

DENTAL ITEMS OF SIGNIFICANCE 65

May 2002

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ADMINISTRATION

65-01 The Importance of Reporting Medical Materiel Problems to Medical Logistics

Dental personnel occasionally discover defects or encounter problems with materiel used in their dental facility. For example, an impression material or an x-ray machine may not perform as the manufacturer advertises or may be a hazard to patients and the dental staff. Materiel defects are uncommon, but sometimes are evidence of a generalized problem with a batch or brand of the product that other facilities are also encountering. Poor manufacturer support can also occasionally be experienced following purchase of a product. If you identify a materiel or manufacturer support problem, there are three things that you should do:

1. Do not accept the problem as a nuisance or shrug it off.
2. Call DIS [DSN 792-7676, Commercial (847) 688-7676] and let us know about the problem.
3. Most importantly, **fill out Standard Form 380 (Reporting and Processing Medical Materiel Complaints/Quality Improvement Report) and properly coordinate the routing of the SF380 prior to submission. The routing is the responsibility of Medical Logistics.**

The SF380 is official documentation that identifies a specific materiel complaint. It is required by both the Joint Readiness Clinical Advisory Board (JRCAB) [formerly the Defense Medical Standardization Board] and the Defense Support Center Philadelphia (DSCP) so that the nature of the defect can be determined and its resolution coordinated through the Food and Drug Administration (FDA). If the problem is not documented on an SF380, it doesn't exist as far as these agencies are concerned.

If a patient or staff member is injured because of the purported medical materiel defect, you should complete an AF Form 765 (Hospital Incident Report) and forward it to your facility's Risk Manager within 24 hours. If an AF Form 765 is completed, a copy should be attached to any SF380 that is forwarded to other agencies.

Types of Medical Materiel Complaints

Type I - Involves supply or equipment items that are harmful or defective to the extent that using them is dangerous to patients and/or medical personnel (i.e., they can cause injury or death).

Type II - Involves non-equipment items that are suspected of being defective, deteriorated, or otherwise unsuitable for use.

Type III - Involves equipment items that are determined to be unsatisfactory because of defects, malfunction, or design.

Reporting Procedures

The procedures for proper submittal of an SF380 and the proper management of defective material or equipment problems are outlined in AFMAN 23-110, USAF Supply Manual, Volume 5, Chapter 19, pages 19-1 through 19-9. **Ensuring that the SF380 is routed to the appropriate offices/individuals within the medical facility before sending it to DSCP is very important.**

Time Submission Requirements

All three types of complaints should be initially classified as to type by personnel familiar with details of the complaint. For Type I complaints, the Medical Treatment Facility (MTF) commander should be briefed

and his/her approval obtained for the facility's Director of Medical Logistics to immediately report the complaint by telephone or electronic message to DSCP-MRCM. For Type II and III complaints, the SF380 should be completed and routed through the medical facility within 48 hours so it can expeditiously be transmitted to DSCP-MRCM.

Once an SF380 has been received at DSCP, they provide DIS with a copy of it for proper review and/or action.

Paper versions of the SF380 may no longer exist at some locations within the federal supply system because electronic transmission is the preferred submission format. Dental personnel may want to submit a material complaint using the electronic format, however DIS recommends against this. The reason is that electronic transmission makes it impossible to route the form to the appropriate offices/personnel within the MTF. **According to current instructions, the SF380 must be properly coordinated before submission, and this should be done by Medical Logistics.** Dental personnel may download an SF380 to use as a worksheet, however, from <http://web1.whs.osd.mil/ICDHOME/SFEFORMS.HTM>. DIS can also fax a copy of the form or send it to you via e-mail. For complete instructions on completing the form, please visit <http://dscp305.dscp.dla.mil/dmmonline/forms/sf380ins.asp>.

(Lt Col Roberts)

References:

DSCP Dental Equipment: DSN 444-9098, Commercial (215) 737-9098 Commercial FAX (215) 737-4113 (Mr. Robert Zalewski) paa2611@dscp.dla.mil

DSCP Dental Devices and Materials: DSN 444-2129, Commercial (215) 737-2129, DSN FAX 444-2081 (Mr. Paul Licht) plicht@dscp.dla.mil

JSDMCG: DSN 343-4075, Commercial (301) 619-4075, DSN FAX 343-4399 (Col Morris R. Lattimore, MSC, USA)

Lt Col Howard Roberts, USAF Dental Investigation Service: DSN 792-7679/7675, Commercial (847) 688-7679/7675, Commercial FAX (847) 688-7667, DSN FAX 792-7667, howard.roberts@ndri.med.navy.mil

References for further information include: AFI 44-119, Quality Assurance and Risk Management in the Air Force Medical Service; AFI 41-201, Managing Clinical Engineering Problems; and AFMAN 23-110, Vol 5, Chap 19.

65-02 Proper Cleaning of Insert Tips for the Cavitron Ultrasonic Scaler

Periodically, DIS is asked how the insert tips for the Cavitron brand of ultrasonic scalers (Dentsply Professional Division) should be cleaned prior to packaging and sterilization. Specifically, people want to know if they can clean the tips by processing them through a thermal disinfectant (such as those from Miele, Steris, and Getinge/Castle) without damaging them. This is an important question because ultrasonic scaler tips usually come into contact with blood and saliva during subgingival scaling. Since contaminants should always be removed from instruments prior to sterilization, knowing the proper way to do this is important. The Dentsply Professional Division's recommendation is to not process the tips through a thermal disinfectant. The reason given by Dentsply is that the company has not conducted testing to determine if processing in these units has an adverse effect on the insert tips. As an alternative, Dentsply recommends rinsing the tips under water to remove gross debris prior to sterilization. Other pre-sterilization procedures, such as using an ultrasonic cleaner, will void the Cavitron tip warranty. Please note that personnel who perform this task should wear proper personal protective equipment such as a mask, gown, heavy-duty utility gloves, and protective eyewear.

(MSgt Belde)

QUESTIONS & ANSWERS

"Questions & Answers" is a feature in which we present and answer the questions we most frequently receive from the field. This month we feature questions about online sources for MSDSs, using wrist-style blood pressure monitors in federal dental clinics, and color-corrected lighting. 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 240-3502.

65-03 Chasing the Elusive MSDS

Question: Is there a centralized source for electronically obtaining Material Safety Data Sheets (MSDSs)? We are looking for an easy way to get the MSDSs we are missing for some products we use in our clinic.

Answer: For those who may not know, Material Safety Data Sheets (MSDSs) provide information to workers and emergency personnel about handling and working with hazardous materials. Each hazardous material's MSDS contains various types of information including its physical properties, health effects, and the proper way of disposing of it. Perhaps most importantly, MSDSs list the protective equipment that should be worn and measures that should be taken by workers to avoid exposure to the material. Procedures are also given that should be followed in the event of a leak or spill. For these reasons, MSDSs are important to have for the products you use in your dental facility. Another good reason for having them is that they are required by the Occupational Safety and Health Administration (OSHA), and have been since 1986.

There are several ways of electronically obtaining MSDSs for dental products. Perhaps the most direct way is by visiting the web site of the manufacturer of the product you're interested in. This is usually where the most current MSDSs can be found. Several dental product manufacturers make MSDSs available for downloading on their web sites. A list of some of these MSDS sites by manufacturer are given in the following table.

BISCO site: http://www.bisco.com/technicalinfo/Aza_Bisco_instructions.asp?path=instructions1
Dentsply/Caulk site: http://www.caulk.com/pages/products/products_search.html
Dentsply Pharmaceutical site: http://www.dentsplypharma.com/msds.htm
GC America site: http://www.gcamerica.com/msds.html
Heraeus Kulzer site: http://www.kulzer.com/msds.htm
J. Morita site: http://www.jmoritausa.com/main.htm (This gains access to the home page, then select individual products to obtain their MSDSs)

<p>Kuraray site: http://www.kurarayamerica.com/main.cfm (This gains access to the home page, then select the MSDS button)</p>
<p>Parkell site: http://www.parkell.com/msds.asp</p>
<p>SDS/Kerr site: http://www.kerrdental.com/Publications/msds_US.html</p>
<p>3M ESPE site: http://products.mmm.com/US/healthcare/MSDS/msdsSearch.jhtml</p>
<p>Ultradent site: http://www.ultradent.com/ (This gains access to the home page, then select individual products to obtain their MSDSs)</p>

If the dental product manufacturer doesn't have the MSDS you want listed on its site, another (less efficient) way of searching for it is by visiting web sites that deal specifically with MSDSs and provide search engines for locating them. A very good site is www.msdssearch.com, which allows searches by manufacturer and product name. Another excellent site that contains comprehensive information about MSDSs is provided by Interactive Learning Paradigms, Inc. (<http://www.ilpi.com/msds/index.html>). Among other things, the site describes what an MSDS is, the type of information it provides, and has a glossary of terms commonly found on MSDSs. Most importantly, the site lists other hyperlinked web sites that can be used to obtain MSDS information for specific products. Three of these sites bear special mention. MSDSolutions.com (<http://www.msdsolutions.com>) claims to have MSDSs for 350,000 products. To use it, you have to register, or use an anonymous login for a limited number of searches. After that, a fee applies. A second useful site for obtaining MSDS information is one maintained by Cornell University (<http://msds.pdc.cornell.edu/msdsrch.asp>) that purportedly has listings for 250,000 MSDSs. This site is searchable by keyword. Finally, a site maintained by the University of Vermont (<http://siri.uvm.edu/msds/>) allows you to search for MSDSs by product name, company name, or National Stock Number (NSN). In addition, it provides a list of manufacturers, arranged alphabetically, that you can use to directly access a specific manufacturer's MSDS web site. Be aware that these sites list MSDSs for all kinds of products, not just dental ones. Probably because of that, your success rate in locating an MSDS for a particular dental product may be lower than you would expect. A trial use of these search sites by DIS found that they produced MSDSs for requested dental products about 30% of the time. Again, the best way to electronically obtain an MSDS is through the manufacturer of the product.

(Col Charlton)

65-04 Wrist Blood Pressure Monitors in the Dental Clinic

Question: Our clinic is currently using a wrist blood pressure (BP) monitor. Our Medical Maintenance people told us that it isn't possible to do periodic maintenance on them and that there is no way to verify their accuracy. As a result, they won't place periodic maintenance stickers on the monitors. Are wrist BP monitors appropriate for use in a federal dental clinic since their accuracy can't be checked?

Answer: DIS believes that wrist BP monitors are acceptable for measuring blood pressure in screening situations such as an annual dental examination, however they should not be considered an alternative to traditional automatic blood pressure machines where the cuff is placed on the upper arm. There is no denying, however, that blood pressure monitors that use a cuff placed around the wrist are becoming very popular. This is probably because they are faster to apply than arm-cuff models, easier to use, and allow you to take measurements without the patient needing to remove his/her coat or adjust their shirtsleeve.

DIS recently evaluated one wrist BP monitor (HEM-608, Omron Healthcare; see *DIS* 62-17) and found it to

be quite accurate compared to a traditional automatic BP monitor. One of our concerns during the evaluation was the fact that, unlike arm-cuff monitors, this monitor couldn't be calibrated and easily checked for accuracy. The manufacturer of the evaluated units states that their devices are factory calibrated and purportedly never need recalibration. During our testing, we received documentation from the manufacturer verifying the unit's accuracy during factory calibration. We did a side-by-side test using a calibrated automatic arm-cuff monitor. We found that both devices were within their claimed specified range and, as a result, we are comfortable with the use of this specific model for routine screenings. This is not to say that wrist BP monitors are without problems. Consumer Reports magazine evaluated blood pressure monitors in 1992 and 1996. They found that wrist monitors were generally less accurate than arm-cuff monitors. It should also be noted that they are quite technique sensitive. For example, the wrist must be at heart level or inaccurate readings can occur. We recommend that if the patient's BP reading measured with a wrist monitor is abnormal, cuff placement and wrist position should be reassessed, the unit's battery power checked, and the reading re-accomplished. If still abnormal, you should retake the BP using a calibrated arm-cuff monitor. DIS strongly recommends that if you are using a wrist BP monitor, that you periodically verify its accuracy by comparing its readings to those obtained with a calibrated arm-cuff monitor. You can compare the wrist monitor's reading to that of the other monitor as well as to the manufacturer's claimed accuracy range (e.g., the wrist model DIS evaluated was purported to be accurate to ± 3 mm/Hg or 2% of the reading, whichever was greater).

Because of these factors, **DIS recommends that if a wrist monitor is used in a federal dental clinic, that it be limited to screening situations, such as annual dental examinations. During surgical or other types of invasive procedures, the traditional arm-cuff monitor should be used.**

(TSgt Sutter)

65-05 Detergent Options for the Miele G7781 Dental Thermal Disinfecter

Question: I'm confused about what detergents and rinses need to be used with the Miele Instrument Washer. Can you explain it, and are there alternatives to using the Miele company's detergents?

Answer: Many Air Force dental clinics use the Miele G7781 thermal disinfecter for cleaning and disinfecting contaminated instruments prior to sterilization. Deciding on the type of detergent and how to use it with the unit can be confusing. This article will explain the use of Miele brand detergents as well as a third-party option. Depending on what detergent is used, the Miele may use up to three chemicals per wash cycle: the detergent, a neutralizing rinse, and a final rinse aid.

WASH CYCLE SUMMARY

1. Detergent:

Either an alkaline or a neutral detergent can be used. Alkaline detergents are reported to be more efficacious than neutral detergents for removing protein, fats, and oils, but alkaline detergents can damage anodized aluminum instruments and cassettes. Previous testing by DIS (see *DIS* 47-39) showed that Getinge/Castle's Neutrawash detergent (pH 7) cleaned as well as Miele's alkaline wash (pH 11.4-11.9) and acid rinse combination, and the cost was considerably less.

Detergents are available in either powder or liquid form.

Powder detergent option With this type of detergent, the powder is placed inside the unit each time a cycle is run. It is placed into a dispensing unit with a lid, which is located inside the Miele washer. This is similar to adding powder detergent to a home dishwasher.

Liquid detergent option Use of liquid detergents avoids the extra step of adding powder to each cycle because the liquid detergent is dispensed automatically by the Miele. Use of a liquid detergent requires purchasing an accessory, the DOS Module C60 (approximately \$550). This is a small control box that regulates the automatic dispensing of liquid detergent into the washer. The DOS Module and detergent

container sit outside of the washer. An optional cabinet (Miele model G7796, \$1500) is available for storing them. It matches the Miele washer and can be placed immediately beside it. One storage cabinet can hold DOS Modules and detergent containers for two Miele washers.

2. Neutralizing Rinse:

If the detergent used is strongly alkaline, it must be followed by an acidic neutralizing rinse to neutralize the alkalinity. This acid neutralizer is always a liquid. The container for the neutralizer resides outside of the washer, and tubing runs between the washer and the detergent container. An automatic dispensing pump for the neutralizing rinse is incorporated into the washer as standard equipment. The container for the liquid neutralizing agent can be placed inside the optional G7796 storage cabinet mentioned above.

3. Final Rinse:

A rinse aid solution may be added in the final rinse cycle. This solution is automatically dispensed from a container located in the door of the washer. The rinse aid helps break down surface tension for faster drying and helps minimize residual spots and films.

CHOICES

Wash cycle comparisons and product comparisons are shown in the tables below. Note that the most economical detergent solution may be to use Castle's Neutrawash. If inadequate cleaning of protein debris is a problem, switching to Castle's Tec Wash III may help.

Company contact information:

Miele Appliances, Inc.
 9 Independence Way
 Princeton, NJ 08540
 (800) 843-7231
 (609) 419-9898
 (609) 419-4298 FAX
 www.miele.com
 e-mail: products@mieleusa.com

Getinge/Castle, Inc.
 1777 E. Henrietta Road
 Rochester, NY 14623-3133
 (800) 394-4638
 (716) 475-1400
 (716) 272-5033 FAX
 www.getingecastle.com
 e-mail: info@getingecastle.com

Government facilities, contact Getinge/Castle at:
 P.O. Box 9766
 Arnold, MD 21012
 (716) 475-1400
 (716) 272-5033 FAX
 e-mail: gov@getingecastle.com

COMPARISONS OF WASH CYCLES

	Detergent	Neutralizer	Final Rinse
Option 1	Miele neodisher FA (liquid, pH 11.4 to 11.9)	Miele neodisher N (liquid, pH 2.1 to 2.4)	Miele neodisher Mielclear
Option 2	Miele neodisher MA (powder, pH 11.2 to 12.0)	Miele neodisher N (liquid, pH 2.1 to 2.4)	Miele neodisher Mielclear

Option 3	Castle Neutrawash (liquid, pH 7)	None	None (Neutrawash contains a rinsing agent)
Option 4	Castle Tec Wash III (liquid, pH 11*)	None	Castle Tec Rinse
Option 5	Castle Tec Wash Powder (powder, pH 11*)	None	Castle Tec Rinse
Option 6	Castle Alkaline Detergent (liquid, pH 13)	Castle Acid Detergent (acidic liquid, pH 2.6)	None

*Note: Castle claims that Tec Wash III liquid and Tech Wash powder, while somewhat alkaline, will not harm aluminum and do not require the use of a neutralizing acid rinse.

PRODUCT COMPARISONS

Product	Liquid or Powder	pH at Use Dilution	Quantity	Company Part Number	Gov t cost	Gov t cost (per fl oz)
Miele neodisher FA	liquid	11.4 - 11.9	5 ltr	2141679	\$75	44¢
Miele neodisher MA	powder	11.2 - 12.0	10 kg	2141687	\$125	35¢ (oz)
Miele neodisher N	liquid	2.1 - 2.4	5 ltr	2141703	\$75	44¢
Miele neodisher Mielclear	liquid	3.2 - 3.8	1 ltr	2141695	\$30	89¢
Castle Neutrawash	liquid	7	1 gal	61301600009	\$9	7¢
			5 gal	61301600010	\$43	7¢
			15 gal	61301600011	\$124	6¢
			30 gal	61301600057	\$238	6¢
Castle Tec Wash III	liquid	11	1 gal	61301668309	\$12	9¢
			5 gal	61301667776	\$57	9¢
			15 gal	61301667777	\$161	8¢
			30 gal	61301600844	\$321	8¢
			55 gal	61301600845	\$569	8¢
Castle Tec Wash Powder	powder	11	25 lb	61301647025	\$30	8¢ (oz)
Castle Alkaline Detergent	liquid	13	1 gal	61301602539	\$12	9¢
			5 gal	61301600040	\$54	8¢
			15 gal	61301600041	\$151	8¢
			30 gal	61301602228	\$294	8¢
			55 gal	61301601081	\$504	7¢
Castle Acid Detergent	liquid	2.6	1 gal	61301602540	\$14	11¢
			5 gal	61301600042	\$65	10¢
			15 gal	61301600043	\$189	10¢
			30 gal	61301602229	\$380	10¢
			55 gal	61301601082	\$656	9¢

Castle Tec Rinse	liquid	3.4	1 gal	61301600842	\$19	15¢
			5 gal	61301664156	\$86	13¢
			15 gal	61301664157	\$248	13¢
			30 gal	61301601299	\$486	13¢
			55 gal	61301603797	\$967	14¢

(Col Browning)

65-06 Bracket Bonds that are Too Temporary

Question: I am having a problem with an unusually large number of orthodontic brackets debonding when I use a self-etching, orthodontic bonding agent. I'm following the manufacturer's instructions. Do you have any ideas why this is happening?

Answer: Bonding systems have undergone a lot of changes over the past few years. The most recently introduced products are those that have primers that have been modified with various acidic components. The pH of these acidified or self-etching primers has been reduced to the extent that their manufacturers claim that they can effectively etch enamel to the same degree as phosphoric acid. Some of these bonding agents take the form of a single liquid applied to the tooth (e.g., One-Up Bond F, Tokuyama/J. Morita; Touch & Bond, Parkell; Prompt L-Pop, 3M ESPE) while others are two separate liquids (Clearfil SE Bond and Clearfil Liner Bond 2V, Kuraray). Both types, though, are said by their manufacturers not to require a separate etching with standard phosphoric acid. Although it is true that these products' primers do have a lower pH, some recent studies have shown that they may not have the same capacity as phosphoric acid to effectively etch UNCUT or UNPREPARED enamel.¹ Furthermore, other studies suggest that some of the new products require more than one application of the bonding agent for increased bond strength.² It has also been reported that auto-cure orthodontic resins (e.g., Concise, etc.) do not work well with the self-etch systems because the primer's acidity has been shown to interfere with the resins' polymerization.³

So when bonding to uncut enamel, what can you do to overcome these limitations of self-etching bonding agents? First, you should consider using a separate phosphoric acid etchant, followed by a thorough rinsing of the etched surface. Make sure the tooth surface is left as the manufacturer recommends before applying the bonding agent (i.e., moist vs dry). Also, you should place multiple coats of the bonding agent before light curing it. Finally, you should lute the orthodontic brackets using only light-activated resins, if possible. If these solutions still do not work, or if you consider them too time-consuming or bothersome, you can always go back to using a traditional bonding product that doesn't employ a self-etching primer. Some of these include Excite (Ivoclar Vivadent), OptiBond Solo (SDS/Kerr), Scotchbond Multi-Purpose Adhesive (3M ESPE), PermaQuik (Ultradent), and Single Bond (3M ESPE).

References:

1. Myazaki M, Iwasaki K, Onose H. Adhesion of single application bonding systems to bovine enamel and dentin. *Oper Dent* 2002;27:88-94.
2. Perdigão J, Frankenberger R, Rosa BT, Breschi M. New trends in dentin/enamel adhesion. *Am J Dent* 2000;13:25D-30D.
3. Sanares AM, Itthangarun A, King NM, Tay FR, Pashley DH. Adverse surface interactions between one-bottle light-cured adhesives and chemical-cured composites. *Dent Mater* 2000;17:542-556.

(Lt Col Roberts)

65-07 Commercially-Available Fluoride Varnishes

Question: I want to begin using a fluoride varnish to help my high-risk patients keep from developing

caries. What brands are available?

Answer: Topically applied fluoride varnishes usually consist of sodium fluoride in a resin carrier and are used primarily as a caries prevention therapy for pediatric and high-risk caries patients. Only relatively recently have they become available for use in the United States. However, fluoride varnishes have been widely used in western Europe, Canada, and the Scandinavian countries since the 1980s as a caries prevention therapy. In fact, by the 1990s, over 90% of the topically applied fluoride in Scandinavia was in the form of varnish. In 1991, Duraflor became the first fluoride varnish available in the United States after it was approved by the Food and Drug Administration (FDA); later in the decade, Duraphat, Fluor Protector C, and Cavity Shield became available. A large number of studies, most done outside the United States, have shown that fluoride varnishes are safe and efficacious in preventing or reducing caries. Sodium fluoride-based varnishes can have the side effect, however, of causing a temporary color change in teeth and restorative materials. Interestingly, fluoride varnishes are approved for use only as cavity liners and for treating hypersensitive tooth structure. Their off-label use as caries-prevention agents, however, is not contraindicated.

Instructions for applying cavity varnish for caries reduction vary among the brands of products, but typically the procedure begins by cleaning the involved tooth surfaces. One study has found that toothbrushing appears sufficient and that a prophylaxis is not required. Prior to application of the varnish, the teeth should be dried with gauze or a cotton roll to remove moisture, but they do not need to be thoroughly dried, because the varnish sets in contact with moisture. The varnish is then applied, usually in about a 0.5-mm-thick layer using a suitable applicator. Some manufacturers recommend that the treated teeth remain isolated for a minute or so, while others do not call for a period of isolation following application. The patient is usually advised not to eat or drink anything for a period of time following treatment (typically from 45 minutes to 2 hours) and are told to forgo brushing that evening. Patients should be advised prior to treatment that some varnishes (usually the sodium-based ones which are yellow) can impart a slight discoloration to the teeth. The discoloration is temporary, however, and is removed by brushing. Some perceptible but clinically acceptable color change may also occur in certain restorative materials. Biannual applications of fluoride varnishes are usually recommended, however some clinicians advise treatment every 3 months. Fluoride varnishes are believed to be efficacious because their stickiness helps to keep them in contact with tooth structure for a longer time than topically-applied fluoride gels and liquids.

The fluoride varnishes currently available in the United States are listed below along with ordering information. The information should help you in selecting and ordering a fluoride varnish.

Product	Main Ingredients	Manufacturer	Retail Price	Gov't Price
Duraphat (item no. F0400954)	5% sodium fluoride in an alcoholic solution of natural resins	Colgate-Palmolive Co. 300 Park Avenue New York, NY 10022 (800) 226-5428 www.colgate.com	\$25.95 (ie, \$2.60/mL) for one 10-mL tube	\$19.95 (ie, \$2.00/mL) for one 10-mL tube
Duraflor (item no. 10011)	5% sodium fluoride in an alcoholic solution of natural resins	A.R. Medicom 9404 Cote de Liesse Montreal, Canada H8T 1A1 (514) 636-6262 (514) 636-6266 FAX www.medicom.ca/#	\$125.00 (ie, \$3.13/mL) for 5 boxes; each box has 16 0.5-mL unit-doses	\$75.00 (ie, \$1.88/mL) for 5 boxes; each box has 16 0.5-mL unit-doses
Fluor Protector C (item no. 550578)	0.9% difluorosilane in a polyurethane-based varnish	Ivoclar Vivadent, Inc. 175 Pineview Drive Amherst, NY 14228 (800) 533-6825 (716) 691-0010 (716) 691-2285 FAX www.ivoclarvivadent.us.com	\$88.15 (ie, \$11.02/mL) for 20 0.4-mL single-dose bottles	\$32.00 (ie, \$4.00/mL) for 20 0.4-mL single-dose bottles

Cavity Shield (when ordering, ask for Trial Size, 0.40-mL version)	5% sodium fluoride in an alcoholic solution of natural resins	Omni Oral Pharmaceuticals 1500 T-N. Florida Mango Rd. West Palm Beach, FL 33409 (800) 445-3386 (561) 689-1159 (479) 787-6507 www.omniipharma.com	\$33.50 (ie, \$2.62/mL) for 320.40-mL unit doses	\$27.90 (ie, \$2.18/mL) for 320.40-mL unit doses
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(Col Charlton)

65-08 X-ray Units for High-Volume Use in Dental Clinics

Question: Our clinic is planning to replace its intraoral x-ray unit in dental radiology. We currently have a Gendex GX-1000. Can we replace it with one of the smaller 70 kVp units on the market today, or should we purchase a heavier unit such as the GX-1000?

Answer: The smaller x-ray units work well for individual dental treatment room (DTR) use. However, for new facilities, we continue to place heavier units (e.g., the Gendex GX-900 or GX-1000) in dedicated dental radiology rooms. These units can be operated at more than one kVp setting, permitting films to be produced with low contrast (i.e., many shades of grey) as well as high contrast (i.e., few shades of grey). The smaller x-ray units typically operate only at 65-70 kVp, which gives films of high contrast. Another advantage of the heavier units is the more robust construction of the support arm, which may be an advantage in high-volume situations. A final consideration deals with duty cycles. The duty cycle represents how frequently successive exposures can be made. It is based on the function of the size of the anode and the method used to cool it. Because of the heat generated at the anode, the interval between successive exposures must be long enough for it to dissipate. We have considerable experience with the heavier units and have not seen overheating problems with them even when they are used in radiology areas with heavy workloads. We have little experience with the smaller units in this situation. Smaller units typically require slightly more cooling time between exposures than do the heavier units. While the small units *should* be able to handle a high workload according to the manufacturers' duty cycle specifications, we know of one instance where a smaller unit was placed in a high volume situation and it frequently overheated. To maximize tube life and performance, dental clinics should not exceed the unit's duty cycle requirements.

As you can see, choice of a small versus a heavy radiographic unit depends on your particular clinic's needs. If you have questions about a specific brand of unit, please contact Col Browning or Col Bartoloni at DIS (DSN 792-7676).

(Col Browning)

65-09 How Many Dentists Does it Take to Change a Lightbulb?

Question: The overhead illumination in our dental treatment rooms seems to be inadequate. What are the lighting standards for them?

Answer: Three factors should be considered regarding dental treatment room (DTR) lighting: intensity, color temperature, and color rendering index. With regard to intensity, most references recommend a range of from 150 to 200 footcandles (fc) when measured at a height of 30 inches off the floor. Military Handbook 1191 specifies that DTRs in new military facilities be designed to have 150 fc. This represents the ambient light produced by the ceiling lights and does not include the dental unit light. The other two considerations deal with optimum lighting conditions for shade selection. An attempt is usually made to produce DTR lighting characteristics similar to those seen with an average noon sky on a slightly overcast day. Color temperature relates to how warm or cool a light source appears. Lower color temperatures produce a warmer (yellow/red) light, while higher color temperatures produce a colder (more blue) light. Color temperatures in the range of from 5000 to 5500 K are desirable for DTR lighting. Color rendering

index (CRI) rates the color rendering ability of a lamp. In other words, it describes the effect of a light on the color appearance of objects compared to a reference light source of the same color temperature. Typical cool white fluorescent lamps have a CRI of 62. Natural daylight has a CRI of 100, which is the highest possible value. A CRI of 90 or greater is preferred for fluorescent lamps used in DTRs. Most major lighting manufacturers offer color correct fluorescent tubes that meet these specifications.
(Col Browning)

65-10 A Good Way to Prevent Contamination of Digital Radiography Sensors

Question: Our clinic would like to purchase a digital radiography system that uses a wired sensor. What is the best way to protect the sensor from cross-contamination?

Answer: A sensor for digital radiography is placed directly in the mouth just like a conventional radiographic film. During placement and exposure, it can easily become contaminated. The sensor is considered a semicritical item (because it only contacts mucous membrane) and must either be barrier protected or treated with a high-level disinfectant. Because the receptor can't be autoclaved or heat sterilized, most manufacturers provide disposable plastic sheaths to facilitate infection control. Two recent studies have shown reduced rates of cross-contamination of wired sensors if the plastic sheath is augmented with a latex finger cot.^{1,2} This is the practical, easy procedure that DIS recommends to prevent cross contamination.

(Col Bartoloni)

1. Hokett SD, Honey JR, Ruiz F, Baisden MK, Hoen MM. Assessing the effectiveness of direct digital radiography barrier sheaths and finger cots. J Am Dent Assoc 2000;131:463-467
2. Hubar JS, Gardiner DM. Infection control procedures used in conjunction with computed dental radiography. International J Computerized Dent 2000;3:259-267

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.

The **Aero Saw/MV Deluxe** from Ferraro Dental is an air-powered, foot-controlled, reciprocating saw for sectioning fixed models into individual dies. It comes with a vise which rotates 360 degrees, to firmly hold the cast while sawing. The base of the holding platform also has suction cups to help hold the cast and base in place while sawing. The Aero Saw has a short stroke that is said to facilitate cutting without interfering with the opposite side of the cast. The Aero Saw uses a 0.010-thick saw blade for normal sawing and an ultra-thin 0.007-thick one for tight areas. Included is an inverted saw that is designed to saw dies from the bottom of the die up to permit sectioning of dies with close margins. The Aero Saw/MV Deluxe package includes: the saw body, model vise, foot control, and filter-regulator-lubricator. Also included is the inverted saw, sample saw blades, and 3-, 4-, and 5-inch saw frames. The package costs \$850.00 (retail) and \$595.00 (government). For more information, contact Ferraro Dental at (520) 378-6597 or visit the company's web site at www.ferraro-dental.com.

(MSgt Osborn)

White & Brite is a carbamide peroxide home bleaching gel from Omnia Oral Pharmaceuticals. The product is available in three concentrations: 10% and 16% (in Deluxe Kits and Touch-Up Kits) and 22% (in Touch-Up Kits only). The manufacturer recommends a 90-minute daily wear time and notes that the trays need not have reservoirs. Marketing materials are included with the product. A White & Brite Deluxe Kit contains six 3.5-g syringes of bleaching gel with dispenser tips, a tray storage case, shade guide, patient instructions, and tray material. It is available for \$45.00 (retail) and \$20.00 (government) from Omnia Oral Pharmaceuticals at (800) 445-3386, (561) 689-1140, (561) 689-1159 FAX, or www.omniapharma.com.

(Col Charlton)

The Brewer Company has introduced the **EG-9000 series of dental stools** that purportedly promotes proper posture while alleviating problems associated with musculoskeletal disorders. The 9000B Operator's Stool and the 9020BL Assistant's Stool are ergonomically-designed with contemporary styling for the dental professional. Each stool features a contoured, four-position backrest that is designed to cradle and support the lumbar region. In addition, Brewer claims that the synchronized tilt of the seat and backrest promote proper curvature of the spine. The shallow seat pan keeps the clinician positioned against the backrest while maintaining proper pelvic tilt. The contoured Cut-Out seat reportedly distributes weight and takes pressure off the lower back and thigh region. This is said to eliminate pinching and circulation cut-off to the knees and thighs. The 9020BL Assistant's Stool includes an adjustable foot ring and a body support arm that can be moved vertically and horizontally for easy entry and exit. Asepsis and infection control are enhanced because the cushion covers are seamless vinyl. Screws and upholstery trim have been eliminated and surface components are smooth to also facilitate infection control. Buyers have a choice of fifteen different colors. The model 9000B weighs approximately 38 lbs and costs \$834.75 (retail) and \$417.38 (government). The 9020BL stool weighs approximately 58 lbs and costs \$1044.75 (retail) and \$522.38 (government). For additional information, please contact Vanessa Parrish at (888) 273-9371, (262) 251-9530, (262) 251-1786 FAX or visit www.brewercompany.com.

(TSgt Sutter)

The most common work position for the dental laboratory technician is called the forward-bent position. To deal with the strain caused by this position, KaVo America recently introduced an ergonomically-friendly laboratory chair called **SENSit**. The chair, which can be ordered with or without armrests, is said to adapt to the user's anatomy by having a synchronized backrest/seat mechanism that makes dynamic adjustments in response to changes in the user's backrest angle and seat incline. Several features are able to be fixed into position include the seat/backrest incline, backrest height, horizontal seat movement, seat height, and seat incline. The chair's standard color is charcoal grey, but five additional colors are available. The SENSit Laboratory Chair with armrests (item number 653.6340) costs \$895.00 (retail) and \$581.75 (government). The model without armrests (item number 653.6280) costs \$735.00 (retail) and \$477.75 (government). For additional information about the SENSit chair, contact KaVo government sales at (800) 323-8029 ext 319, (847) 550-6825 FAX, or visit the KaVo web site at www.kavo.com.

(TSgt Sutter)

Virtual is a new polyvinyl siloxane (addition polymerizing silicone) impression material from Ivoclar Vivadent introduced at the February 2002 Chicago Mid-Winter dental meeting. The company claims that the product is extremely hydrophilic because it contains unique, spheroidally-shaped, silica microfill particles. The particles are said to reduce Virtual's viscosity (i.e., thickness) when the impression tray is seated. Both dentin and soft tissue wettability is reported to be excellent. Other advantages listed for Virtual include a marked capability to displace moisture (which should enhance the capturing of fine detail), high tear strength, and a heat-triggered setting time. Its reported heat-activated setting is comparable, then, to the same property exhibited by Flexitime, an impression material from Heraeus Kulzer recently evaluated by DIS (see *DIS* 63-20). Six viscosities of Virtual are available as shown below.

Viscosity/Type	Indication	Setting Time (minutes)*
Extra-Light Body	Wash	Fast 2½ Regular 4½
Light Body	Wash	Fast 2½ Regular 4½
Heavy Body	Tray	Fast 2½ Regular 4½
Monophase	Tray/Wash	Fast 2½ Regular 4½
Putty	Tray	Fast 2½ Regular 4½
Bite Registration	Bite Registration	Fast 1

*as claimed by the manufacturer

Available separately is a rechargeable, cordless dispensing gun. Virtual is sold in various introductory and refill packages. For comparison purposes, the Heavy/Light Intro Package (which contains 2 traditional automix gun dispensers, 2 cartridges of Heavy Body, 1 cartridge of Light, and 1 cartridge of Extra-Light material) can be purchased for \$199.00 (retail) and \$92.60 (government) from Ivoclar Vivadent at (800) 533-6825, (716) 691-0010, (716) 691-2285, or www.ivoclarvivadent.us.com.

(Col Charlton)

Pola Office is an in-office bleaching product recently introduced by SDI Limited. It consists of a syringe of 36% liquid hydrogen peroxide that is mixed immediately prior to use with 0.3 g of powder. The resulting mixture is then applied to the facial surfaces of the involved teeth. Each tooth is exposed to a standard halogen light-curing unit for 30 seconds, and the gel is then allowed to remain in contact with the tooth surface for a minimum of 3 minutes. SDI claims that the gel can be easily removed by rinsing. Up to four

applications can be placed at a single appointment, until the desired shade is achieved. The product comes with syringes of a flexible, light-activated, gel barrier that is used to isolate the marginal gingival prior to bleaching. Pola Office contains potassium nitrate for the reduction of bleaching-associated thermal sensitivity. A Pola Office 3-Patient Kit (item number 7700015) is available for \$100.00 (retail) and \$60.00 (government) from SDI Limited at (800) 228-5166 or www.sdi.com.au.

(Col Charlton)

Pola Day and Pola Night are new at-home bleaching products recently introduced by SDI Limited. Pola Day is hydrogen peroxide-based and available in either 3% and 7.5% concentrations. Pola Night is carbamide peroxide-based and comes in 10%, 16%, and 22% concentrations. SDI claims that the products provide excellent patient comfort during use because they have a neutral pH, contain fluoride to promote remineralization of the tooth surface, and have a high water content to prevent tooth dehydration. Pola Day and Pola Night also contain chitosan that SDI says is a naturally-occurring soother and conditioner claimed to further reduce sensitivity by inhibiting plaque formation, promoting calcium absorption, and reducing ion loss from the tooth. SDI also claims that the products have a high viscosity (i.e., thickness) which helps to retain it in the tray and a pleasant taste. A 10-Syringe Kit of Pola Day or Pola Night can be purchased for \$25.00 (retail) and \$13.80 (government) from SDI Limited at (800) 228-5166 or www.sdi.com.au.

(Col Charlton)

CompositRepair is a light-activated adhesive designed for use in repairing defective or damaged resin composite restorations. The manufacturer, All Dental Prodx, claims that the product enhances the bond strength between the pre-existing composite and the composite used for the repair. To repair the defective or fractured area of a composite restoration, the area is first roughened and peripheral edges smoothed. CompositRepair is applied to the area for 30 seconds using a brush. It is then light cured for 20 seconds and the new composite is added to repair the defect. The product (item number 200021) is packaged in a small box that contains a 5-mL bottle of the adhesive, dispensing well, and application brushes. It is available for \$66.00 (retail) and \$56.10 (government) from All Dental Prodx at (877) 647-7639, (253) 265-8624, (253) 265-8639 FAX, or www.alldentalprodx.com.

(Col Charlton)

M-Bond, an adhesive cement from Tokuyama/J. Morita, has just been brought to the market. The self-curing cement is supplied as a powder and liquid that are hand-mixed at the time of use. It comes with a self-etching primer and is available in two shades, Clear and Ivory, both of which are included in the kit. The kit also contains two bottles (A and B) that constitute the self-etching primer. According to the manufacturer, M-Bond is indicated for typical cementation situations, but can also be used for temporarily bonding a loose tooth to adjacent teeth, cementing orthodontic brackets, and repairing fractured porcelain on porcelain-fuse-to-metal prostheses. The range of prostheses that can be cemented with M-Bond include:

- Metal crowns, inlays, onlays, and bridges
- Porcelain-fused-to-metal crowns
- Noble-metal post and cores
- All-ceramic and all-porcelain crowns, inlays, onlays, bridges, and veneers
- Cured composite crowns, inlays, onlays, and bridges
- Resin-bonded bridges

According to the manufacturer, the intaglio surfaces of the prosthesis must be treated prior to cementation with M-Bond. For base-metal restorations, sandblasting is sufficient, but for noble-metal restorations, sandblasting and tinplating or application of Tokuyama/J. Morita's separately-available Metalite is necessary. With all-ceramic, all-porcelain, and all-resin prostheses, the intaglio surfaces must be roughened and then coated with Tokuso Ceramic Primer, also sold separately. Tokuyama/J. Morita claims that M-Bond produces high bond strengths, an extended working time (1 minute, 40 seconds), and is competitively priced. A box of M-Bond is available for \$240.00 (retail) and \$144.00 (government) from J. Morita USA at (888) 566-7482, (949) 581-9600, (949) 465-1095 FAX, or www.jmoritausa.com.

(Col Charlton)

The **Original E-Vac Tip**, marketed by E-Vac, Inc., is advertised as being an inexpensive, disposable,

easy-to-use, plastic screen that is placed on the intraoral end of standard plastic and metal high-volume evacuation tubes. It is designed to prevent the inadvertent suctioning of large, foreign objects (e.g., tooth structure, root tips, crowns, inlays, impression material, etc.) into the high-evacuation system. The E-Vac Tip is purportedly easy to place and designed to prevent intraoral hematomas that can result from soft tissue suctioning. The Original E-Vac Tip is available in lots of 100 per bag for \$18.00 (retail) and \$10.00 (government) from E-Vac, Inc. at (509) 448-2602 or (509) 448-2602 FAX.

(TSgt Sutter)

Opalescence Xtra Boost is a chemically-activated, in-office, power bleaching agent. The product is primarily indicated for whitening discolored vital teeth but can also be used on nonvital teeth and for intracoronal bleaching. The manufacturer, Ultradent, notes that it can be used as a stand-alone treatment or in conjunction with a standard at-home bleaching agent. The active ingredient in Opalescence Xtra Boost is 38% hydrogen peroxide. The product is packaged as two syringes, one containing the liquid hydrogen peroxide and the other a dry, proprietary chemical activator. Prior to use, the marginal gingival tissues are isolated and protected from the bleaching agent by using either a rubber dam or Ultradent's OpalDam, a light-activated resin barrier material that is supplied with Opalescence Xtra Boost. After the teeth have been isolated, the syringes are joined together and the dry material is expressed from its syringe into the syringe containing the hydrogen peroxide. The resulting material is then expressed back and forth from one syringe to the other to thoroughly mix it. After mixing, the syringes are separated and the mixture is expressed directly onto the involved teeth in a 0.5- to 1.0-mm layer using a supplied disposable dispenser tip. The mixed bleaching agent is red, so clinicians are able to easily see where it is being applied. The bleaching material is removed from the teeth after 10 to 15 minutes using suction. If the desired shade has not been achieved, a new mixture can be made and the material reapplied. Ultradent claims that Opalescence Xtra Boost has the advantages of having a neutral pH that helps prevent post-treatment sensitivity and does not require the use of an expensive curing light. The company also notes that it is always fresh because it is mixed immediately prior to use. A box of Opalescence Xtra Boost (item number 387) contains 4 syringes each of hydrogen peroxide and the chemical activator, 2 syringes of OpalDam, and dispensing/application syringe tips. It can be purchased for \$99.95 (retail) and \$84.96 (government) from Ultradent at (800) 552-5512, (800) 842-9024 FAX, or www.ultradent.com.

(Col Charlton)

The **Ultimate Flosser** is a new patient flossing device manufactured by Ultimate Flosser LLC and distributed by Almore International, Inc. The device, developed by a periodontist, is a handheld, plastic, fork-shaped unit that can be used with one hand. The floss is advanced between the tines of the Ultimate Flosser by clicking a button on its side. The manufacturer claims that it is indicated for geriatric and/or arthritic individuals as well as for those who dislike the pain some associate with flossing. The flosser is said to maintain constant tension on the floss and is easy to refill with manufacturer-supplied spools of waxed floss. Two 30-yard-long refill spools are provided with the Ultimate Flosser and additional refills (2 per package) are available from Almore for \$3.95 (retail) and \$2.61 (government). The flosser is available for \$10.95 (retail) and \$7.23 (government). For more information, contact Almore at (800) 547-1511, (503) 643-6633, (503) 643-9748 FAX or visit the company's web site at www.almore.com.

(Col Leonard)

The **Microlux Transilluminator**, marketed by AdDent Inc., is designed to provide an intense, focused beam of cool, white light for use in the clinical diagnosis of caries, calculus, and tooth fractures. The hand-held device is battery-operated, five inches long, and slightly over ½ inch in diameter. The Microlux's light source is a light-emitting diode (LED) that is reported to transfer the high-intensity light through a focused, three-millimeter-diameter autoclavable light guide. In addition to diagnostic use, the manufacturer claims it can be used as an auxiliary light source during dental procedures. The Microlux Transilluminator Complete Kit (LED transilluminator, glass light guide, and batteries) retails for \$169.00 (government pricing pending) and can be purchased by contacting AdDent Inc. at (203) 778-0200, (203) 792-2275 FAX, or www.addent.com.

(Lt Col Roberts)

The **7th Edition Drug Information Handbook for Dentistry** is described as having been specifically compiled and designed for dental professionals. The 1500-page book is marketed specifically

to professionals who require quick access to concise drug information. The 5,580 listed medications included in the book are organized alphabetically, fully cross-referenced by page number, and featured by therapeutic category. Each drug monograph provides information about local anesthetic/vasoconstrictor precautions, potential effects on dental treatment, and possible drug interactions. In addition, sections discussing medically-compromised dental patients and the management of patients with specific oral conditions (e.g., oral pain, oral/bacterial infections, periodontal disease, etc.) are provided along with sample prescriptions. New to this edition are dietary/ethanol/herb considerations, an updated cardiovascular disease section, HIV/AIDS information, and guidelines for the antibiotic management of odontogenic infections. New products for treating recurrent aphthous ulcers and periodontal disease are also featured, and a complete list of artificial saliva products is given. The *7th Edition Drug Information Handbook for Dentistry* is available for \$39.95 from Lexi-Comp, Inc. at (877) 837-5394, (330) 650-6506, or www.lexi.com.

(Lt Col Roberts)

Systemp.c&b is a self-setting, bis-acryl provisional crown and bridge material introduced in February 2002 by Ivoclar Vivadent. It is recommended by the manufacturer for making provisional bridges, single crowns, veneers, and posts. Systemp.c&b is supplied as two pastes in an automix cartridge that uses a special 4:1 ratio dispenser gun. It is available in four shades (Bleach XL, A1, A2, A3.5). Ivoclar Vivadent claims that Systemp.c&b provisionals are strong, highly polishable, and esthetic. The material is also reported to have a working time of nearly 2 minutes and sets intraorally in slightly less time. Systemp.c&b's relatively low degree of rigidity supposedly allows it to flex slightly, making it a good choice for longer-span bridge provisionals. An 80-g refill cartridge of one shade with 10 mixing tips is available for \$105.00 (retail) and \$37.79 (government). The gun dispenser costs \$85.00 (retail) and \$30.59 (government) and can be ordered from Ivoclar Vivadent at (800) 533-6825, (716) 691-0010, (716) 691-2285 FAX, or www.ivoclarvivadent.us.com.

(Col Charlton)

TapMaster from Integra Dynamics, is a hands-free faucet controller that is said to be easy to install and converts any faucet to hands-free operation. The unit works using water pressure and does not require electrical or air pressure connections. It is compact and works with virtually any type of faucet, free-standing or cabinet enclosed. When mounted to a free-standing faucet, a kick pedal placed on the floor is used to operate the unit; with a cabinet-enclosed faucet, a kick pedal is used that attaches to the front of the cabinet base. An alternative way to activate a cabinet-mounted TapMaster is to mount its actuator to the inside of the cabinet so that water flow is started by pressing against the cabinet door with your knee. Integra Dynamics claims that the device is extremely reliable, with only a 0.25% defective return factor. The TapMaster also is reported to have built-in 25-micron filtration. Various models are available depending on the type of faucet you have and desired method of activation. The TapMaster is available for \$249.00 (retail) and \$199.20 (government) from Integra Dynamics at (800) 791-8117, (403) 275-5554, (403) 275-5928 FAX, or www.integradynamics.com.

(Col Charlton)

The **Demetron LC** is the latest quartz-tungsten-halogen curing light from Demetron/Kerr. The unit is a no-frills, compact curing light that offers a simple, cost-effective alternative to more expensive, option-laden curing lights. It features the Demetron's patented 80-watt Optibulb that is reported to not degrade over time. The Demetron LC accepts 11 different sizes of autoclavable light tips (from 2 mm to 13 mm in diameter) and is purported to deliver 600 mW/cm² with the included 8-mm-diameter tip. It is said to provide over 1,000 mW/cm² with the optional Turbo Tip. During light exposure, users are alerted at 10-second intervals by a tone. Also included with the unit is a protective light shield. The Demetron LC is available from Demetron/Kerr for \$415.00 (retail) and \$250.00 (government). For further information, call (800) 537-7123, (714) 516-7400, (714) 516-7633 FAX, or www.KerrDental.com.

(Col Leonard)

GC America recently introduced the **GC e-Light**, a portable light-emitting-diode (LED) curing light powered by a lithium ion battery. The light has 64 LEDs that are collimated and focused to improve output by means of a five-element system of lenses. The unit comes with an 8-mm-diameter autoclavable curing tip. The e-lights maximum power density is concentrated between 440 and 490 nm, which represents the

spectral range that is most efficient for activating the commonly used photoinitiator camphorquinone. A liquid crystal display (LCD) shows the various curing modes and intensity levels that are available. The light also has a library mode that is capable of storing up to 15 visible-light-curing profiles as new applications and materials are developed. The light's bar code mode is used to scan curing profile bar codes, and its download function will be used to update system software, curing profiles, and the materials library with the e-light internet kit (available at additional cost). Also available at additional cost is a direct power supply that can be plugged directly into the curing light to power it when battery power is not used. The GC e-Light is available from GC America for \$1495.00 (retail) and \$1495.00 (government). The unit can be purchased by contacting the manufacturer at (800) 323-3386, (708) 597-0990, (708) 597-6222 FAX, or www.gcamerica.com.

(Col Leonard)

Cool Temp is a filled resin composite from Coltène/Whaledent for making provisional (i.e., temporary) restorations. The self-cured resin is supplied in automix cartridges that the company claims fits the gun dispenser most commonly supplied with impression materials; several other popular provisional products require a special gun dispenser. The material is reported to go through an elastic setting stage that makes it easy to remove the temporaries from the mouth without distorting them. Cool Temp can be used in both the direct and indirect technique. The primary claim made for the product by Coltène/Whaledent is that it sets very rapidly, requiring only 50 to 60 seconds in the mouth prior to removal. Final cure is reported to occur within 5 minutes. The manufacturer also claims that Cool Temp has high strength, excellent esthetics, is easy to trim and polish, and produces minimal heat during setting. Synergy Flow, Coltène/Whaledent's flowable resin composite, is provided in the Cool Temp Starter Kit and can be used to repair voids or defects in the provisionals. The resin comes in three shades (A1, A2, and A3.5). A Cool Temp Starter Kit (item number C5800) contains two 85-g automix cartridges (one A2, one A3.5), mixing tips, two 2.3-g syringes of Synergy Flow (one A2/B2, one A3.5/B3), and syringe tips. It is available for \$234.00 (retail) and \$128.70 (government) from Coltène/Whaledent at (800) 221-3046, (201) 512-8000, (201) 529-2103 FAX, or www.coltenewhaledent.com.

(Col Charlton)

ÆLITE LS is a light-activated resin composite marketed by BISCO specifically for use in the posterior dentition. The company claims that it is highly filled (86% by weight) and recommends it for Class I and II restorations as well as for core build-ups. The main claim made for ÆLITE LS is that it undergoes considerably less polymerization shrinkage than do many hybrid and microfill composites. Its shrinkage of 1.4% is claimed to minimize the production of open margins, sensitivity, bond failure, and recurrent caries. BISCO notes that ÆLITE LS is radiopaque which makes radiographic detection possible. It also reports that the resin composite's handling characteristics make it easy to produce adequate proximal contacts. ÆLITE! LS is available in six shades (A2, A3.5, B1, C2, C4, and D3) and is sold in syringe and unit-dose capsule forms. The ÆLITE LS Unit-Dose Kit (item number H-72020K) contains 15 capsules each of shades A2, A3.5, B1, and C2, one bottle of One-Step Plus bonding agent, one syringe of Fortify Plus surface sealant, and accessories. It can be purchased from BISCO for \$200.00 (retail) and \$170.00 (government) at (800) 247-3368, (847) 534-6000, (800) 959-9550, or www.bisco.com.

(Col Charlton)

The **Comfort Grip Saw Frame** and **FastCut Blades**, manufactured by the Freedom Company, reportedly cut dental stone twice as fast as other saw blades. The Comfort Grip Saw Frame is designed with a textured grip and is angled for minimum wrist fatigue when sawing out dies for fixed master models. The saw frame is slightly offset to the right for better view of the blade during cutting. It holds all standard 5-inch pinned blades, and has a tension screw for easy blade changing and to allow proper tensioning of blades. The FastCut blades are designed with all of the teeth facing towards the middle of the blade, which allows cutting during both the forward and backward strokes. The blades are available in the standard .010-inch or an ultra thin .007-inch thickness. They come with a standard 25 teeth per inch (TPI) or 18.5 TPI. The Comfort Grip Saw Frame is available for \$15.95 (retail). An assortment pack of FastCut blades (5 each type) is available for \$9.95 (retail). See the chart below for additional retail cost of the FastCut blades. No government price is currently offered. For ordering, contact the Freedom Company at (203) 792-8622, (203) 796-7861 FAX, or www.freedom.com.

Blade Description	Item Number for a Tube of 10 Blades	Retail Cost	Item Number for a Tube of 100 Blades	Retail Cost
.010 x 25TPI	DN5851-10	\$4.25	DN5851-100	\$35.00
.007 x 25TPI	DN5852-10	\$6.00	DN5852-100	\$50.00
.010 x 18.5TPI	DN5841-10	\$4.25	DN5841-100	\$35.00
.007 x 18.5TPI	DN5842-10	\$6.00	DN5842-100	\$50.00

(MSgt Osborn)

The **BL-1A Bench Lathe** from the Foredom Company is a compact, variable-speed lathe suitable for grinding and polishing at the workbench. The BL-1A comes complete with tapered mandrels for the right and left sides, a wheel mandrel, and a collet holder with ¼-inch and 3/32-inch collets. The 1/6-horsepower motor is available in both 110 volts and 230 volts and has a variable speed range of 1,800 to 7,000 RPM. The BL-1A weighs 7½ pounds and is 5 inches in height by 13 inches wide. The BL-1A Bench Lathe is available for \$219.00 (retail). No government price is currently offered. For ordering, contact the Foredom Company at (203) 792-8622, (203) 796-7861 FAX, or www.foredom.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.

BE CAREFUL WHILE USING THAT ULTRASONIC SCALER

Reduction of bacteria-containing spray produced during ultrasonic scaling. Klyn SL, Cummings DE, Richardson BW, Davis RD. *Gen Dent* 2001;49:648-652.

The use of ultrasonic scaling devices produces significant amounts of bacteria-containing spray (aerosols and spatter) which can be a potential source of contagion in the dental treatment room. Studies have shown that this contamination can remain suspended in the air and be detected up to two meters from the patient following use of an ultrasonic scaler. However, the use of a preoperative antimicrobial rinse and a special suction device attached near the ultrasonic tip (an aerosol reduction device [ARD]), have been found to be effective in reducing air contamination during ultrasonic scaling procedures. The purpose of this *in vivo* study was to compare the influence of an ARD, a preoperative 0.12% chlorhexidine gluconate (CHX) antimicrobial rinse, and a combination of an ARD and a preoperative CHX rinse on the amount of bacteria-containing spray produced during ultrasonic scaling. The results of the study showed that use of the ARD or use of the preoperative CHX rinse significantly decreased airborne bacterial contamination. Use of the ARD alone or the combined use of the ARD and preoperative CHX rinse resulted in significantly greater contamination reduction than the use of the preoperative CHX rinse alone. There was no additive effect in bacteria reduction when the ARD and the preoperative CHX rinse were combined. **The results indicate that the physical removal of bacteria-containing spray with the use of an ARD is highly effective, and the use of a preoperative CHX rinse does not enhance reduction when combined with the ARD.**

DIS Comment: There has been no direct evidence linking dental aerosols to disease transmission for the dental staff, but it is recommended that all potentially contaminated aerosols and spatter be minimized during dental treatment. Dental clinics should consider the use of an ARD or preoperative CHX rinse to minimize the spread of airborne bacterial contamination during ultrasonic scaling.

WHO SHOULD I CALL IF I HAVE A PROBLEM?

Dental device-associated problems: an analysis of FDA postmarket surveillance data. Fuller J, Parmentier C. *J Am Dent Assoc* 2001;132:1540-1548.

Dental devices are products used in clinical patient diagnosis and treatment. Injuries from these devices may result due to defects, malfunctions, inadequate use instructions, or misuse. The U.S. Food and Drug Administration (FDA) regulates the manufacture, import, transport, storage, and marketing of foods, drugs, and devices, and routinely performs surveillance to monitor device problems. The FDA collects postmarket surveillance data through reports of adverse events submitted by device manufacturers, healthcare professionals, consumers, and others. This data help the FDA to support actions that can lead to improvements in devices and in the removal of unsafe or ineffective products from the market. To evaluate dental device-associated problems, the authors of this study analyzed adverse event reports involving dental devices gathered through the FDA's mandatory and voluntary reporting programs between 1 August 1996 and 30 June 1999. During this 35-month period, the FDA received a total of 28,555 dental device reports. The dental device-associated events included two deaths (0.0007 percent), 18,406 injuries (64.4 percent) and 9,942 device malfunctions (34.8 percent). A majority of the injuries reported (98.97 percent) were associated with surgical devices including endosseous implants, temporomandibular joint implants, bone plates, and bone augmentation materials. Most malfunction reports involving dental devices (95.86) were due to surgical devices, primarily endosseous implants (95.50 percent). **The FDA encourages civilian dental staff members to report any device-related**

adverse events. Reporting is quick, simple, and can be accomplished by telephone (1-800-FDA-1088), by fax (1-800-FDA-0178), online (www.fda.gov/medwatch), or via mail (5600 Fishers Lane, Rockville, MD 20852-9787).

DIS Comment: Information regarding the reporting of medical (dental) materiel complaints for DoD personnel can be found in DIS reports 53-06, and 55-03. All military dental facilities should report materiel complaints to their local Medical Logistics Department. Dental personnel are key players in detecting dental device (i.e., materials and equipment) problems, and are encouraged to report all events that may be device-related so that quality of care is not compromised for our patients.

BLEACHING TRAYS: ARE RESERVOIRS NECESSARY?

A clinical evaluation of a bleaching agent used with and without reservoirs. Matis BA, Hamdan YS, Cochran MA, Eckert GJ. Oper Dent 2002;27:5-11.

Home bleaching has been used for over a decade for the whitening of teeth and has been shown to be effective and safe. Some products come with instructions recommending that reservoirs be incorporated into the bleaching tray. The purpose of the reservoirs is to hold the bleaching gel in contact with the tooth surface for a longer period of time. It is suggested that this may increase the rate of whitening. This study evaluated the effect of using reservoirs in bleaching trays on the rate of color change and degree of sensitivity produced when using a home bleaching product. Maxillary bleaching trays were made for the patients with one half of the arch having reservoirs and the other half without them. Patients were instructed to apply the 15% carbamide peroxide bleaching agent (Rembrandt Xtra-Comfort Non-Sensitizing Bleaching Gel Regular Strength, Den-Mat) daily for 2 hours. Patients returned in 1, 2, 3, 6, and 12 weeks, and a colorimeter was used to measure the color change of their teeth. The patients were also asked to record any tooth or gingival sensitivity on the right and left sides of their maxillary arch over a three-week period. **The colorimeter data indicated that the teeth bleached using a tray with reservoirs were significantly lighter than the teeth bleached without using reservoirs. The degree of lightening, however, was below the threshold of visual perception. The patients reported no significant difference in sensitivity between the two sides.**

DIS Comment: A colorimeter is a piece of equipment that is able to measure very small changes in color. It uses a standardized light source and illumination level when making measurements, so it is much less subjective than the human eye. Of course, being able to perceive differences using the eye alone is what really matters, so in this type of study it is always important to determine whether or not reported differences in the data are relevant to the clinical situation. The authors of this article made it quite clear that although numerical analysis of their data showed a difference, it was one that was clinically insignificant.

LABORATORY PERFORMANCE OF SINGLE-APPLICATION DBAs

Adhesion of single application bonding systems to bovine enamel and dentin. Miyazaki M, Iwasaki K, Onose H. Oper Dent 2002;27:88-94.

The most recent development in adhesive products has been that of the single-application dentin bonding agents which etch, prime, and bond with one liquid. Products common in the United States include Prompt L-Pop (3M ESPE), One-Up Bond F (Tokuyama/Morita), and Touch & Bond (Parkell). This study evaluated the in vitro shear bond strength of several single-application products to enamel and dentin and compared them to those of a compomer adhesive system. The single-application products (Reactmer Bond, Shofu; One-Up Bond F; AQ Bond, Sun Medical; and Prompt L-Pop) were used to bond resin composite to extracted bovine enamel and dentin surfaces. A compomer adhesive product (Clicker, 3M ESPE) was used to bond a compomer (F2000, 3M ESPE) in a similar fashion. At 24 hours, the shear bond strengths of each system were measured. Specimens of enamel and dentin were also prepared for SEM examination. Results were that bond strengths to enamel ranged from 12.1 to 21.7 MPa and to dentin ranged from 10.7 to 13.9 MPa. Statistical testing indicated no significant differences between the products in their capability to bond to dentin, however Prompt L-Pop bonded stronger than the others to enamel. SEM examination showed that degree of enamel etching varied by product. All generally

removed the smear layer, and the hybrid layer for most was relatively thin. **The authors concluded that the single-application dentin bonding agents tested in this study were equivalent in their adhesive performance to that of the compomer adhesive.**

DIS Comment: Single-application bonding products are the most recent development in adhesive dentistry. Perhaps a more descriptive term for them is single-solution products because they etch, prime, and bond with the application of a single solution that is applied to enamel and dentin. Some, however, such as One-Up Bond F are packaged as two liquids, but they are mixed immediately prior to bonding and the resulting single solution is applied to the tooth. Regardless of what they are called, they represent a major breakthrough in adhesive technology because they have greatly simplified and shortened the bonding process. Another advantage of these products is that they seem to reduce post-treatment sensitivity. Although some researchers have reported that they have slightly lower bond strengths to dentin than those seen with three-step (i.e., three-component) products, clinical performance may well be the same. An equally important question, however, is how well they bond to enamel, since they generally use a less aggressive acid to etch it. This study found that they bond at least as well as a compomer adhesive, but the enamel had been roughened as part of the application process. Most manufacturers of these products recommend that when they are applied to enamel, it should first be cut or roughened. There are clinical situations, though, where we bond to uncut/unprepared enamel, and more laboratory and clinical studies need to be done to assess the performance of single-application products in this regard.

STRENGTH OF PROVISIONAL CROWN AND BRIDGE RESINS

Flexure strength of provisional crown and fixed partial denture resins. Haselton DR, Diaz-Arnold AM, Vargas MA. J Prosthet Dent 2002;87:225-228.

Many brands of provisional materials are currently being marketed and used by clinicians. This study measured the flexure strength of 13 products. In part, the authors wanted to determine if the chemical composition of the resins affected their flexure strength. To do this, they tested eight bis-acryl resins and five methacrylate-based resins. The researchers made 10 bar-shaped specimens for each material according to ANSI/ADA Specification 27. After storage for 10 days in artificial saliva, they subjected them to a 3-point loading test and calculated their mean flexure strengths. As can be seen in the table below, the results showed that the flexure strengths of the tested products varied greatly and were material-specific. **The strongest product was Provipont DC but it did not differ significantly from three other bis-acryl products. The weakest were Protemp Garant, Temphase, Zeta, and Unifast LC. Because some of the weakest and the strongest products were bis-acryl resins, the authors concluded that there was no apparent correlation between flexure strength and type of provisional material (i.e., bis-acryl vs methacrylate based).**

Tested Materials and their Mean Flexure Strengths

Product	Flexure Strength \pm st dev (MPa)	Significance Groupings*	Type
Provipont (Ivoclar Vivadent)	123.6 \pm 13.6	A	bis-acryl
Integrity (Dentsply/Caulk)	120.8 \pm 17.0	A	bis-acryl
Protemp 3 Garant (3M ESPE)	115.7 \pm 5.7	A	bis-acryl
Luxatemp (Zenith-DMG)	114.6 \pm 26.6	A	bis-acryl
Caulk (Dentsply/Caulk)	97.9 \pm 13.7	B	methacrylate based
Jet (Lang)	89.9 \pm 20.1	BC	methacrylate based
Alike (GC America)	83.1 \pm 5.3	C	methacrylate based

Provitec (GC America)	81.4 ± 22.2	C	bis-a cryl
InstaTemp (Sterngold)	76.6 ± 15.3	C	bis-a cryl
Protemp Garant (3M ESPE)	62.7 ± 6.8	D	bis-a cryl
Tempphase (SDS Kerr)	59.7 ± 8.3	D	bis-a cryl
Zeta C&B Acrylic (Vita Zahnfabrik)	56.9 ± 14.6	D	methacrylate based
Unifast LC (GC America)	56.2 ± 4.1	D	methacrylate based

*Products with the same letter were not significantly different (p>0.05)

DIS Comment: Flexure strength (also known as transverse strength and modulus of rupture) is a combination of tensile and compressive strength tests. It is performed by flexing a beam of a material until it breaks. It is important for a provisional material to have a high flexure strength, especially when the patient must wear the provisional restoration for an extended period of time and/or has parafunctional habits. It is also an important property for long-span restorations that may exhibit a greater degree of flexing than single crown or short-span fixed partial denture provisionals. It is not particularly surprising to see the rather wide range of values for the tested materials, but is interesting that no correlation was found between type of material and its strength. It is important to note, however, that flexure strength is only one of many factors that should be considered prior to buying and using a brand of provisional material. Other factors include esthetics, number of available shades, polishability, ease of use, and cost.

PACKING THE PACKABLES: DO WE DO MORE POORELY WITH THEM?

Porosities and voids in Class I restorations placed by six operators using a packable or syringable composite. Opdam NJM, Roeters JJM, Joosten M, vd Veeke O. Dent Mater 2002;18:58-63.

Packable resin composites were introduced to the profession several years ago in an attempt to address some of the shortcomings of composites when used to restore posterior teeth. Primary among these is the difficulty often encountered in producing an adequate proximal contact. To remedy this, the packable resin composites were developed that have a higher viscosity (i.e., are thicker), which is said to make it easier to produce an adequate contact. Because they must be packed into the preparation, the resulting restoration may contain a larger number of voids or porosities than seen with less viscous traditional resin composites. This study evaluated the influence of two resin composites on the homogeneity of restorations placed in small and large preparations. Standardized Class I preparations of two sizes were made in an artificial mandibular molar. The preparations were then restored using a packable composite (SureFil, Dentsply/Cauk) with a packing technique or a traditional hybrid composite (Ecusit, DMG) using a placement syringe. A total of 240 restorations were placed by six operators. After polymerization, the restorations were sectioned and examined for the presence of voids and porosities. Results found that only 143 of the 480 sections were free of porosities. For both the small and large restorations, using Ecusit with the syringe technique resulted in significantly fewer porosities than using SureFil with the packing technique. Three of the six operators achieved significantly better results (i.e., fewer porosities) using the syringe technique, while the other three showed no significant difference. The authors concluded that the use of packable resin composites increases the risk of voids and porosities in restorations.

DIS Comment: Although it is often our goal, it is rare to produce an ideal restoration. In this case, the criterion being evaluated was the presence of porosities and voids. Clinicians will never produce a void-free, direct resin composite restoration because even resin composites in syringe form can contain porosities in up to a 1.4% concentration by volume. We should minimize porosities and voids whenever possible, however, because they may reduce the overall fracture strength and quality of the bond of restorations. Naturally, other factors should also be considered when choosing a resin composite for posterior use such as wear rate, ease of use, and handling characteristics. The primary reason for using a packable resin composite (Prodigy Condensable, SDS/Kerr; Solitaire 2, Heraeus Kulzer; Pyramid,

BISCO; Alert, Jeneric Pentron) is to make it easier to produce an adequate proximal contact. Traditional hybrid resin composites, however, can also be used to achieve good contacts as long as pre-wedging, matrix band burnishing, and proper placement technique are used.

WILL WE EVER GET THOSE DENTAL UNIT WATERLINES CLEAN?

Clearance of biofilms from dental unit waterlines through the use of hydroperoxide ion-phase transfer catalysts. Shepherd PA, Shojaei MA, Eleazer PD, Van Stewart A, Staat RH. Quintessence Int 2001;32:755-761.

Many studies have shown that dental unit waterlines (DUWLs) harbor significant numbers of bacteria. The major source of the bacteria is from the biofilm formed by microcolonies of bacteria that adhere and then develop on the inner walls of the DUWL. Once established, bacteria are continually sloughed from the biofilm into the water flow as planktonic (i.e., free-living) microorganisms. Unfortunately, removing biofilm can be a challenge because it is able to withstand the shear forces produced by the flow of water through the lines. The American Dental Association (ADA) has recommended that all water exiting from DUWLs not contain more than 200 colony-forming units (CFU) per 1 mL of water.

The purpose of this study was to evaluate the effectiveness of hydroperoxide ion-phase transfer catalyst cleaners and disinfectants for maintaining DUWLs. Water samples were taken from 117 sites including dental units and operatory sink faucets. The samples were plated on appropriate bacteriologic media and incubated. Scanning electron microscopy (SEM) was used to confirm the presence or absence of biofilm formation. Twenty-two dental units were retrofitted with a separate water reservoir, and a commercially-available catalyst cleaner (Sterilex Ultra, Sterilex Inc) was used for waterline cleaning as per the manufacturer's instructions. **Water from untreated units contained an average of 140,000 CFU/mL. An interesting finding was that 80% of the DUWLs harbored streptococci typically found in the oral cavity. Treatment with Sterilex Ultra successfully cleared the waterlines of biofilm when applied for 3 consecutive days. A once-weekly application of the product was shown to maintain the ADA goal of 200 CFU/mL.**

The oral streptococci isolated from 80% of the DUWLs indicate that contamination from patient-derived bacteria can occur. The authors suggested that these bacteria were probably established in the biofilm, because the organism wasn't detected in the lines after cleaning with Sterilex Ultra. The researchers also noted that the best approach to controlling planktonic bacteria in DUWLs is via biofilm removal. SEM samples from treated lines confirmed biofilm removal, and microbiological data indicated the lack of significant numbers of planktonic bacteria in the treated DUWLs.

DIS Comment: Several methods have been suggested as ways of improving DUWL quality including flushing, filters, sterile water delivery systems, and the use of a chemical germicide and an independent water reservoir. Sterilex Ultra (previously called UltraKleen) has been evaluated by DIS (see DIS 60-20) and was rated as Acceptable. This product has also been authorized for use by the A-dec company which showed that the proper use of Sterilex Ultra has no significant adverse effects on the components of their dental units.

SCREENING FOR CARDIOVASCULAR DISEASE

Screening for traditional risk factors for cardiovascular disease: a review for oral health care providers. Glick M. J Am Dent Assoc 2002;133:291-300.

Cardiovascular disease (CVD) significantly contributes to the high rate of morbidity and mortality seen among individuals in the United States. More than 60 million people in the United States suffer from some type heart disease and it claims 950,000 lives annually. Many studies have shown that educating and screening individuals and improving treatment can influence the CVD's morbidity and mortality. Preventing initial coronary events can be accomplished by identifying high-risk individuals.

Oral health care providers can aid in the screening and monitoring of risk factors associated with CVD, as well as provide patient education. The purpose of this article was to discuss the role that oral health care providers have in caring for CVD patients. The paper also reviewed risk factors and markers for CVD. To compile this information, the author conducted a MEDLINE and Internet search and reviewed

publications for the most current information on CVD and associated risk factors. He selected and reviewed more than 550 articles based on their relevance to epidemiology, etiology, and primary and secondary prevention of CVD.

From these studies the author concluded that a thorough medical history and examination are critical for screening for the existence and severity of CVD. Also, the studies showed that the following risk factors can contribute to CVD: age, smoking, hypertension, high serum cholesterol levels, elevated serum glucose levels and diabetes mellitus, family history, excess body weight, and lack of physical activity.

Patients usually visit their dentist when they feel their physical health is sound. This gives dentists the opportunity to screen for underlying medical conditions of which the patient may be unaware. This screening by can result in early recognition and intervention, potentially preventing or delaying the onset of CVD and decreasing morbidity and mortality.

DIS Comment: This article provides an excellent update on CVD and its risk factors. It also serves to point out that oral health care providers can screen for these risk factors and counsel patients about them. As part of the health care team, we should also interact with the patient's primary care provider so that he/she is fully informed about the patient's status.

GENERAL DENTISTRY

65-11 Midmark 355 Minor Surgery Light

(Project 01-22)

The Midmark 355 Minor Surgery Light is designed to provide an even light source for surgical procedures. It is advertised as offering counterbalanced, drift-free positioning that requires only two and a half pounds of force. The surgical light features an eight-inch-diameter light pattern that is produced by a faceted reflector at a 36-inch focal length. It contains a convection-cooled, 100-watt halogen lamp that has a listed color temperature of 4200 Kelvin and purportedly produces an illumination of 42,000 lux. The surgical light is said to have earned CE, Canadian, and Underwriters Laboratory certifications and is compatible with a 120-VAC/60 Hz electrical supply. It is available for both single- and dual-ceiling mounting for eight- and nine-foot ceilings and is also available as a mobile, floor-mounted light. The Minor Surgery Light can also be paired with the Midmark 354 Surgical Spotlight (DIS 64-21), which provides high-intensity illumination for surgical procedures. DIS evaluated only the mobile configuration of the 355 Minor Surgery Light in this evaluation.

Manufacturer:

Midmark Corporation
60 Vista Drive
P.O. Box 286
Versailles OH 45380
(800) 643-6275
(937) 526-3662
(877) 725-6495 FAX
www.midmark.com

Suggested Retail Price: \$1855.00

Government Price: \$1045.37

ADVANTAGES:

- + Provides excellent illumination for oral surgical procedures.
- + Bulb is easy to remove and replace.
- + Controls are easy to reach.
- + Integral infrared filter reduces radiant heat production and limits infrared emission.
- + Meets International Standard 9680 requirements for illumination pattern consistency, radiant heat production, and shadow pattern size.
- + Meets all electrical safety requirements.
- + Has a one-year warranty (except for the bulb).
- + Installation and operation manual is complete and well organized.
- + Cost is comparable to that of dental operator lights currently being used.

DISADVANTAGES:

- Instructions that caution the light is not for use in oxygen-rich atmospheres is ambiguous.
- Instructions for voltage requirements are ambiguous.
- Mobile configuration is difficult to maneuver in traditional dental treatment rooms.

SUMMARY AND CONCLUSIONS:

The Midmark 355 Minor Surgery Light is designed to provide an even light source for the illumination of oral surgery procedures. The DIS evaluation found that the light produced an even, wide area of illuminance that was better than that usually seen with dental operator lights. The light met electrical safety requirements as well as most of the items from the Medical Procurement Item Description #2 for

dental operatory lights. The light also met international standards for illumination pattern consistency, radiant heat production and shadow pattern. The USAF Surgeon General's Consultant for Oral and Maxillofacial Surgery expressed the opinion that the light should be considered for all oral surgery treatment areas. The cost of the ceiling-mounted unit is comparable to that of the ceiling-mounted dental operatory light commonly used in USAF oral surgery clinics. The illuminance requirements of a varied surgical practice might best be met by a combination of the Midmark 354 Minor Surgery Spotlight and this minor surgery light. The **Midmark 355 Minor Surgery Light** is rated **Recommended** for use by the federal dental services.

(Lt Col Roberts)

65-12 Odontosurge 3

(Project 01-07)

The Odontosurge 3 is a high-frequency electrosurgery unit designed for soft tissue surgery. The unit operates at a much higher frequency (27 MHz) than most conventional electrosurgery units (between 0.5 and 4 MHz). The manufacturer (Flex Dental A/S) claims that the product's high frequency eliminates the need to use a patient ground plate. The Odontosurge 3 has a unique power-tuning system that automatically controls the power delivery from the electrode, based on the type of tissue being cut, the incision depth, and the cutting speed. The tuning system is said to eliminate the need for power adjustments and current wave switches. The manufacturer also claims that the power output constantly regulates itself, and increases power for deep incisions to avoid loss of efficiency. However, if the cutting electrode approaches bone or tooth structure, the tuning system momentarily reduces power delivery to avoid causing tissue necrosis. Flex Dental A/S also believes this feature reduces the likelihood of sparking and tissue snagging. The handpiece features an on/off switch, which eliminates the need for foot controls. The electrodes, handpiece, and hose are purported to be autoclavable. The unit weighs approximately 6 pounds and is 1.85 inches in height, 6.81 inches in width, and 9.81 inches in length. It carries a one-year warranty. Supply voltage configurations include 100, 115, 230 V at 50/60 Hz.

Manufacturer:

Flex Dental A/S
1100 South Coast Highway, STE 204
Laguna Beach, CA 92651
(800) 368-5776
(949) 376-4228
(949) 376-8268 FAX
www.odonto-wave.com

Suggested Retail Price:

\$2,495.00 Odontosurge 3: includes a set of six (6) electrodes in holder

Government Price:

\$2,250.00 Odontosurge 3: includes a set of six (6) electrodes in holder

ADVANTAGES:

- + Automatically regulates the amount of power delivered to the electrode.
- + Very efficient at cutting and coagulating.
- + No tissue drag or sparking noted during evaluation.
- + Requires no ground pad or foot control.
- + Handpiece is operated by a finger switch.
- + Easy to set-up and use.
- + Very ergonomic with minimal controls to adjust.
- + Activating finger switch results in an audible signal indicating operation.
- + Compact, lightweight, and portable.
- + Handpiece, cord, and electrodes can be autoclaved.
- + Streamlined design of control box facilitates disinfection.

DISADVANTAGES:

- Handpiece holder does not retain handpiece securely.
- Using the buttons on the control box to choose electrode function is not intuitive.
- More expensive than conventional electrosurgery units.

SUMMARY AND CONCLUSIONS:

The Odontosurge 3 is an innovative electrosurgery unit that functions without a ground plate or foot control, which simplifies set-up and treatment. The unit features an automatic power regulator that delivers the correct amount of energy to the electrode based on the depth of the incision and tissue type. It automatically increases power for deeper cuts and reduces power when approaching bone or tooth structure. During the user evaluation, the unit exhibited no signs of tissue snagging, sparking, or burning. The evaluators noted that the unit produced precise, well-defined, clean incisions with complete hemostasis. The main shortcomings of the unit are the control box's confusing operator buttons and the non-retentive design of the handpiece holder. The **Odontosurge 3** is rated **Acceptable** for use by the federal dental services.

(Col Bartoloni)

65-13 Clinpro Pit and Fissure Sealant**(Project 01-48)**

Clinpro is a new fluoride-containing, light-activated pit and fissure sealant from 3M ESPE. The product is distinguished from other sealants in that it uses color-change chemistry to make the sealant easier to see during placement. Clinpro is pink when expressed from its delivery syringe and turns white following light activation. 3M ESPE claims that Clinpro can be placed precisely because its direct delivery syringes have "ultra-fine" disposable syringe tips, and its thin viscosity enables it to flow easily into pits and fissures.

Clinpro is packaged in a small paper box that contains 2 syringes of the sealant, one syringe of 35% phosphoric acid etchant, and disposable syringe tips. Written instructions are included as well as a pictorial example of product use that appears on the inside cover of the box.

Manufacturer:

3M Dental Products Division
3M Health Care
3M Center, Bldg 275-2SE-03
St. Paul, MN 55144-1000
(800) 237-1650
(612) 733-8524
(800) 888-3132 FAX
www.3m.com/espe/index.html

Suggested Retail Price:

\$49.45 Clinpro Sealant Introductory Kit (item number 12626) contains:
-two 1.2-mL syringes of sealant
-one 3-mL syringe of Scotchbond Etchant
-20 sealant syringe tips
-24 etchant syringe tips

Government Price:

\$30.25 Clinpro Sealant Introductory Kit (item number and contents as described above)

ADVANTAGES:

- + Small dispensing/application tips make precise placement easy.
- + Color-change chemistry makes it easy to see sealant during placement and confirms adequate light activation.
- + Viscosity of the sealant material was highly rated.