided reliable function during clinical evaluation.
- + Patients reported the unit was comfortable during use.
- + Features automatic inflation/deflation system with rapid deflate function option.
- + Automatic pressure-setting function inflates cuff to patient's optimal pressure.
- + Various modes allow for Single, Average, Manual, and Check measurements.
- + Average mode displays mean blood pressure/pulse for up to three measurements.
- + Manual mode allows for stethoscope auscultation.
- + Hide function masks measurement readings.
- + Well constructed with a large, easy-to-read liquid-crystal display.
- + One-button operation facilitates ease of use.
- + Air tubes feature quick connect/disconnect for easy cuff change.
- + Easy to operate with minimal training required.
- + Operating manual well written and includes trouble-shooting guide.
- + Generates virtually no noise.
- + Stream-lined design is portable and light weight.
- + Floor stand and battery pack enhance portability of unit.
- + Met all electrical safety standards.
- + Comes with a 5-year limited warranty.

DISADVANTAGES:

- May be technique sensitive; patient must remain still with brachium of the arm maintained at the heart level and operator must be familiar with proper operational techniques.
- Biomedical Equipment Technicians may be unfamiliar with calibration requirements.

- Lacks printout capabilities.
- Not for use during long procedures that require automatic timed-interval measurements and printout capabilities.

SUMMARY AND CONCLUSION:

The HEM-907 IntelliSense Digital Blood Pressure Monitor is a digital-readout blood pressure/pulse monitor that is based on oscillometric technology. The unit is of light-weight design and the addition of the optional floor stand along with the rechargeable nickel-metal battery pack enhances its portability. Features of the unit include one-button operation, automatic pressure inflation setting, automatic inflation/deflation, and quiet operation. The HEM-907 also features four different operation modes with readings displayed on a large, easy-to-read LCD screen. The evaluators appreciated the unit's accurate readings, patient comfort, and easy-to-use features. The evaluator rated the HEM-907 as Excellent and recommended its purchase. Drawbacks include lack of printer capabilities, inability to provide readings over long procedures, technique sensitivity, and learning curve with calibration procedures. The **HEM-907 IntelliSense Digital Blood Pressure Monitor** is recommended for routine vital sign screenings during procedures such as Type 2 examinations and is rated **Acceptable** for overall use by the federal dental services.

(TSgt Sutter)

69-16 UltraTemp Temporary Polycarboxylate Cement

(Project 03-04)

UltraTemp is a water-soluble, noneugenol-containing, polycarboxylate luting and filling material indicated for the temporary cementation of provisional restorations, sealing of endodontic access openings, and temporary restoration of small preparations. UltraTemp, the company claims, has the attributes of polycarboxylates such as low irritation to the pulp and great sealing ability. The syringe system allows mixing and delivery in one easy step. The polycarboxylate cement reportedly remains water-soluble until set, providing easy clean-up. Once set, UltraTemp purportedly remains moist to seal out bacteria, prevent dehydration, and reduce post-operative sensitivity. UltraTemp is available in regular and firm set. Regular set is suggested for 2 to 4 weeks of temporization while firm set is recommended for longer retention.

Manufacturer:

Ultradent Products, Inc
 505 West 10200 South
 South Jordan, UT 84095
 (800) 552-5512
 (800) 842-9024 FAX
 www.ultradent.com

Suggested Retail Price:

\$39.95 Regular (item number 1174) or firm set (item number 3037) contains:
 -1 - 10-gm UltraTemp Syringe
 -20 - black collars
 -20 - mixing tips

Government Price:

\$33.96 Regular or firm set (item number and contents as listed above)

ADVANTAGES:

- + Easy to mix and dispense.
- + Easy to clean-up excess cement from the margins.
- + Easy to remove provisional at insertion appointment.

- + Working time is adequate.
- + Adequately radiopaque for detection on radiographs.
- + Expiration date and lot number provided on box.
- + Adequate film thickness.
- + Material Safety Data Sheet provided in kit.

DISADVANTAGES:

- Relatively expensive.
- Limited number of mixing tips provided in kit.
- Long setting time.
- Low compressive and diametral tensile strengths.
- Removal of residual cement from the preparation may be difficult.
- Expiration date and lot number not provided on individual syringes.

SUMMARY AND CONCLUSIONS:

UltraTemp is a noneugenol-containing, polycarboxylate cement designed to temporarily lute provisional restorations to prepared tooth structure and to temporarily restore small preparations and endodontic access openings. Clinical evaluators rated UltraTemp highly overall and would consider its purchase for their clinic. The products mixing and dispensing system was appreciated, however, the cost for this convenience is relatively high. The working time, film thickness and radiopacity were acceptable, however, the setting time may be relatively long. The provisionals were easy to remove, but clean-up of residual cement from the prepared surfaces may be more difficult. Laboratory testing found UltraTemp's strength properties to be relatively low, therefore caution should be exercised when using UltraTemp to temporize larger endodontic access openings or preparations. **UltraTemp Temporary Polycarboxylate Cement** is rated **Acceptable** for use by the federal dental services.

(Col Vandewalle)

69-17 Fuji Triage Glass-Ionomer Sealant & Temporary Restorative Material (Project 03-08)

Pit and fissure sealants play an important role in preventive dentistry. Since their introduction to the dental profession in 1967, sealants have been shown to prevent caries in pit and fissures and to arrest undiagnosed caries in non-cavitated pit and fissures. Sealants are usually resin-based composites and quite similar to each other with only minor variations in their method of placement and viscosity. Fuji Triage is a new low-viscosity glass ionomer by GC America. The chemically-setting, fluoride-releasing material is indicated for pit and fissure sealing, for filling of endodontic-access openings and for treatment of non-cavitated lesions. The company claims that the moisture-friendly glass ionomer is ideal for sealing partially-erupted molars and the self-bonding feature allows fewer steps in a shorter amount of time. The high fluoride release of Fuji Triage may be beneficial when used as an intermediate-restorative material in a situation of rampant caries.

Manufacturer:

GC America
 3737 W. 127th Street
 Alsip, IL 60803
 (800) 323-7063
 (708) 597-0900
 (708) 371-5103 FAX
 www.gcamerica.com

Suggested Retail Price:

\$175.99 Fuji Triage Starter Package (item number 439990) contains 50 capsules and applicator

-\$30.45 GC Cavity Conditioner

Government Price:

\$84.00 Fuji Triage Starter Package (item number and contents as described above)

-\$9.00 GC Cavity Conditioner

ADVANTAGES:

- + Easy placement for temporary restorations.
- + Convenient unit-dose capsules.
- + Reduced chemical-setting time with curing light.
- + Less moisture sensitivity.
- + Releases fluoride.
- + Lot number and expiration date printed on individual capsule package.
- + Written instructions and graphics are easy to understand and contain adequate detail.
- + Autoclavable applicator.

DISADVANTAGES:

- Thicker viscosity makes sealant placement difficult.
- Pink color may be objectionable.
- Tacky, sticks to instruments.
- Bulky dispenser may limit access.
- Conditioner and varnish must be purchased separately.
- Relatively low diametral tensile strength.
- No Material Safety Data Sheet (MSDS) provided with product.

SUMMARY AND CONCLUSIONS:

Fuji Triage is a new fluoride-releasing, chemically-setting glass ionomer used for pit and fissure sealing, filling of endodontic access openings, temporary restoration of rampant carious lesions, and cavity lining in patients at high risk for caries. The instructions and glossy summary card were well received by evaluators as well as the ease of mixing and dispensing. However, users reported difficulties when handling the material during sealant placement; reporting that the viscosity increased rapidly, limiting working time and the ability to flow a small amount of the material into the depths of the pits and fissures. Also, many operators objected to the pink color. Due to its moisture tolerance, Fuji Triage may be useful as a sealant in cases with difficult isolation, such as partially-erupted molars. However, some evaluators noted that the bulky dispenser limited access to posterior areas. The glass ionomer received better reviews when used to close endodontic access openings or for intermediate restorations. However, most providers rated the glass ionomer as only Average or Fair overall and would not consider its purchase for their clinic. **Fuji Triage** is rated **Marginal** for use as a sealant and **Acceptable** for use as an intermediate restorative material in the federal dental services.

(Col Vandewalle)

69-18 EG9000B Dental Operator Stool

(Project # 02-10)

The EG9000B Dental Operator Stool is an ergonomically-designed stool that is marketed for dental professionals. The stool is said to enhance proper posture while reducing problems associated with musculoskeletal disorders. The EG9000B's features include a contoured adjustable back rest that is designed to cradle and support the lumbar region. The synchronized tilt of the seat and backrest are said to promote proper curvature of the spine and the shallow seat pan purportedly keeps the clinician positioned against the backrest while maintaining proper pelvic tilt. The contoured Cut-Out seat with waterfall edges is said to enhance proper weight distribution by reducing lower back and thigh pressure

which the manufacturer claims to eliminate the possibility of circulation compromise to the lower leg. Asepsis and infection control procedures are said to be maximized with a design that uses screwless components and smooth, seamless vinyl upholstery. The 38-pound stool is available in multiple color schemes and is positioned on a five-caster aluminum base that is advertised to provide both stability and easy maneuverability. The EG 9000B Dental Operator Stool comes with a five-year warranty.

Manufacturer:

The Brewer Company
13901 Main Street
Menomonee Falls, WI 53051
(800) 558-8777
(262) 251-9530
(262) 251-1786 FAX
www.brewercompany.com

Suggested Retail Price:

\$834.75 EG9000B Dental Operator Stool

Government Price:

\$417.38 EG9000B Dental Operator Stool

ADVANTAGES:

- + Comfortably accommodates to various body dimensions.
- + Evaluators reported perceived improved posture, comfort, and reduction in fatigue.
- + Synchronized backrest/seat tilt feature provided proper anatomical sitting alignment.
- + Easy and convenient to maneuver in dental operatory.
- + Lockable adjustment mechanisms are conveniently placed and easy to operate.
- + Seat height-adjustment lever allows for adaptation to body height.
- + Adjustable backrest provided superior lumbar support.
- + Adjustable locking seat-back tilt allows user control and individualization of stool synchronizing mechanisms.
- + All mechanisms operated reliably during the course of this evaluation.
- + Seamless vinyl upholstery facilitates ease of cleaning and asepsis.
- + Ergonomic design features a classical look that was reported to be esthetically pleasing.
- + Appears to be of solid-construction with high-quality fit and finish.
- + Five-star caster base with double wheels provided excellent stability and maneuverability.
- + Concise operating instructions complete with graphics for visual interpretation.
- + Includes a five-year warranty.

DISADVANTAGES:

- Some evaluators reported the stool to be bulky.
- More expensive than other dental operatory stools on federal service contract.

SUMMARY AND CONCLUSION:

The EG 9000B Dental Operator Stool features an ergonomic design that is marketed to improve posture and help reduce lower back pain in the dental environment. The stool was found to be esthetically pleasing, of apparent solid construction, with a high-quality finished appearance. The double-wheeled, five-star caster base provided excellent stability and maneuverability. Features include three adjustment mechanisms that allow for individual adaptation and can be locked for individual preference. Seamless vinyl upholstery facilitates asepsis. Clinical users reported perceived improved posture, work comfort, and reduction in overall fatigue. A small minority of evaluators reported the stool to be bulky and cumbersome and thought the 17-22.5 inch pneumatic height adjustment should be increased to allow for greater

adaptation. However most users appreciated the overall size and working-height capabilities of the stool. The biggest downside to the stool is its cost, which is approximately \$100.00 more than other dental operator stools currently on the federal contract. An overwhelming majority of evaluators lauded its comfort and features and recommended its purchase for their clinic. The **EG9000B Dental Operators Stool** is rated **Acceptable** for use by the federal dental services.

(TSgt Sutter)

69-19 EG9020BR/L Dental Assistant Stool

(Project # 02-11)

The EG9020BR/L Dental Assistant Stool is an ergonomically-designed stool that is marketed for dental professionals. The stool is said to enhance proper posture while reducing problems associated with musculoskeletal disorders. The EG9020BR/L features include a contoured adjustable backrest that is designed to cradle and support the lumbar region. The synchronized tilt of the seat and backrest are said to promote proper curvature of the spine and the shallow seat pan purportedly keeps the clinician positioned against the backrest while maintaining proper pelvic tilt. The contoured Cut-Out seat with waterfall edges is said to enhance proper weight distribution by reducing lower back and thigh pressure which the manufacturer claims helps to eliminate the possibility of circulation compromise to the lower leg. The Swingmatic assistant arm provides additional support and adjusts both in the vertically and horizontal dimension, while the 18-inch diameter, circular footring adds to the supporting features. Asepsis and infection control procedures are said to be maximized with a design that uses screwless components and smooth, seamless vinyl upholstery. The 58-pound stool is available in multiple color schemes and is positioned on a five-caster aluminum base that is advertised to provide both stability and easy maneuverability. The EG9020BR/L Dental Assistant Stool comes with a five-year warranty.

Manufacturer:

The Brewer Company
13901 Main Street
Menomonee Falls, WI 53051
(800) 558-8777
(262) 251-9530
(262) 251-1786 FAX
www.brewercompany.com/

Suggested Retail Price:

\$1044.75 EG9020BR/L Dental Assistant Stool

Government Price:

\$522.38 EG9020BR/L Dental Assistant Stool

ADVANTAGES:

- + Accommodates comfortably to various body dimensions.
- + Evaluators reported perceived improved posture, comfort, and reduction in fatigue.
- + Synchronized backrest/seat tilt feature provided proper anatomical sitting alignment.
- + Lockable adjustment mechanisms are conveniently placed.
- + Seat height-adjustment lever allows for adaptation to body height.
- + Adjustable backrest provided good lumbar support.
- + Adjustable locking seat-back tilt allows user control and individualization of stool synchronizing mechanisms.
- + "Swingmatic" body support arm adjusts both in the horizontal and vertical dimension.
- + Footring provides additional support for lower third of body.

- + All mechanisms operated reliably during the course of this evaluation.
- + Seamless vinyl upholstery facilitates cleaning and asepsis.
- + Ergonomic design features a classical look that was reported to be esthetically pleasing.
- + Appears to be of solid-construction with high-quality fit and finish.
- + Five-star caster base with double wheels provided excellent stability and maneuverability
- + Concise operating instructions complete with graphics for visual interpretation.
- + Available in left-handed or right-handed versions.
- + Includes a five-year warranty.

DISADVANTAGES:

- Bulkiness impeded convenient use in the dental operatory.
- "Swingmatic" arm reportedly was difficult to operate.
- More expensive than other dental operatory stools on federal service contract.

SUMMARY AND CONCLUSION:

The EG9020BR/L Dental Assistant Stool features an ergonomic design that is marketed to improve posture and help reduce lower back pain in the dental environment. The stool was found to be esthetically pleasing, of apparent solid construction, with a high-quality finished appearance. The double-wheeled, five-star caster base provided excellent stability and maneuverability. Features include adjustment mechanisms that allow for individual adaptation which can be locked for individual preference. The stool's seamless vinyl upholstery was found to facilitate asepsis. Some clinical users reported perceived improved posture, work comfort, and reduction in overall fatigue. However, most evaluators reported the stool was too bulky and cumbersome for use in smaller dental treatment rooms and found the "Swingmatic" adjustable arm rest difficult to operate. Another downside to the stool is its cost, which is approximately \$150.00 more than other dental assistant stools currently on the federal contract. Most evaluators were ambivalent to many of the stool's features and perceived no advantage over other stools in the federal inventory. Consequently, the majority of the evaluators did not recommend its purchase for their clinic. The **EG9020BR/L Assistant Stool** is rated **Marginal** for use by the federal dental services.

(TSgt Sutter)

LABORATORY

69-21 SENSit Laboratory Chair

(Project 02-09)

The SENSit Chair is an ergonomically-designed chair that is marketed for both dental laboratory professionals and administrative support staff. The manufacturer states that the chair is designed to relieve strain associated with sustained, forward-bent work positions. The 37.5-pound laboratory chair is designed without arm support while the 42-pound office chair model includes height-adjustable arm rests. The SENSit chair is advertised to adapt to individual anatomy with a specially-designed, synchronized backrest/seat mechanism that will make dynamic adjustments in relation to changes in the seat's backrest angle and incline. Accordingly, the SENSit's 15-inch wide backrest and 17.5-inch wide seat are connected by an articulated joint. As the backrest-opening angle increases, the seat surface will accordingly move in a compensating backward inclination. This counterbalancing action is said to relieve spinal pressure while aligning the vertebral column in a more natural position. Five standard adjustment options (height, backrest, backrest resistance, one-inch horizontal seat movement, and seat/backrest incline) allow for seat adaptation to individual preference and body type. The backrest purportedly adjusts from 15.75 to 18.5 inches in length from the seat surface and the seat height is said to range from 18.5 to 24 inches from the floor. The chair is positioned on a five-star caster base that is advertised as providing stability and maneuverability. The upholstery, is purportedly made of an easy to clean, non-slip, moisture-permeable material, and is available in five color schemes. A laboratory hand-towel holder is located on the rear of the backrest for technician convenience. Optional features include a seat-cushion cover, leather upholstery, and footrest. The SENSit chair features a full one-year warranty.

Manufacturer:

KaVo America Corporation
340 East Main Street
Lake Zurich, IL 60047
(800) 323-8029
(847) 550-6800
(847) 550-6825 FAX
www.kavousa.com

Suggested Retail Price:

SENSit Laboratory Chair
\$869.00 (without armrests)
\$1099.00 (with armrests)

Optional Accessories:

\$329.00 Backrest cushion leather
\$313.00 Seat cushion leather
\$249.00 Footrest
\$103.00 Seat cushion cover

Government Price:

SENSit Laboratory Chair
\$556.16 (without armrests)
\$703.36 (with armrests)

Optional Accessories:

\$210.56 Backrest cushion leather

\$200.32 Seat cushion leather

\$159.36 Footrest

\$65.92 Seat cushion cover

ADVANTAGES:

- + Comfortably accommodates to various body dimensions.
- + Evaluators reported perceived improved posture, comfort, and reduction in fatigue.
- + Synchronized backrest/seat tilt feature provided proper anatomical sitting alignment.
- + Easy and convenient to maneuver in dental laboratory and administrative support areas.
- + Five lockable-adjustment mechanisms are conveniently placed and easy to operate.
- + Seat height-adjustment lever allows for adaptation to body length.
- + Adjustable backrest provided superior lumbar support.
- + Adjustable backrest resistance allows user to control the synchronizing mechanism according to each individual's body weight.
- + Seat horizontal-adjustment mechanism ensures backrest is in optimal relationship to each user.
- + Seat and backrest incline mechanism angles user to desired position.
- + All mechanisms operated reliably during the course of this evaluation.
- + Ergonomic design features a classical look that was reported to be esthetically pleasing.
- + Appears to be of solid-construction with high-quality fit and finish.
- + Five-star caster base with double wheels provided excellent stability and maneuverability.
- + Hand-towel holder on rear of chair facilitates convenience.
- + Concise operating instructions complete with graphics for visual interpretation.
- + Includes a one year warranty.

DISADVANTAGES:

- More expensive than some other dental laboratory chairs on federal service contract.
- Standard upholstery available only in cloth fabric, which may represent laboratory-cleaning problems.
- Multi-language operating instruction format may be confusing to some users.

SUMMARY AND CONCLUSION:

The SENSit laboratory chair features an innovative design that is marketed to improve posture and ergonomics in the dental environment. The chair was found to be esthetically pleasing, of apparent solid construction, with a high-quality finished appearance. The double-wheeled, five-star caster base provided excellent stability and maneuverability. Features include five adjustment mechanisms that allow for individual adaptation that can be locked for individual preference. Available options include leather upholstery, seat cushion cover, and footrest. Clinical users reported perceived improved posture, work comfort, and reduction in overall fatigue. Some evaluators reported the armrest was not compatible with their working bench, however most users appreciated the armrest's ability to help reduce arm strain. Dental laboratory technicians may best be served using the armless version of the SENSit chair. The SENSit chair's standard upholstery is a cloth fabric, which may represent a cleaning problem in the laboratory environment. Leather is available as an option. While the chair is more expensive than those currently on the federal service contract, most evaluators lauded its comfort and features regardless of working environment and recommended its purchase for their clinic. The **SENSit chair** is rated **Acceptable** for use by the federal dental services.

(TSgt Sutter)

INFECTION CONTROL

69-21 Sterisil PureTube BR Cartridge

(Project 03-01)

Sterisil's PureTube BR is a continuous water treatment system designed to reduce microorganism concentration in dental unit waterlines below the American Dental Association (ADA) goal (i.e., 200 CFU/ml or less) for water quality. The PureTube BR cartridge is designed for use with independent water reservoir systems. The cartridge attaches to the existing fittings (i.e., 1/8" or 1/4" tubing) within the dental unit's independent water reservoir. The manufacturer claims the PureTube BR cartridge purifies dental unit water by releasing ionized colloidal silver continuously for 90 days or 60 liters of water, whichever comes first. This process reduces microorganisms in water supplied from an independent water reservoir resulting in dental unit water meeting or exceeding the ADA recommendation. Distilled water or high quality tap water is recommended for use in the independent water reservoir. Initial treatment of the waterlines with the ShockTube SKB for one week is recommended to deactivate existing biofilm. Ozonated water or tap water exceeding 10 grains of hardness should not be used because it will interfere with the product's function. The manufacturer recommends continuation of recommended flushing protocols (e.g., 20-30 second flush of handpieces, ultrasonic scalers, air/water syringe after each patient) and periodic sterilization of the independent water reservoir when using the PureTube BR cartridge.

Manufacturer:

Sterisil
200 South Wilcox #417
Castle Rock, CO 80104
(877) 755-PURE
(719) 481-0937
(719) 481-0349 FAX
www.sterisil.com

Suggested Retail Price:

ShockTube SKB (bottle) \$25.00
PureTube BR (bottle) \$129.00

Government Price:

ShockTube SKB (bottle) \$13.75
PureTube BR (bottle) \$70.95

ADVANTAGES:

- + Produced water meeting or exceeding current ADA recommendations (i.e., ≤ 200 CFU/ml).
- + More time efficient when compared with other waterline disinfection procedures.
- + No need for weekly waterline disinfection procedures.
- + Simple technique: minimizes technician compliance.
- + No mixing or dilution required.
- + Minimal maintenance.
- + Less likely to damage dental unit components than bleach.
- + Easily installed on units with an independent water reservoir.
- + User-friendly instructions.
- + No offensive odor or taste noted.
- + No clogging of dental unit waterlines or signs of residue noted.

- + Includes replacement reminder label.
- + No special disposal requirements for the used cartridge.

DISADVANTAGES:

- More expensive than diluted bleach
- Not recommended for use with ozonated water or tap water exceeding 10 grains of hardness
- Manufacturer recommends periodic sterilization of the independent water reservoir.

SUMMARY AND CONCLUSIONS:

The PureTube BR continuous water treatment system was found to be easy to install and use. All evaluators rated the product excellent overall. During the 12-week evaluation period, all dental water samples met the ADA recommendation of 200 CFU/ml or less. The PureTube BR water treatment system is non-corrosive, reducing the likelihood of damage to the dental unit when compared with using diluted bleach. The manufacturer recommends changing the PureTube BR cartridge every 90 days or 60 liters of water, whichever comes first. This eliminates the need for weekly waterline disinfection, minimizes technician compliance, and results in considerable time savings. The **PureTube BR cartridge** is rated **Recommended** for use by the federal dental services.

(Lt Col Harte)

UPDATE

Since the completion of this evaluation, Sterisil introduced an improved version of the PureTube BR continuous water treatment system. The **PureTube BR360** is packaged with an antimicrobial coated water bottle, which eliminates the need for periodic sterilization of the water reservoir. Sterisil claims the PureTube BR360 and antimicrobial bottle will last for 1 year of service with the use of distilled water. The PureTube BR360 cartridge and antimicrobial coated bottle are available for \$340.00 (retail) and \$187.00 (government).

69-22 Synopsis of Dental Unit Water Quality Testing Products (Project 03-26)

Water treatment and monitoring products require strict adherence to maintenance protocols. Non-compliance with treatment regimens has been associated with persistence of microbial contamination in treated systems. Clinical monitoring of water quality can ensure that procedures are properly performed and that devices are working in accordance with the manufacturer's previously validated protocol. There is no need to identify specific organisms unless investigating a waterborne illness or a unit refractory to treatment. Testing should accurately detect a wide concentration range and type of aerobic, mesophilic, heterotrophic, waterborne bacteria within a reasonable incubation time at room temperature. There are two options:

- 1) Water samples can be submitted to the microbiology lab or Bioenvironmental Engineering and cultured using method 9215 (heterotrophic plate count) as described in Standard Methods for the Evaluation of Water and Wastewater (American Public Health Association, American Waterworks Association, Water Environment Foundation); 1999:9-1 9-41, or
- 2) Use of an in-office self-contained system that is equivalent to method 9215.

The following synopsis consists of a table (HTML version, PDF version) listing selected commercially available dental unit water quality testing products, their manufacturers, and basic information. This synopsis should assist the reader in selecting a dental unit water quality-testing product.