

Consortium of Operative Dentistry Educators

(CODE)



REGIONAL REPORTS
FALL 2009

Web site: <http://www.unmc.edu/code>

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Consortium of Operative Dentistry Educators (CODE)

Forward - Larry D. Haisch, D.D.S.

National Director

On February 26, 2009, CODE held a National/International meeting during the annual meeting of the Academy of Operative Dentistry in Chicago. Drs. Kevin Frazier and Gary Holmes, Medical College of Georgia School of Dentistry, presented the program "2008 CODE National Agenda, Question V: Curriculum Part 1 - Curriculum Revisions, Part 2 - Pre-clinic, Clinic Time Gap." The responses to the national Agenda Question V (see CODE web site, Regional Reports Fall 2008) were reviewed, synthesized, summarized, and discussed.

I had the privilege to attend the Region V meeting in New York and the Eastern Coalition of CAMBRA. Also attended the Region II meeting in Regina, Canada held in conjunction with the 2009 Annual Scientific Session of the Saskatchewan Dental Professions. Three of the Region II members and attendees also were presenters at the Scientific Session of the Provincial meeting.

Continue to familiarize your Deans and Department chairs with CODE's objectives and its value to their school. Their support is crucial in providing the means for faculty to attend or host Regional meetings.

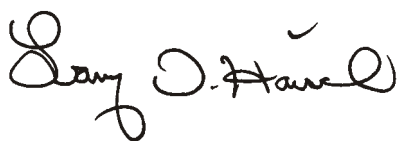
All are to spread the word about CODE and work to provide input to Licensure Boards on Restorative Dentistry. Also encourage/invite members of the Licensure examining boards to attend the Fall Regional meetings. Invite our colleagues in the Armed and Public Health Services to our meetings - both Regional and National. Again in 2009, an open invitation to attend the meetings was e-mailed to CITA, CRDTS, NERB, SRTA, WREB and the American Association of Dental Examiners.

Support of CODE by payment from the schools for annual dues is excellent, although not without repeated follow-up efforts by the National office. The same can be said for the collection of the Fall Regional Reports.

Thank you to webmaster, Dr. William Johnson, for the timely website updates and enhancements. **NOTE:** Update your schools' directory via the active "Please help update" link in the main menu of the web site: (<http://www.unmc.edu/code>)

My appreciation to the Regional Directors and the meeting hosts (Drs. Klud Razoky, David Tyler, Scott Phillips, Marco Taul, Richard Lichtenthal, James Kaim, Mary Bsechle and Elizabeth Taylor Nance), the Operative Section of ADEA and the general membership for helping to make CODE what it is and what it accomplishes.

Best wishes,

A handwritten signature in black ink, reading "Larry D. Haisch". The signature is written in a cursive style with a checkmark above the "H".

ORIGINS OF C.O.D.E **(Consortium of Operative Dental Educators)**

Project ACORDE (A Consortium of Restorative Dentistry Education)

The date usually cited as the starting point for the development of Project ACORDE is 1966. That year, in Miami, the Operative Dentistry Section of AADS formed a committee charged to plan for the cooperative development of teaching dental materials.

In July of 1971, the Dental Health Center, San Francisco, invited faculty from 14 dental schools to explore the feasibility of reaching consensus of a series of operative dental procedures. The outcome of the meeting suggested that it was feasible to achieve broad-based agreement on basic procedures: task analyses could be developed in which consensus could be reached on essential details of methods and instrumentation. The Project ACORDE committee was charged with the responsibility for coordinating curriculum development efforts on a national level in November of that year. Prominent in this project development were Bill Ferguson, David Grainger and Bob Wolcott.

The Broad Goals and Functions of this committee were:

1. To gain agreement among all participating dental schools on the teaching of operative dentistry functions and gain acceptance by all schools.
2. To produce materials which can be universally accepted and utilized for teaching dental students and expanded function auxiliaries.

During 1974, a 15 module package entitled Restoration of Cavities with Amalgam and Tooth-colored Materials was presented.

The preparation package entitled Cavity Preparations for Amalgam and Tooth-colored Materials became available for distribution in March of 1976.

Project ACORDE was found to have produced three major benefits for dental education:

1. It opened new channels of communication among dental educators.
2. It suggested uniform standards of quality for the performance of restorative skills.
3. It produced numerous lesson materials which were useful both for teaching students and as models of developers of other lessons.

The benefit, most frequently cited by dental school faculty, was communication. The primary example of the communication begun by Project ACORDE, which has lasted well beyond the initial project, is CODE (Consortium of Operative Dentistry Educators). CODE has as its goal, the continuation of meetings for the purpose of information exchange among teachers of operative dentistry. Regional CODE meetings are held annually with minutes of each session recorded and sent to the national director for distribution. This system is a direct spin-off of Project ACORDE.

The first annual session of CODE was held in 1974/75.

The Early Years (1974-1977)

As founding father of the concept, Robert B. Wolcott of UCLA assumed the role of national coordinator and appointed Frank J. Miranda of the University of Oklahoma as national secretary. A common agenda to be provided to all six regions was established at this time. The first regional meetings were held in the winter of 1974. During the first three years of operation, each region devised a system of rotation so that a different school hosted the regional meeting each year, thus providing a greater degree of motivation and bringing schools closer together in a spirit of fellowship and unity. Each region submitted suggestions for future agendas, thereby insuring a continued discussion of interesting and relevant topics. A collection of tests or a test bank was started in early 1976. This bank consisted of submitted written examination questions on specified topics that were compiled and redistributed to all schools.

The Transition Years (1977-1980)

The first indication that the future of CODE was in jeopardy came in 1977, the first year that a national report could not be compiled and distributed. As the result of the efforts of a committee chaired by Dr. Wolcott, the original concept was renewed in 1980. Its leadership had been transformed from the structure of a national coordinator and secretary to a standing subcommittee under the auspices and direction of the Section of Operative Dentistry of the AADS.

The Reaffirmation Years (1997 - 1998)

During the 1997 meetings of both the Operative Dentistry Section Executive Council and the Business meeting of the Section, interest was expressed about reorganizing CODE and aligning it more closely with the Section. During the following year, fact finding and discussions occurred to formulate a reorganization plan. The plan was submitted for public comment at the 1998 meeting of the Operative Dentistry Section Executive Council and the Business meeting of the Section. At the conclusion of the business meeting the reorganization plan was approved and implemented.

Reaffirmation of CODE official title (2003)

CODE changed its name from *Conference of Operative Dentistry Educators* to *Consortium of Operative Dentistry Educators* due to a ratification vote at the Fall 2003 Regional CODE meetings.

The Future of CODE

The official sponsorship by the Section of Operative Dentistry of ADEA (formerly ADDS) and the revised administrative structure of CODE are both designed to insure its continuance as a viable group. The original concepts, ideas and hopes for CODE remain unchanged and undiminished. Its philosophy continues to be based on the concept of dental educators talking with each other, working together, cooperating and standardizing, when applicable, their teaching efforts and generally socializing in ways to foster communication. There is every reason to believe that organizations such as CODE, and those developed in other fields of dentistry, will continue to crumble the barriers of provincialism and provide the profession with a fellowship that is truly national in scope.

National Coordinators/Directors

1974 - 1982	Robert B. Walcott (UCLA)
1982 - 1986	Thomas A Garmen (Georgia)
1986 - 1989	Frank Miranda (Oklahoma)
1989 - 1998	Marc Gale (Florida)
1998 - to present	Larry Haisch (Nebraska)

ORGANIZATION OPERATION

The Section of Operative Dentistry of the American Dental Education Association has “oversight” responsibility for sustaining and managing CODE.

- The national director will be appointed by the executive council for a three-year term, renewable not to exceed two consecutive terms.
- The director will be selected from a list of one or more individuals nominated by the CODE Advisory Committee after input from the regions.
- The director will perform the functions and duties as set forth by the council.
- The director will be a voting member of the council who will be expected to attend regional CODE meetings and the annual meeting of the council and section.

A CODE Advisory Committee will assist the national director with his/her duties.

- A CODE Advisory Committee will consist of one member (regional director) from each of the six regions plus 1 or 2 at-large members.
- Each regional director is selected by their region. The at-large member(s) may be selected by the national director and/or the executive council.
- The terms are three years, renewable, not to exceed two consecutive terms.
- The national director serves as chair of the Advisory Committee.

The annual CODE Regional meetings will serve as the interim meeting of the section. Some section business may be conducted at each CODE Regional meeting as part of the National agenda.

Regional Directors:

- Will be a member of ADEA and the section of Operative Dentistry
- Will oversee the conduct and operation of CODE in their respective region while working in concert with the national director
- Will have communication media capabilities including e-mail with the capability of transmitting attachments
- Will Attend the region’s meeting
- Ensure that meeting dates, host person and school are identified for the following year
- Do follow-up assist on dues “non-payment” by schools
- Ensure that reports of regional meetings are submitted **within 30 days** of meeting conclusion to the national director
- Ensure that individual school rosters (operative based) are current for the region
- Identify a contact person at each school
- Assist in determining the national agenda
- Other, as required

CODE ADVISORY COMMITTEE
(Revised 2-01-08)

	Region	Regional Director	Phone/E-mail	Term (3 years)
I	Pacific	Dr. Edmond R. Hewlett UCLA Los Angeles, CA	310-825-7097 ehewlett@dentistry.ucla.edu	2009-2011
II	Midwest	Dr. R. Scott Shaddy Creighton University Omaha, NE	402-280-5226 shaddy@creighton.edu	2009-2011
III	South Midwest	Dr. Scott Phillips Mississippi School of Dentistry Jackson, MS	601-984-6042 smphillips@sod.umsmed.edu	2010-2012
IV	Great Lakes	Dr. Paul E. Reifeis Indiana University Indianapolis, IN	317-278-1858or 317-274-8408 pereifei@iupui.edu	2010-2012
V	Northeast	Dr. Richard Lichtenthal Columbia University New York, NY	212-305-9898 rml1@columbia.edu	2008-2010
VI	South	Dr. Kevin Frazier MCG Augusta, GA	706-721-2881 kfrazier@mail.mcg.edu	2008-2010
II	At-Large	Dr. Poonam Jain SIU Alton, IL	618-474-7073 pjain@siu.edu	2008-2010
III	At-Large	Dr. Alan Ripps LSU New Orleans, LA	540-619-8548 aripps@lsuhsc.edu	2010-2012
II	National Director	Dr. Larry Haisch UNMC Lincoln, NE	402-472-1290 lhaisch@unmc.edu	2008-2010
II	Web Master	Dr. William Johnson UNMC Lincoln, NE	402-472-9406 wwjohnson@unmc.edu	No Term

**Consortium of Operative Dental Educators (CODE)
2009-2010**

Paid - Regions and Schools

✓ = Paid Member as of November 13, 2009

68 schools (10 Canada, 57 United States)

<p><u>Region I (Pacific) -11</u></p> <ul style="list-style-type: none"> ✓ Alberta - Canada ✓ ATSU - Arizona ✓ MUCDM - Arizona ✓ British Columbia - Canada ✓ Loma Linda ✓ Nevada ✓ Oregon ✓ Pacific ✓ UCLA ✓ UCSF ✓ USC ✓ Washington 	<p><u>Region II (Midwest) - 10</u></p> <ul style="list-style-type: none"> ✓ Colorado ✓ Creighton ✓ Iowa ✓ Manitoba - Canada ✓ Marquette ✓ Minnesota ✓ UMKC - Kansas ✓ UNMC - Nebraska ✓ Saskatchewan - Canada ✓ Southern Illinois
<p><u>Region III (South Midwest) - 7</u></p> <ul style="list-style-type: none"> ✓ Baylor ✓ Louisiana State ✓ Mississippi ✓ Oklahoma ✓ Tennessee ✓ UTHSC - San Antonio ✓ UTHSC - Houston 	<p><u>Region IV (Great Lakes) - 10</u></p> <ul style="list-style-type: none"> ✓ Case Western ✓ Detroit Mercy ✓ Illinois ✓ Indiana ✓ Michigan ✓ Ohio State ✓ Pittsburgh ✓ SUNY - Buffalo ✓ West Virginia ✓ Western Ontario - Canada
<p><u>Region V (Northeast) - 18</u></p> <ul style="list-style-type: none"> ✓ Boston ✓ Columbia ✓ Connecticut ✓ Dalhousie - Canada ✓ Harvard ✓ Howard ✓ Laval - Canada ✓ Maryland ✓ McGill - Canada ✓ Montreal - Canada ✓ New Jersey ✓ NYU ✓ Pennsylvania ✓ SUNY - Stony Brook ✓ Temple ✓ Toronto - Canada ✓ Tufts ✓ US Naval Dental School 	<p><u>Region VI (South) - 11</u></p> <ul style="list-style-type: none"> ✓ Alabama ✓ Florida ✓ Georgia ✓ Kentucky ✓ Louisville ✓ Meharry ✓ North Carolina ✓ Nova Southeastern ✓ Puerto Rico ✓ South Carolina ✓ Virginia

The National Agenda for 2009 was established after review of the suggestions contained in the reports of the 2008 Fall Regional meetings, National CODE Meeting and from the Regional CODE Directors. Previous National agendas are reviewed to avoid topic duplication. Inclusion of a previous topic may occur for discussion from the aspect of what has changed and the response/action taken and the outcome.

Thank you to the Regional CODE Directors and the membership for making recommendations to establish the National Agenda. Each Region is encouraged to also have a Regional Agenda.

Each school attending the Regional Meetings is requested to bring their responses to the National Agenda in written form AND electronic media. This information is vital to the publication of the Annual Fall Regional Report.

Continue to invite your colleagues, who are Dental Licensure Board examiners and your Military and Public Health Service colleagues who head/instruct dental education programs to your Regional meetings.

Each Region should select next year's meeting site, date or tentative date during your Fall Regional CODE meeting so this information may be published in the Annual Fall Regional Report and on the Web site.

The Regional meeting reports are to be submitted to the National Director in **publishable format** as an attachment to e-mail.

The required format and sequence will be:

- 1. CODE Regional Meeting Report Form***
- 2. CODE Regional Attendees Form***
- 3. Summary of responses to the National Agenda.**
- 4. Individual school responses to the National Agenda**
- 5. The Regional Agenda summary and responses.**

* (Copies may be obtained from the Web site: <http://www.unmc.edu/code>).

NOTE: to locate the web site via a search engine, enter Academy of Operative Dentistry and then use the link CODE and ADEA.

Send a hard copy and an electronic copy of the report to the National Director. Both electronic and hard copy versions are to be submitted **within thirty (30) days** of the conclusion of the meeting.

National CODE Meeting:

The meeting will be held **Thursday, February 25, 2010 from 4:00 pm to 6:00 pm** at the Fairmont Hotel in Chicago, Illinois. Suggestions as to how to make this meeting productive and efficient are requested.

National Directory of Operative Educators:

The CODE National Office maintains the National Directory of Operative Educators as a source for other professionals. It is imperative that the information be as current as possible.

To update your university's directory listing on the CODE website,

<http://www.unmc.edu/code>

click on the red link, "Please help update," found under the CODE menu on the left side of the screen. Make any necessary changes and click "submit form".

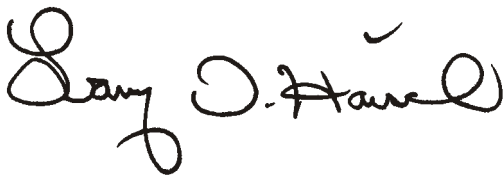
Please have each school in your Region update the following information for the National Directory of Operative Educators:

- School name and complete mailing address
- Individual names: (full time), phone #, fax #, e-mail address of faculty who teach operative dentistry.

(This could be individuals in a comp care program, etc. if there is no defined operative section of department.)

Your help and cooperation in accomplishing the above tasks helps save time and effort in maintaining a complete web site and publishing the Annual Fall Regional Report in a timely fashion.

Thank you,



Larry D. Haisch, D.D.S.
National Director, C.O.D.E.
UNMC College of Dentistry
40th & Holdrege Streets
Lincoln, Ne 68583-0740

lhaisch@unmc.edu
Office: 402-472-1290
Fax: 402-472-5290

2009 NATIONAL CODE AGENDA

(Please cite the evidence were applicable. If utilizing reports/forms/schedules from your Regional schools, please submit these as PDF files for utilization in the Annual Fall Regional Report)

I. Fiber Posts.

1. Are you teaching fiber post for endodontic build-ups in your school? Graduate and/or undergraduate programs?
2. Which system are you using and why?
3. What bonding material are you using with your fiber posts and why?

II. Lasers

1. What is your school's (and/or department's) view on the use of lasers in Operative Dentistry? Minimally Invasive Dentistry? Surface treatment for bonding? Cavity Preparation? DIAGNODent?
2. Are lasers being taught for applications in operative/restorative dentistry at your school? If so, how? Didactic, Pre-clinical, and/or in Clinic?
3. What credentials does your school require for those who teach and use the lasers?
4. Are there lasers available for teaching and patient care?

III. DIAGNODent (first question is an update from a 2003 agenda item)

1. Does your school currently teach the DIAGNODent in its caries diagnosis curriculum?
2. Does your school possess any DIAGNODent units?
3. What sort of hands on exposure do your faculty/students have to the DIAGNODent? (Example: lectures, demo, and/or actual patient treatment)
4. By word of mouth, some practitioners are advocating the use of DIAGNODent by dental hygienists in their practices. Although final "confirmation" of caries is done by the dentist, does use of DIAGNODent qualify as diagnosis of caries? Any support from the literature?

IV. Gold

1. Has the use of Cast Gold as a restorative treatment increased, decreased, or remained the same over the past 5 years in your pre-doctoral clinics? Explain this trend; or lack of change.
2. What are the most common applications of this technique listed in frequency of use or in decreasing order? (Examples: Crown, FPD, Onlay, $\frac{3}{4}$ crown, Class II Inlay, Other: specify)
3. If you do Gold Crowns in your clinics, please estimate the percentage of total gold crowns done last year.

4. Are students able to receive Direct Gold (foil) training in your school?
If so, please describe the method of teaching (regular curriculum, elective curriculum, gold study group visits, individual experience by a faculty mentor, other-specify).
5. Did any students do at least one DIRECT GOLD restoration in your clinical last year? If so, how many had this experience and describe or categorize the experiences.(Example: Class V, Class I, Class VI, Crown repair, other-specify).

V. Cavity Liners

1. What is the standard cavity-lining material for placement under amalgam restorations, taught and practiced at your school? (Are all amalgams, regardless of size and location, being bonded, or are glass ionomer liners/cements used?)
2. What are schools teaching as acceptable used for flowable composite? (Liners under composites? For Class V Lesions? etc.?)

VI. Effect of Beverage on Enamel/Dentin Erosion

1. Is information regarding the sugar/acid content and erosive properties of soft/energy drinks being given in an Operative Dentistry course to your dental students?

VII. Licensing Examinations

Licensing examinations continue to constantly change. Florida has accepted and adopted NERB. California has accepted WERB and will allow a PGY1 alternative. New York has a mandated PGY1 and Minnesota has just announced the elimination of patients in testing. (See ADA on-line news of July 14, 2009, Dr. Bicuspid on-line article of July 8, 2009)

1. Should CODE take an official position and what is that position? What is the rationale for such a position? Pros/Cons.
2. Should dental schools be responsible for the content of the examinations? Pros/Cons.

Regional CODE Agenda

To be established by the respective Region and Regional Director. Please also report on responses to the Regional Agenda from all participants.

Suggestions for CODE.

1. What can the organization do to improve its effectiveness?
2. Any comments or suggestions to improve the Web site?

<http://www.unmc.edu/code>

NOTE: to locate the web site via a search engine, enter Academy of Operative Dentistry and then use the link CODE and ADEA.

3. Other comments/suggestions?

CODE REGIONAL MEETING REPORT FORM

REGION _____

LOCATION AND DATE OF MEETING:

University: _____

Address: _____

Date: _____

CHAIRPERSON:

Name: _____ Phone #: _____

University: _____ Fax #: _____

Address: _____ E-mail: _____

List of Attendees: Please complete the CODE Regional Attendees Form (following page)

Suggested Agenda Items for Next Year:

LOCATION AND DATE OF NEXT REGIONAL MEETING:

Name: _____ Phone #: _____

University: _____ Fax #: _____

Address: _____ E-mail: _____

Date: _____

Please return all completed enclosures to
Dr. Larry D. Haisch, National Director, UNMC College of Dentistry;
40th and Holdrege Streets; Lincoln, NE 68583-0740.

Deadline for return: 30 Days post-meeting

Office: 402 472-1290 Fax: 402 472-5290 E-mail: lhaisch@unmc.edu

Also send the information on a disk and via e-mail with all attachments.
Please indicate the software program and version utilized for your reports.

CODE Region _____ Attendees Form

[illegible]

CODE REGIONAL MEETING REPORT FORM

REGION I (Pacific)

LOCATION AND DATE OF MEETING:

University: Arizona School of Dentistry and Oral Health - A. T. Still University

Address: Mesa, AZ 85206

Date: November 5-6, 2009

CHAIRPERSON:

Name: Dr. Klud Razoky

Phone #: 480-219-6184

University: Arizona School of Dentistry

Fax #: 480-219-6180

Address: Mesa, AZ 85206

E-mail: krazoky@atsu.edu

List of Attendees: Please see reverse of this page for List of Attendees to Regional Meeting

Suggested Agenda Items for Next Year:

- Age-appropriate restorative dentistry
- Should faculty lead or follow regarding trends in the use of cast gold, especially partial coverage?

LOCATION AND DATE OF NEXT REGIONAL MEETING:

Name: Dr. Phil Buchanan

Phone #: 408-427-2552

University: University of the Pacific

Fax #:

Address: San Francisco, CA 94115

E-mail: jbuchan@garlic.com

Date: TBD

Please return all completed enclosures to
Dr. Larry D. Haisch, National Director, UNMC College of Dentistry;
40th and Holdrege Streets; Lincoln, NE 68583-0740.
Office: 402 472-1290 Fax: 402 472-5290 E-mail: lhaisch@unmc.edu

Deadline for return: 30 Days post-meeting

Also send the information on a disk and via e-mail with all attachments.
Please indicate the software program and version utilized for your reports.

CODE Region __I__ Attendees Form

NAME	UNIVERSITY	PHONE #	FAX #	E-MAIL ADDRESS
Klud Razoky	ASDOH	480-219-6184	480-219-6180	krazoky@atsu.edu
Jim Pashayan	MUCDM	623-571-3811	623-572-3803	jpashayan@midwestern.edu
Douglas Roberts	LLU	909-558-4640	909-558-0235	droberts@llu.edu
Dan Tan	LLU	909-558-4640	909-558-0235	datan@llu.edu
John Lee	OHSU	503-494-8948	503-494-8339	leejoh@ohsu.edu
Mark Fogelman	UBC	604-822-6626	604-584-1261	mfog@interchange.ubc.ca
Ingrid Emanuels	UBC	604-822-6626	604-584-1261	emanuels@interchange.ubc.ca
Janet Bauer	UCLA	310-825-7747	310-825-2536	jbaruer@dentistry.ucla.edu
Edmond Hewlett	UCLA	310-825-7097	310-825-2536	ehewlett@dentistry.ucla.edu
Oanh Le	UCSF	650-558-9253	650-558-9256	oanh.le@ucsf.edu
Jonathan Rothbart	UNLV	702-774-2516	702-774-2651	jonathan.rothbart@unlv.edu
Ray Tozzi	UNLV	702-774-2673	702-774-2651	raymond.tozzi@unlv.edu
Phil Buchanan	UOP	408-427-2552(cell)		jbuchan@garlic.com
Eddie Sheh	USC	213-740-2375		sheh@usc.edu
J. Martin Andersen	UW	253-852-5155	253-852-5159	jma@uw.edu
Tar-Chee Aw	UW	206-543-5948	206-543-7783	tcaw@uw.edu
Charles Broadbent	WREB	480-838-7411	480-206-6921	carlosdbt@cox.net

**2009 NATIONAL CODE AGENDA
REGION I
SUMMARY RESPONSES TO NATIONAL AGENDA**

(Editor note: Questions condensed for printing purposes)

I. Fiber Posts.

Six of 10 schools are teaching/using fiber posts, with users regarding their experience as positive. One non-user school cited concerns regarding post flexure elevating the risk of debonding or breakage. Bisco Double-Tapered Light Post is the most commonly-used product (four schools), with the Whaledent fiber Parapost use at the other two. A variety of self-curing resin cements (traditional and self-adhesive) are being used to lute the fiber posts.

II. Lasers

Four schools have didactic and clinical curricula in dental lasers. At the clinical level, use on soft tissue is significantly more common than on tooth structure. Non-users tended to acknowledge the value of lasers in soft tissue management prior to crown impressions. None of the schools view laser treatment as an appropriate tooth surface preparation for bonding. Supervising faculty for clinical laser use are required to either have significant experience with lasers or completion of the school's laser curriculum.

III. DIAGNODent (first question is an update from a 2003 agenda item)

Nine of ten schools teach the use of DIAGNODent (one of these at the level of a "mention in lecture") six of these schools have at least one unit, one is acquiring a unit, and one borrows a unit annually from KaVo for its preclinical course. Four schools currently provide hands-on experience in preclinical /sim lab and one additionally reports limited use of the units in its clinic. Attendees generally agree that DIAGNODent is at best an adjunct to caries detection and that its use does not qualify as diagnosis.

IV. Gold

Two schools reported decreased use of cast gold, while the other eight indicated that it has remained the same. Patient preferences for tooth-colored options is a commonly cited reason for actual and anticipated decreases. The most common application is the full crown. Two schools with requirements in partial coverage restoration report that several of these restorations are placed each year. Percentages of gold crowns done in clinics ranged from less than ten to the mid-30s. Five of the ten reporting schools provide direct gold training to students - exclusively as elective courses - and five to 20 students at these schools place direct gold clinically (primarily Class Is and gold crown repairs).

This topic generated a lively discussion. Attendees generally felt that: more faculty should be exposed to the cast gold philosophy of R. V. Tucker; students are highly motivated to provide cast gold restorations once they are exposed to the Tucker protocol; there is educational value in teaching students the high precision in cast gold technique regardless of whether they eventually provide gold restorations in their practices; communication with patients (patient education) is the key to their acceptance of gold.

V. Cavity Liners

Resin-modified glass ionomer was the unanimous choice of liner reported for use under amalgams when a liner is desired. None of the schools are utilizing amalgam bonding. The

most commonly-cited use of flowable composite was in sealants/PRRs. Three schools are using flowable composites to restore Class V abfractions, and two are using it in the “snowplow” technique for Class IIs.

VI. Effect of Beverage on Enamel/Dentin Erosion

Information regarding beverage-related tooth damage is generally provided in cariology courses rather than operative dentistry courses.

VII. Licensing Examinations

School representatives generally (but not unanimously) expressed that dental schools should certify graduates for licensure and that patient procedures should be eliminated. There was no strong sense that CODE should take a position on this issue.

2009 NATIONAL CODE AGENDA
REGION I RESPONSES
(Evidence cited where applicable)

Region I School Abbreviations

ATSU	Arizona School of Dentistry	UCLA	University of California - LA
UBC	University of British Columbia	UCSF	University of California - SF
LLU	Loma Linda University	UNLV	University of Nevada
MUC	Midwestern University College	UOP	University of the Pacific
OHSU	Oregon School of Dentistry	USC	University of Southern California
UALB	University of Alberta	UWASH	University of Washington

I. Fiber Posts.

1. Are you teaching fiber post for endodontic build-ups in your school?
Graduate and/or undergraduate programs?

ATSU: No, we do not teach fiber post in our fixed module and we do not use it in the clinic.

UBC: Yes, in the undergraduate program.

LLU: Fiber posts are used as well as cast gold posts and direct cores with amalgam and composite.

MUC: No response noted.

OHSU: We are not teaching the use of fiber posts in either graduate or undergraduate programs.

UALB: No response noted.

UCLA: We are not currently teaching fiber posts for foundation restorations in endodontic teeth.

UCSF: Yes, we are teaching the use of fiber posts for endodontic buildups.

UNLV: We teach the use of fiber posts in the undergraduate curriculum using the Parapost product.

UOP: We are not currently teaching the use of fiber posts.

USC: We have discussed about the pros and cons and the possibility of using Carbon Fiber posts at USC for more than 10 years. But no, we are not teaching fiber

posts at the dental school at this time. We recently looked into bringing a few fiber post systems, including the Whaledent Parapost fiber post and testing them here.

UW: Three years ago we introduced the use of a fiber post and composite resin core to the sophomore class. The experience has been excellent. The topic is included in the very comprehensive lectures on restoring endodontically treated teeth.

2. Which system are you using and why?

ATSU: Fiber posts have some flexibility when they bond with resin, they tend to break and come out, and they are not retreatable.

UBC: Bisco Double taper Light-Post Illusion. The RDT post system that Bisco markets is well researched, has documented success, and clinically easy to use.

LLU: We use the DT Light post from Bisco because the shape generally fits the canal shape and Bisco is generous in their support of our preclinical use of this product.

MUC: No response noted.

OHSU: See response to previous question.

UALB: No response noted.

UCLA: See response to previous question.

UCSF: We use Whaledent (white Parapost) because it's easier to use, less technique sensitive, and costs less than other posts. It also flexes similar to dentin, developing less fracture stress on the post.

UNLV: See response to previous question.

UOP: We use cast post/cores and steel Paraposts.

USC: We are using the traditional Parapost system for prefabricated posts and cast posts at this time based on Sorensen's studies. The traditional studies done by J. Standlee from UCLA supports the use of the systems. Clinical track record on the system at USC is fair to good. Studies of dentin bonding systems shows that it tends to fail after cyclic loading and fatigue testing. That is one of the main reasons preventing us from using large composite buildups with or without fiber posts. We also believe that if the tooth has the proper ferrule effect, it does not matter what type of post we use, including fiber posts.

UW: The specific laboratory project is the restoration of an "endodontically treated" dentiform tooth (maxillary central incisor) with the Whaledent/Coltene Parapost System of FiberLux post, Paraform 'matrix', and ParaCore dual core cure resin.

3. What bonding material are you using with your fiber posts and why?

ATSU: We use Para-post, zirconium post, and custom made posts.

UBC: We bond posts with the Bisco Post Placement kit.

- LLU:** We use a variety of bonding procedures including Duo-Link, Panavia, and Bistite. Success of the bonding is more determined by the meticulous adherence to proper procedure than from the specific material itself.
- MUC:** No response noted.
- OHSU:** See response to previous question.
- UALB:** No response noted.
- UCLA:** See response to previous question.
- UCSF:** We bond posts with Bistite II DC, All bond system, C&B luting cement, and Fuji Plus. We most often use C&B luting cement and Fuji Plus because the coefficients of expansion are compatible with dentin and flexi-post has equal stress distribution.
- UNLV:** Our bonding protocol is silane followed by a dual-cured resin cement.
- UOP:** We cement post with RelyX Unicem.
- USC:** We are not bonding our cast posts or prefab posts. We just switched from ZPC to resin-modified glass ionomers to cement our cast posts or prefab posts.
- UW:** We have found the cementation of the post convenient with 3M's resin cement. We have minimized the specific indication in the didactic course, preferring to leave that to the discretion of the clinical faculty based on the clinical circumstances for patients in our clinics.

II. Lasers

1. What is your school's (and/or department's) view on the use of lasers in Operative Dentistry? Minimally Invasive Dentistry? Surface treatment for bonding? Cavity Preparation? DIAGNODent?

ATSU: Our students experience the use of lasers in the clinic - a few cases in Operative Dentistry. DIAGNODent is not used.

UBC: We have no policy as of yet. We teach DIAGNODent (see section III), but we are not teaching or using lasers for other applications in operative/restorative.

LLU: The Biolase Waterlase is the system that is used here. It is used for some cavity preparation procedures but more for soft tissue procedures related to margin access for restorative procedures. It is not used specifically to prepare a surface for bonding, but the surface becomes a byproduct of the laser procedure. Conventional etch is used in conjunction with the laser prep.

MUC: No response noted.

OHSU: There is good evidence (Hilton TJ, (Swift EF, ed). Critical Appraisal: Adhesion to Laser-Prepared Tooth Structure. J Esthet Rest Dent 18:370-375; 2006) to show that laser prepared surfaces reduce bonding effectiveness. This is certainly true of dentin adhesion, and may be true of enamel bonding as well. Since lasers are typically advocated for minimally invasive dentistry procedures, which almost

universally implies the use of adhesive dentistry, we do not recommend, nor teach clinically, the use of lasers for tooth preparation. DIAGNODent is available for student checkout and use from our clinic dispensary. Study results on DIAGNODent are variable, but seem to show sensitivity and specificity for caries detection comparable to the typical clinical assessment including examination with magnification in a dry field and radiographs. We recommend DIAGNODent as an adjunct to occlusal caries diagnosis.

UALB: No response noted.

UCLA: We are not currently teaching the use of lasers for operative dentistry procedures. We perceive no benefit (and an unacceptable cost/benefit ratio) regarding the use of laser on enamel and dentin as compared to traditional tooth preparation methods. Additionally, evidence does not support the use of laser on tooth structure as either an adjunct to or a substitute for the etch/prime/bond protocol for resin adhesion. That said, we do perceive significant value in the teaching and application of the diode laser for soft tissue procedures associated with restorative dentistry such as gingival recontouring and troughing prior to crown impressions.

UCSF: Laser is an exciting new technology and a useful addition to our armamentarium.

UNLV: We like the ideal of teaching laser applications in operative dentistry but we have none available at this time. Students currently receive some didactic information on lasers in the preclinical curriculum.

UOP: Lasers are available for use in the clinic on soft tissue only by certified instructors.

USC: We do not use laser in operative dentistry at this time though we have followed up on laser for more than 10 years. We still believe that "laser has yet to find its place in dentistry." We tend to be on the conservative picking some of the new high tech material & instrument and we really have not invested in laser, at least in the area of operative dentistry. We do not teach lasers in didactic, preclinical or clinic.

UW: We are not teaching the use of lasers for any of the above purposes. They are quite expensive and there is no evidence of any advantage to their use.

2. Are lasers being taught for applications in operative/restorative dentistry at your school? If so, how? Didactic, Pre-clinical, and/or in Clinic?

ATSU: Our curriculum includes 3 full days of pre-clinical laser module. We teach the history, science and applications of lasers. The students have hands-on in the simulation clinic and experience the use of different kinds of laser units. They practice using the laser on soft tissue with pig tongues and also hard tissue using extracted teeth. During the 3rd and 4th years, students should have at least one experience of using laser on hard and soft tissue in the clinic. We currently give laser certification to our graduates. We are considering including more laser experience for our students. Our faculty leader in laser just attended a big meeting regarding the photo dynamic theory and new research in laser dentistry. We are going to review our laser module and try to improve it and include the new technique.

UBC: See response to previous question.

- LLU:** LLu conducts a six hour (two 3 hour) orientation elective course prior to the student being able to use the laser in clinic. In clinic the student can only work with a faculty who has taken the laser course and is cleared to use the laser in the clinic.
- MUC:** No response noted.
- OHSU:** Students receive didactic (lecture) information on lasers for operative/restorative dentistry.
- UALB:** No response noted.
- UCLA:** The addition of this use of laser to our curriculum within the next 12 months is likely. Lasers are currently for clinical use only in the GPR/Hospital Dentistry program. Lasers are not currently available for use in the predoctoral program.
- UCSF:** Students receive lectures in the use of lasers in operative dentistry. Clinical use is limited to soft tissue only.
- UNLV:** See response to previous question.
- UOP:** See response to previous question.
- USC:** See response to previous question.
- UW:** See response to previous question.

3. What credentials does your school require for those who teach and use the lasers?

- ATSU:** We require five years of laser experience for faculty who teach or use lasers.
- UBC:** See response to previous question.
- LLU:** See response to previous question.
- MUC:** No response noted.
- OHSU:** See response to previous question.
- UALB:** No response noted.
- UCLA:** See response to previous question.
- UCSF:** Students undergo standard proficiency training with Dr. Joel White (4 hours lecture, 6 hours hand-on simulation, 2 hours online exam).
- UNLV:** See response to previous question.
- UOP:** See response to previous question.
- USC:** See response to previous question.
- UW:** See response to previous question.

4. Are there lasers available for teaching and patient care?

ATSU: We have 12 units used for the predoctoral program and AEGD residents.

UBC: See response to previous question.

LLU: We have three laser units.

MUC: No response noted.

OHSU: There are no laser units available for teaching or patient care.

UALB: No response noted.

UCLA: We are adding DIAGNODent to our curriculum this year.

UCSF: We currently have Nd:YAG, and diode for soft tissue crown lengthening, frenectomy, and fibroma removal. Hopefully, by February of 2010, we will use Erbium:YAG with water for limited Class I cases.

UNLV: See response to previous question.

UOP: See response to previous question.

USC: See response to previous question.

UW: See response to previous question.

III. DIAGNODent (first question is an update from a 2003 agenda item)

1. Does your school currently teach the DIAGNODent in its caries diagnosis curriculum?

ATSU: We teach it during the operative module to our first year dental students.

UBC: Yes, 3rd year students are given a didactic lecture type session on novel caries detection technologies including DIAGNODent. Additionally, students have an opportunity, in small groups of six, to apply DIAGNODent in two settings on extracted teeth and on each other. Students may also make appointments for using equipment when they will have relevant clinical cases.

LLU: It is mentioned in lecture but not used in the clinic.

MUC: No response noted.

OHSU: DIAGNODent is discussed as a newer method to diagnose caries that are suspected but not clearly seen on radiographs or clinically.

UALB: No response noted.

UCLA: We are introducing DIAGNODent into our Cariology curriculum this year in a new 2nd year Cariology course on caries detection methodologies.

UCSF: Yes, we currently teach the DIAGNODent in our caries diagnosis curriculum.

UNLV: We teach DIAGNODent use in DS1 Operative and hands-on in DS2 Cariology.

UOP: We do currently teach the DIAGNODent, but we use only on a limited basis clinically, mainly in a couple of Pediatric Dentistry departments.

USC: No, we do not teach DIAGNODent, but we use only on a limited basis clinically, mainly in a couple of Pediatric Dentistry departments. Our faculty believe that DIAGNODent is an acceptable adjunct to radiographs & clinical examination to diagnose caries but have not invested in it. We are a little concerned about possibility of student abuse and over-diagnosis if when used without the proper guidance.

UW: Yes, we do teach the applications of the DIAGNODent as an adjunct for diagnostic purposes but the students do not use it in the clinics.

2. Does your school possess any DIAGNODent units?

ATSU: We used to have two units which were given to us and they were rarely used. The company took them back. We are in the process of purchasing the units again and comparing them to other systems.

UBC: There is only one unit in the school which was purchased for research purposes but it is also used for demonstrations.

LLU: We do not possess an units.

MUC: No response noted.

OHSU: We do have one unit, as well as Midwest's Caries ID.

UALB: No response noted.

UCLA: We currently have one unit and are acquiring another.

UCSF: We have three units and one QLF unit.

UNLV: We do not have any units.

UOP: We have 2 DIAGNODent units and several CARIES ID units.

USC: We have two units in Pediatric Dentistry.

UW: We have two units, but students' exposure is through lecture only.

3. What sort of hands on exposure do your faculty/students have to the DIAGNODent?
(Example: lectures, demo, and/or actual patient treatment)

ATSU: Faculty and students currently have no hands-on exposure - lectures only.

UBC: Faculty and students are exposed to lectures and demonstrations with a possible extension to clinical cases.

LLU: No response noted.

MUC: No response noted.

- OHSU:** No hands-on exposure yet - the faculty has had the opportunity to try it at the Restorative meeting and we are looking for ways to actually have them participate in the research.
- UALB:** No response noted.
- UCLA:** Students will initially be exposed to lecture and demo. Plans are underway to design a hands-on exercise – likely to occur in simulation on extracted teeth – for both students and faculty.
- UCSF:** Hands-on experience occurs in the sim lab, with limited use in clinic.
- UNLV:** Hands-on exposure occurs in a preclinical demonstration and a hands-on exercise in the Simulation Lab.
- UOP:** Students learn usage of these devices in per-clinical Cariology lab.
- USC:** Pre-doctoral dental students receive no hands-on experience.
- UW:** See response to previous question.

4. By word of mouth, some practitioners are advocating the use of DIAGNODent by dental hygienists in their practices. Although final “confirmation” of caries is done by the dentist, does use of DIAGNODent qualify as diagnosis of caries? Any support from the literature?

- ATSU:** No response noted.
- UBC:** No, DIAGNODent when used alone does not qualify for caries diagnosis. Moreover, unexpected values may be acquired which should be interpreted with caution. At present, DIAGNODent should be used ONLY as an adjunct to a clinical examination. A comprehensive and very good overview article: Pretty, IA. Caries detection and diagnosis: novel technologies. J Dent. 2006 Nov;34(10):727-39. A very short summary for clinicians with an extensive reference list: Aleksejuniene J, Gorovenko M. Caries detection techniques and clinical practice. Pract Proced Aesthet Dent. 2009 Jan-Feb;21(1):26-8. A study where DIAGNODent was used in real patients in order to evaluate the performance of DIAGNODent in real life setting: Aleksejuniene, J.; Tranaeus, S.; Skudutyte-Rysstad, R. DIAGNODent--an adjunctive diagnostic method for caries diagnosis in epidemiology. Community Dent Health. 2006 Dec;23(4):217-21
- LLU:** No response noted.
- MUC:** No response noted.
- OHSU:** No response noted.
- UALB:** No response noted.
- UCLA:** Use of DIAGNODent by dental hygienists as part of data collection for interpretation in collaboration with a dentist seems appropriate.
- UCSF:** The technology is useful for detection only, not for diagnosis.
- UNLV:** Some recent articles show support for the DIAGNODent in caries diagnosis: Hamilton JC, WA Gregory, JB Valentine. DIAGNODent Measurements and

Correlation with the Depth and Volume of Minimally Invasive Cavity Preparations. Operative Dentistry, 2006, 31-3, 291-296.

- UOP:** DIAGNODent is advocated only as a adjunctive diagnostic tool.
- USC:** We are hesitant in teaching DIAGNODent or used in dental school because it may be subjective to abuse or may mislead dental students. We think dental school should teach evidence-based dentistry and we need to be very careful not to misguide dental students.
- UW:** The use of the device should be limited as an adjunct in diagnosis only. The literature shows that they measurements advocated by the manufacturer as indicative of caries, are over-estimated. The DIAGNODent has high specificity but very low sensitivity which results in false positives.

IV. Gold

1. Has the use of Cast Gold as a restorative treatment increased, decreased, or remained the same over the past 5 years in your pre-doctoral clinics? Explain this trend; or lack of change.

- ATSU:** We have not been here for a long time. Our number is about the same as it was from 3 years ago.
- UBC:** The percentage of Cast Gold restorations, for the most part Full Gold Crowns, of all restorations done by DMD students in the clinic has varied from 31% to 39%. We cannot identify a trend over the last five years this number has increased and then decreased.
- LLU:** Decreased – largely because the students have to wax and invest the gold crowns, whereas the school laboratory does the ceramic and metal-ceramic crowns – but there is also an increase in patient request for tooth colored restorations rather than gold.
- MUC:** No response noted.
- OHSU:** Remained the same. Some patients select gold because it is slightly less expensive than PFM.
- UALB:** No response noted.
- UCLA:** Remained the same. Our curriculum requires that each student has a minimum of two partial-coverage cast gold clinical experiences. During the past 10 years, the overall use of conservative cast gold (inlays, onlays, $\frac{3}{4}$, $\frac{7}{8}$, vented FGCs) has dramatically increased, reaching a plateau in 2004. Each year we deliver over 500 conservative cast gold restorations
- UCSF:** Decreased! Due to (1) decreased emphasis on gold in teaching (teaching has not been at the same level as in the past), (2) less experience among younger faculty in gold casting, (3) cosmetic reasons, (4) economic reasons, (5) culturally students are less likely to educate their patients re the value of gold crowns.
- UNLV:** Remained the same. Older patients like the longevity; younger patients like more esthetic restoration.

- UOP:** Use of cast gold here has remained the same.
- USC:** The use of cast gold restorations has decreased over the past five years due to (1) the patients' preference of tooth-colored PFM, and (2) increased use of bonded porcelain inlays and onlays over the past five years for the preservation of tooth structure. The number of gold and metal ceramics made in the clinic will continue to decrease dramatically the next few years due to the increase cost of gold and the introduction of Zirconia crowns in the clinic.
- UW:** Cast Gold restorations have remained about the same during the past 5 years. Recently, because of the price of gold, cast gold full crowns are superseded by porcelain fused to metal crowns.
2. What are the most common applications of this technique listed in frequency of use or in decreasing order? (Examples: Crown, FPD, Onlay. ¾ crown, Class II Inlay, Other: specify)
- ATSU:** Crowns (PFM, All ceramic); FPD; Gold onlay; No 3/4 crowns.
- UBC:** The most common types are crown, FPD, ad onlay, with gold crowns accounting for 33% of all crowns done last year.
- LLU:** Most common are partial coverage crowns and FPD because the students have to do a "partial coverage" and a FPD competency examination. (The partial coverage exam can also be a ceramic restoration and the majority of FPD restorations are metal-ceramic. However, the laboratory will also do the all gold FPDs for the students).
- MUC:** No response noted.
- OHSU:** Our most common applications are crowns, onlay, FPD, 3/4 crown.
- UALB:** No response noted.
- UCLA:** Our most common applications: crown>onlay>inlay>7/8 crown>3/4 crown. Last year gold crowns accounted for 25% of all full-coverage restorations.
- UCSF:** Most common: single crown, FPD, 3/4 crown, Class II inlay (rarely).
- UNLV:** Most common: crown, onlay, FPD, 3/4 crown, inlay.
- UOP:** Most common: crowns, FPD, onlays, inlays.
- USC:** Most common: gold crowns, inlays/onlays (inlays tend to be more ceramic or CAD/CAM, our onlays tend to be 2/3 porcelain 1/3 gold), FPDs, implant crowns are mostly PFMs.
- UW:** Order of frequency: Full crowns, FPD, ¾ crown, Onlay, Class II Inlay
3. If you do Gold Crowns in your clinics, please estimate the percentage of total gold crowns done last year.
- ATSU:** Gold crowns are about 10-15% of the total crowns that we do in the school.
- UBC:** See response to previous question.

LLU: Cast gold restorations were 27% of the total indirect restorations.

MUC: No response noted.

OHSU: 33% of all crowns done last year were gold.

UALB: No response noted.

UCLA: See response to previous question.

UCSF: Last 10% of all crowns were gold.

UNLV: 30% of crowns done last year being gold.

UOP: Less than 20% of crowns being gold.

USC: Last year, 15% of indirect restorations were gold (includes all types of gold restorations).

UW: No response noted.

4. Are students able to receive Direct Gold (foil) training in your school?
If so, please describe the method of teaching (regular curriculum, elective curriculum, gold study group visits, individual experience by a faculty mentor, other-specify).

ATSU: We have a direct gold elective course with about 20 students from the D4 & D3 years. We have one faculty member (Dr. Sam Palmer) who leads the class. The class meets during lunch time they go over the cases and work directly with Dr. Palmer.

UBC: There is no training in direct gold available for students.

LLU: We have a direct gold selective course that about half the class takes. It is 12 hours in length with lecture and laboratory procedures.

MUC: No response noted.

OHSU: Students are still expected to have clinical experiences with both gold and PFM/Ceramic. Students can receive one-on-one direct gold training with an experienced clinician. This is on a case specific basis. Perhaps five students did a direct gold restoration in the clinic last year. These were small Class Is or crown repairs.

UALB: No response noted.

UCLA: We do have an elective available (the RV Tucker Student Cast Gold Study Club) in which students can learn the direct gold technique. We have six faculty trained to cover direct gold restorations in the clinic, and approximately 25 of these restorations are placed in our clinic.

UCSF: We have no training available in direct gold technique.

UNLV: We cover direct gold at the didactic level only.

UOP: We conduct no training or clinical experience in direct gold.

USC: Students do not receive direct gold training/clinical experience.

UW: We do have a Cast Gold Elective course that is very popular and is taught by study club instructors. We have an elective course in direct gold offered to 3rd and 4th year students. Students who have taken the course can also place these restorations in the regular clinic. Students were required to place 2 restorations in each clinic session. Most of the restorations were placed on dentofoms because of the scarcity of good clinical cases.

5. Did any students do at least one DIRECT GOLD restoration in your clinical last year? If so, how many had this experience and describe or categorize the experiences.(Example: Class V, Class I, Class VI, Crown repair, other-specify).

ATSU: The students in the direct gold elective perform their first cases in the simulation clinic, then they start working on their patients with the faculty. We have about 20 students involved in this elective class. They mostly experience Class I & V cases. The number of the restorations that they did ranged from one to six per student.

UBC: See response to previous question.

LLU: Fourteen students did direct gold restorations for a total of 31 restorations. Two students did 6 restorations each and 1 student did 5 restorations. Most of the restorations were Class I or crown repair – we do not have specific data.

MUC: No response noted.

OHSU: No response noted.

UALB: No response noted.

UCLA: No response noted.

UCSF: No response noted.

UNLV: No response noted.

UOP: Students do not receive direct gold training/clinical experience.

USC: Students do not receive direct gold training/clinical experience.

UW: Last year we had 18 students place a total of approximately 360 direct gold restorations

V. Cavity Liners

1. What is the standard cavity-lining material for placement under amalgam restorations, taught and practiced at your school? (Are all amalgams, regardless of size and location, being bonded, or are glass ionomer liners/cements used?)

ATSU: We use glass ionomer cements: Fuji IX, Fuji Liner, Fuji II LC. We teach amalgam bonding, but it has not been used in the clinic.

UBC: Resin Modified Glass Ionomer (e.g. 3M Vitrebond) is used as a pulp-protecting, insulating liner on the pulpal wall when preparations are deep and approaching

the pulp (but not up to the cavosurface margins) and as a thin, sealing layer over calcium hydroxide when calcium hydroxide is used as a pulp capping material. Amalgams are not being bonded in our school. Restorative pulpal and repair responses: Murray et al. J Am Dent Assoc 2001;132:482-491. Clinical Evaluation of Glass-Ionomer Cement Restorations Tyas, M.J., J APPL Oral Sci. 2006;14 (sp. issue): 10-3.

- LLU:** We don't use liners under amalgam unless it is very close to the pulp or is used for remineralization technique of indirect pulp capping. Resin modified GIC is used. Amalgams are not routinely bonded except when they are very large and/or used as a foundation build-up.
- MUC:** No response noted.
- OHSU:** No liner for "routine" amalgam restorations, since studies indicate that post-operative sensitivity following amalgam restorations is typically mild in intensity and short in duration (Hilton TJ. Cavity Sealers, Liners, and Bases: Current Philosophies and Indications for Use. Oper Dent 1996; 21:134-146). We do not teach the routine use of "bonded amalgams" since there is no evidence that this improves clinical performance. The use of bonded amalgams creates a second interface (the adhesive to the tooth) that can degrade with time and function and that serves as a potential source for secondary caries that otherwise would have been sealed by the formation of amalgam corrosion products (Hilton TJ. Cavity Sealers, Liners, and Bases: Current Philosophies and Indications for Use. Oper Dent 1996; 21:134-146). It is well documented that amalgam restorations are more caries resistant than composite (Bernardo M et al, Survival and reasons for failure of amalgam vs. composite posterior restorations placed in a randomized clinical trial. JADA 138:775-783; 2007; Soncini JA et al, The longevity of amalgam vs. compomer/composite restorations I posterior primary and permanent teeth: findings from the New England Children's Amalgam Trial; JADA 138:763-772; 2007). Since there is nothing inherently cariogenic about composite, it would seem likely that a significant cause of this increase in caries is the bonded interface in composites. It does not seem prudent to produce this bonded interface for amalgam restorations in the face of the clinical evidence regarding restoration performance and secondary caries formation. If there is a direct or indirect pulp cap, the students are taught to place calcium hydroxide over the exposure or near-exposure, place a protective layer of resin-modified glass ionomer liner to protect the calcium hydroxide from dissolution, then the amalgam (Hilton TJ. Keys to clinical success with pulp capping: a review of the literature. Oper Dent 34:615-625; 2009).
- UALB:** No response noted.
- UCLA:** We use glass ionomer as the routine liner and base material. We recommend the use of a traditional dentin bonding agent (Optibond FL) under amalgam restorations as a dentin sealer and **NOT** for bonding to amalgam.
- UCSF:** Research shows no clinical advantage of disadvantage. Some instructors teach no cavity liner in small preps. In large amalgams we use a glass ionomer liner and bonded amalgam in place of pins (37% etch, DE resin 3-4 layers blow dry, then light cured for 20 seconds).
- UNLV:** RMGI is our standard cavity lining materials. The use of bonded amalgam is dictated by faculty supervision.

UOP: GICs are used as liners. Usage of amalgam bonding at UOP is decreasing.

USC: We are not doing as many amalgam restorations as we used to at this time. Students have difficulty finding Class II amalgam cases for their clinical examinations that we have to lower the exam to one on extracted tooth and one on the patient. In many cases, that one patient class II is the only one amalgam the students do in the clinic. When the cavity is minimal, we do not place any liner or varnish in the cavity. If the cavity extends beyond minimum depth, a resin modified glass-ionomer liner is sometimes used under the amalgam despite reported problems with weak early strength of glass ionomer under amalgam condensation. We do not bond amalgams.

UW: Resin Modified Glass Ionomer is the standard liner used in the clinics. We use Fuji Lining for the purpose of lining either deep cavities or cavities where the use of Dycal is indicated. Amalgams are not being bonded in our clinics.

2. What are schools teaching as acceptable used for flowable composite? (Liners under composites? For Class V Lesions? etc.?)

ATSU: We teach the use of flowable composite as a thin layer under direct composites. We do not encourage its use to restore an entire preparation.

UBC: We do not teach the use of flowable composites in any application (including the snowplow technique for packable composite placement or for use in preventive resin restorations). Influence of flowable liner and margin location on microleakage of conventional and packable class II resin composites: Tredwin CJ et al., Oper Dent. 30(1): 32-8, 2005 Jan-Feb. Microleakage of posterior packable resin composites with and without flowable liners. Leevailoj C, et al., Oper Dent. 26(3);3002-7, 2001 May-Jun.

LLU: Flowable composite is used sometimes in the proximal box area with the “snowplow” technique. It is also used for some Cl. V restorations (RMGIC is the material of choice for routine Cl. V restorations of a carious or other etiology).

MUC: No response noted.

OHSU: We teach the use of flowable composite as a pit and fissure sealant, repair for bis-acryl based provisional restorations. We only teach the use of flowable as a liner under composites in the situation where the preparation is too conservative to use the “warm composite” technique. We also stress the use of flowable composite as a liner only in the “snowplow” technique, in which a thin layer of flowable is placed in the floor of the preparation, not cured, and the first increment of restorative composite is condensed into the unset layer of flowable. In this way, most flowable composite is extruded from the cavity preparation, and only remains in those areas that otherwise would have been voids (Hilton TJ, Broome JC. Chapter 10: Direct Posterior Esthetic Restorations, in Fundamentals of Operative Dentistry: A Contemporary Approach (Third edition). Summitt JB, Robbins WB, Hilton TJ, Schwartz RS editors. Quintessence Publishing Co, Carol Stream; 2006). Pros for flowable: ease of use and placement. Cons for flowable: reduced filler content, reduced physical/mechanical properties, increased polymerization shrinkage, many have reduced and insufficient radiopacity.

UALB: No response noted.

- UCLA:** We recommend the use of flowable composites only for repair/modification of bis-acryl provisionals and for restoration of Class V abfraction lesions.
- UCSF:** We teach the use of flowable in Class II boxes to seal the gingival margin only if enamel is present - if margin is in dentin we use glass ionomer in the sandwich technique. We also use flowable to restore Class V abfractions.
- UNLV:** We teach the use of flowable composite for PRR's. We do not advocate the use of flowable *routinely* under composite of for Class V's.
 Chuang SF, Jin YT, Liu JK, Chang CH. Influence of Flowable Composite Lining Thickness on Class II Composite Restorations. Oper. Dent 2004, 29-3, 301-308
 Çelik C, G Özgünaltay, N Attar. Clinical Evaluation of Flowable Resins in Non-carious Cervical Lesions: Two-year Results. Operative Dentistry, 2007, 32-4, 313-321
 Attar N, Turgut MD, Gungor HC. The Effect of Flowable Resin Composite as Gingival Increments on the Microleakage of Posterior Resin Composites. Oper. Dent 2004 29-2 162-167
 M Sadeghi, CD Lynch. The Effect of Flowable Materials on the Micro-leakage of Class II Composite Restorations That Extend Apical to the Cemento-enamel Junction: Operative Dentistry, 2009, 34-3, 306-311
- UOP:** Flowable is used for repair to temporary crowns/composite restoration.
- USC:** We do not use flowable composite other than sealants. We do immediate dentin bonding using OptiBond FL (40% filled, flowable?) when we do composites or indirect bonded restorations prior to the impression. We also use pure GI and sandwich technique on many occasions when the cavity is deep to (1) prevent moisture contamination affecting dentin bonding, (2) for the purpose of fluoride release into affected dentin, and (3) to relieve stress from the shrinkage of composite.
- UW:** The use of flowable composites is limited in our clinics to Preventive Resin Restorations and repair/adjustments of marginal adaptation in temporaries made with Bis-Acryl materials.

VI. Effect of Beverage on Enamel/Dentin Erosion

1. Is information regarding the sugar/acid content and erosive properties of soft/energy drinks being given in an Operative Dentistry course to your dental students?

- ATSU:** Yes it is taught during the operative model (CAMBRA & Cariology). E also teach prevention as part of Operative and this topic is covered there as well.
- UBC:** This is discussed in 3rd year Operative as an etiology for Class Vs, and it appears in a 2nd year PBL case.
- LLU:** This is given in a Restorative Dentistry course (Fixed Prosthodontics and Occlusion); since we have a combined department, we have the freedom to put it wherever we can fit it. This topic is also discussed by Restorative faculty who teach the Caries Management course that is housed in the interdisciplinary part of the curriculum.
- MUC:** No response noted.

- OHSU:** This is definitely mentioned in Operative Dentistry as part of the Caries Risk Assessment and also in the nutrition course.
- UALB:** No response noted.
- UCLA:** Dietary etiology of non-carious cervical lesions is mentioned only briefly in preclinical operative. The topic is covered in detail in the Cariology curriculum.
- UCSF:** This is covered in the caries risk assessment curriculum.
- UNLV:** This information is taught as a DS1 course and reinforced in Cariology as a DS2 course.
- UOP:** This is presented in Cariology.
- USC:** Students are first exposed to this in a PBL course with GERD, extrinsic and intrinsic erosion from different type of acids and other sources, such as fruit, soda, energy drinks, chlorine, etc. This is included in the Bonded Restoration course when they discuss the etiology of different types of Class V lesions, including attrition, erosion, abrasion, abfraction. Patients in the clinic with high caries index will go through a four day (two days in the weekend) Diet Analysis (Kydd) that documents: (1) everything and time of food/drink intake; (2) amount of acid foods, and (3) number of acid attacks.
- UW:** NO, this information is not presented in Operative. It is provided to the students by D. Bea Gandara from Oral Medicine. She lectures on erosion and its etiology and management.

VII. Licensing Examinations

Licensing examinations continue to constantly change. Florida has accepted and adopted NERB. California has accepted WERB and will allow a PGY1 alternative. New York has a mandated PGY1 and Minnesota has just announced the elimination of patients in testing. (See ADA on-line news of July 14, 2009, Dr. Bicuspid on-line article of July 8, 2009)

1. Should CODE take an official position and what is that position? What is the rationale for such a position? Pros/Cons.

ATSU: No response noted

UBC: No response noted

LLU: No response noted

MUC: No response noted.

OHSU: If CODE wishes to have any influence in the development and content of licensure examinations, then it must take an official stance. This would help take the issue of licensure examinations from the non-dentist administrators and put the matter into the hands of the ones that should know a bit more about dental education. The benefit would be to help establish what needs to be a “consensus” format that is applicable to all states. The difficulty would be obtaining that “consensus” even amongst the CODE members, as there are a wide variety of opinions on what is truly appropriate and accurate means for testing.

- UALB:** No response noted.
- UCLA:** No response noted.
- UCSF:** No response noted.
- UNLV:** No response noted.
- UOP:** No response noted.
- USC:** No response noted.
- UW:** There is likely little point in CODE becoming involved in the testing agencies since the testing agencies receive heavy input from the schools. This occurs in testing procedures, testing content, and in calibrations sessions as well as in the actual examinations. The agencies invite faculty observers during examinations and in pre-test calibrations. The operative committee of the WREB, for example, invites representatives from several schools to participate in organizing the examinations.

2. Should dental schools be responsible for the content of the examinations? Pros/Cons.

- ATSU:** Our administration likes the idea of eliminating patients. Also, if there could be one national licensing exam, dentists can use to practice everywhere. We could expand the licensing agency to include more feedback from dental school educators.
- UBC:** Not applicable to Canada, however it seems that Minnesota is now accepting our NDEB examinations for licensure. It is based on written and OSCE and doesn't have a patient care component.
- LLU:** CODA accreditation for the curriculum of the dental schools is so pervasive and standardized that there is no need for a licensure examination of a person who graduates from an accredited school. Virtually everyone passes the examinations sooner or later with no, or very little, additional education – the exam is useless!
- MUC:** No response noted.
- OHSU:** The dental schools need to be a great part of the content development. The problem lies in not making this another Dental National Board Exam. Again, the problem is consensus within the dental schools and CODE and the acceptance by the State Boards that the results are truly reflective of a practitioners' ability.
- UALB:** No response noted.
- UCLA:** No response noted.
- UCSF:** We have concerns of quality control related to PGY1. Schools should not be responsible for the content of licensure exams – they currently don't seem to take responsibility for their graduates.
- UNLV:** There should be ONE National Licensing examination. Dental schools should be active participants in a National dialogue on the make-up of licensing examinations.

- UOP:** No response noted.
- USC:** No response noted.
- UW:** Schools should conduct their own autonomous clinical examinations that measure knowledge, skills, and judgment. Schools are responsible for graduating competent clinicians. Schools should not graduate incompetent students. The schools should comply with ADA Accreditation standards. Most students from dental schools in the United States have little trouble passing the agency examinations. Incompetent practitioners and foreign dentists are the clinicians that have the most difficulty on the examinations. It can be argued that the testing agencies hold the schools accountable for safety of the public.

Regional CODE Agenda

To be established by the respective Region and Regional Director. Please also report on responses to the Regional Agenda from all participants.

1. **How are you teaching the use & handling of true RMGIC's (Resin Modified Glass Ionomer Cements) at your school? (liner, base, build-up material, Cl. V restorations, open & closed sandwich restoration, with resin composite and amalgam). Which products are you using & do you adhere to manufacturer's mixing instructions & proportions?"**

ATSU: We teach the open and closed sandwich technique in the operative module. The students will practice using the RMGIC's (Fuji II LC) as a liner on extracted and typodont teeth in the simulation clinic. The material is used widely in the clinic. We teach our student to follow the manufacturer's instruction . I print the instructions in the Kit and hand them to the student.

UBC: No response noted

LLU: Ketac Cem for crowns, Fuji II LC and Fuji IX for bases, Class Vs, root caries, crown margin repair, and some Class IIIs. Capsules only.

MUC: No response noted.

OHSU: We use Vitrebond liner for closed sandwich, Fuji II LC for open sandwich Class Vs. Capsules only.

UALB: No response noted.

UCLA: All metal, metal-ceramic, and zirconia crowns are cemented with Fuji I or Fuji Plus, as well as all posts. Fuji II LC and Fuji IX are used extensively for bases, blockouts, open and closed sandwiches (Classes II and V), and transitional/carries-control. Capsules only.

UCSF: Similar to USC (See below). We use capsules only.

UNLV: We advocate the open sandwich technique on Class Is and IIs. We use GIC for caries control (mostly Fuji IX, but also Fuji II LC), then cut back later and leave remaining as a base under composite. We use Fuji II LC when there is a possibility of needing to add an additional layer with a second mix due to better adhesion between layers vs. Fuji IX. Crowns are cemented with FujiCem Paste Pack – capsules for all other GICs.

- UOP:** We use RMGIC as bases under composites, to restore root caries lesions, and as block-out on C&B preps. We cement crowns with Fuji Cem and use the conditioner prior to seating. We use cure-through matrices for Class Vs. We made up our own direction sheets based on the manufacturer's instruction sheets. Capsules only.
- USC:** We cemented crowns with zinc phosphate in the past, now we use Fuji I. We do not use GIC to restore Class Vs unless as a liner over affected dentin. We use capsules only.
- UW:** No response noted.

Suggestions for CODE.

1. What can the organization do to improve its effectiveness?

No responses noted.

2. Any comments or suggestions to improve the Web site?

<http://www.unmc.edu/code>

NOTE: to locate the web site via a search engine, enter Academy of Operative Dentistry and then use the link CODE and ADEA.

No responses noted.

3. Other comments/suggestions?

No responses noted.

CODE REGIONAL MEETING REPORT FORM

REGION

II Midwest

LOCATION AND DATE OF MEETING:

University: University of Saskatchewan

Address: Saskatoon, Saskatchewan, Canada

Date: September 18 - 20, 2009

CHAIRPERSON:

Name: Dr. Dave Tyler

Phone #: 306-374-3175

University: Saskatchewan

Fax #: 306-966-6632

Address: Saskatoon, Saskatchewan, CA

E-mail: dave.tyler@usask.ca

List of Attendees: Please see reverse of this page for List of Attendees to Regional Meeting

Suggested Agenda Items for Next Year:

1. Hand instruments for cutting in Operative Dentistry education and practice.

Do you teach students the use of hand instruments for cutting for shaping and refining tooth preparations in Oper Dent? Are hand instruments for cutting available and used in clinical tooth preparation for Oper Dent procedures? What is your "essential" set of hand instruments for cutting that you believe should be available for proper tooth preparation in Oper Dent procedures? Is there pressure at your school to reduce or eliminate hand instruments for cutting because of economic constraints or a perceived lack of necessity?

LOCATION AND DATE OF NEXT REGIONAL MEETING:

Name: Dr. William Johnson

Phone #: 402-472-9406

University: UNMC College of Dentistry

Fax #: 402-472-5290

Address: Lincoln, NE 68583-0750

E-mail: wwjohnson@unmc.edu

Date: September 16 - 18, 2010

Please return all completed enclosures to
Dr. Larry D. Haisch, National Director, UNMC College of Dentistry;
40th and Holdrege Streets; Lincoln, NE 68583-0740.
Office: 402 472-1290 Fax: 402 472-5290 E-mail: lhaisch@unmc.edu

Deadline for return: 30 Days post-meeting

Also send the information on a disk and via e-mail with all attachments.
Please indicate the software program and version utilized for your reports.

CODE Region II Attendees Form

NAME	UNIVERSITY	PHONE #	FAX #	E-MAIL ADDRESS
Susan McMillen	UMKC	(816) 235-2019	(816) 235-5524	mcmillens@umkc.edu
Dr. Larry Haisch	UNMC	(402) 472-1290	(402) 472-5290	lhaisch@unmc.edu
Dr. Bill Johnson	UNMC	(402) 472-9406	(402) 472-5290	wwjohnson@unmc.edu
Dr. Craig Passon	University of Colorado	(303) 724-7073	(303) 724-7079	craig.passon@uchsc.edu
Dr. Gary Stafford	Marquette University	(414) 288-5409	(414) 288-3586	gary.stafford@mu.edu
Dr. Marcela Hernandez	Iowa	(319) 335-7313		marcela-hernandez@uiowa.edu
Dr. Poonam Jain	SUI	(681) 474-7073		pjain@siu.edu
Dr. David Tyler	Saskatchewan	(306) 966-3175	(306) 966-6632	dave.tyler@usask.ca
Dr. Alan Kilistoff	Saskatchewan	(306) 374-5131	(306) 966-6632	alan.kilistoff@usask.ca

**2009 NATIONAL CODE AGENDA
REGION II
SUMMARY RESPONSES TO NATIONAL AGENDA**

(Editors Note: Questions condensed for printing purposes)

I. Fiber Posts.

Only Creighton and Marquette are using them either for undergraduate or graduate programs. There seemed to be little interest in using them. A summary article was cited: *"Post placement and restoration of endodontically treated teeth - A literature review"*, Schwartz RS and Robbins JW, *Journal of Endodontics* 30(5):289-301, 2004. Marquette uses Coltene/Whaledent ParaPost Taper Lux due to high ratings, retentive head design, radiopacity, ease of removal and tapered end. Variolink , Dual Cure ParaCore by Coltene/Whaledent.

II. Lasers

There is no evidence of any undergraduate use of lasers for Operative Dentistry in the dental schools in this Region. There is some use for Periodontal surgery both at the undergraduate and graduate level in selected schools, but lasers in general are not being readily adopted. Some schools are using DIAGNODent as a diagnostic aid, but not with enthusiasm because of the inherent limitations.

With the exception of some schools teaching the use of lasers for soft tissue recontouring and providing some limited hands-on experience at the undergraduate level, laser technology is primarily encountered didactically in most curriculums. The schools that do provide some teaching in soft tissue applications have faculty certified for laser usage. The specifics of the certification process were not discussed. Generally they are not available except for soft tissue applications under strict supervision. There would seem to be a little more usage at the graduate level rather than undergraduate clinics.

III. DIAGNODent (first question is an update from a 2003 agenda item)

In general, students are exposed to DIAGNODent in the didactic situation as part of the diagnostic armamentarium. Clinical exposure is very limited and not generalized. Five of the schools have one or more units.

The units are primarily discussed and or given some preclinical exposure in most schools. Only one or two schools are using this technology in direct patient care. Not every school was aware that this (use of DIAGNODent by dental hygienists in their practices) was happening. Hygiene programs, like undergraduate dentistry training programs, may well expose their students to the technology. It was recognized that there may be a commercial push for hygienists to screen patients using such a tool as a money generator. However, the overall skepticism about the reliability of the device as a diagnostic tool remains. Dentists should be the final authority on caries diagnosis using a variety of clinical techniques of which DIAGNODent is complementary, but not solely reliable.

IV. Gold

Gold usage has either remained the same or decreased slightly in most schools. While composite resins have improved significantly in mechanical properties, large preparations and endodontically treated teeth are better served by gold based restorations, and the classical indications for gold remain unchanged.

Crowns, either single or part of an FPD, predominate, followed by onlays, $\frac{3}{4}$ crowns, cast gold posts and inlays.

Three schools reported approximately 40%, one 28%, and another 20%.

The use of direct gold has declined to the point that only one or two schools provide any experience for undergraduate students. Where mentors are available, such as Nebraska, students do occasionally place foils under close supervision.

Only Nebraska reported placing 5 or 6 last year in student clinic. They have had up to 12 placed one year. This is the exception compared to other schools.

V. Cavity Liners

There is a divergence of views on the treatment of cut dentin and cavity liners/sealing under amalgam in minimal or ideal depth preparations. Several schools routinely bond all amalgams using Amalgabond, AllBond, OptiBond Solo or SingleBond except where isolation is poor. Other schools either do not seal cut tubules or they use an agent like Gluma (glutaraldehyde), Superseal (oxalate) or Copal resin. There is more close alignment when cavities are deeper. Calcium hydroxide/Dycal is used in close proximity to the pulp followed by glass ionomer/Vitrebond over the Dycal, or alone as a liner material. SIU and Saskatchewan have been routinely bonding amalgams for approximately 10 years and Marquette for 5 years.

The use of flowable composite resins is limited. Its use as a marginal seal on the gingival wall of the Class II proximal boxes is controversial. The optimal use would seem to be for preventive resin restorations and small Class I's and small shallow Class V's. They are also used for repairs of Bys-Acryl temporary restorations. Poor mechanical properties, viscosity and tendency to create voids and polymerization shrinkage would seem to be the main handicaps of these materials.

VI. Effect of Beverage on Enamel/Dentin Erosion

In summary, all of the schools in this Region are addressing these issues, but to a lesser extent in the Operative part of the program, but more likely in Cariology courses, Diagnosis and Treatment Planning, Caries Risk Assessment as part of CAMBRA and general courses that discuss topics like the "Foundation of Dental Health" or "Social and Preventive Dentistry." There has been a tendency in the past for courses in several disciplines to cover the same topic "ad nauseum." As the curriculum has become more crowded, topics like this are being identified and taught more intentionally to eliminate redundancy. Where you teach or what course is less important than asking if it is taught and how effectively!

VII. Licensing Examinations

Following a round table discussion, it was unanimously concluded that: "CODE supports a National Licensure Examination comprised of an OSCE Board

Examination and satisfactory completion of Parts I and II of the written National Boards. Each State may have a written jurisprudence section. All candidates must be eligible for graduation or have graduated from an Accredited USA Dental School.” Following discussion, it was unanimously concluded that: “Dental schools should contribute to the content of the examination by representation on a National OSCE Board Exam Committee: Representation should include private practice, military, public health and dental schools.”

Regional CODE Agenda

To be established by the respective Region and Regional Director. Please also report on responses , individual and a summary, to the Regional Agenda from all participants.

2009 NATIONAL CODE AGENDA REGION II SUMMARY RESPONSES TO REGIONAL AGENDA

1. BEVELS:

There is total agreement that occlusal bevels are not appropriate or taught. There was no consensus over proximal wall bevels. Some are teaching that bevels are appropriate to improve margin quality or improved esthetics. There is also the view that such a bevel produces end cutting of enamel rods which increases bond strength. In contrast, there is a case for not breaking contact in minimal Class II boxes to destroy healthy enamel and to break a physiological content. Sometimes breaking contact is required for matrix adaptation. The gingival floor of the proximal box is difficult to bevel with rotary instruments and enamel in this situation should be retained for optimal gingival seal. Where enamel is of adequate thickness, gingival beveling is then an option. One senses in summary, that there is no “knock out clinical study” sited to provide an evidence base for or against proximal bevels and that each clinical situation requires informed decision making, in which case a bevel becomes an option which may or may not be appropriate. In large preparation with broken contacts and good access, bevels would seem to be optimum.

2009 NATIONAL CODE AGENDA
REGION II RESPONSES
(Evidence cited where applicable)

Region II School Abbreviations

COLO	University of Colorado	MINN	University of Minnesota
CRE	Creighton University	UMKC	University of Missouri - KC
IOWA	University of Iowa	UNMC	University of Nebraska
MAN	University of Manitoba	SASK	University of Saskatchewan
MARQ	Marquette University	SUI	Southern Illinois University

I. Fiber Posts.

1. Are you teaching fiber post for endodontic build-ups in your school?
Graduate and/or undergraduate programs?

COLO: No. Only using prefabricated metal posts (Para-post) or cast metal posts.

CRE: Yes.

IOWA: We are not teaching fiber posts in undergrad. They are available for grad use if needed.

MAN: No, we are not teaching the use of fiber posts for endo build-ups.

MARQ: Yes, in both the undergraduate and graduate programs.

MINN: No response noted.

UMKC: Based on articles and research we do not routinely teach students to use fiber posts in the undergraduate or graduate clinics. There are too many cases of them becoming moist and turning into "brush" fibers.

UNMC: No. The prosthodontic section director prefers the cast post and core technique. Currently we are also using metallic, prefabricated posts.

SASK: No.

SUI: No response noted.

2. Which system are you using and why?

COLO: No response noted.

CRE: ParaPost fiber posts because the school has an arrangement to receive their products at a reduced rate, and there appears to be no significant difference between fiber posts on the market.

- IOWA:** Don't use any standard system (samples). We use and teach core build ups in amalgam (posterior) and composites or gold cast post and core (taught in Pros not in Operative) when lacking of enough tooth structure for the core.
- MAN:** For anterior and premolar teeth - use of a cast post and core system. Taught and utilized in the clinic due to the precise adaptation of the post to the existing canal space. For molars, prefab post and core systems - either amalgam or composite cores.
- MARQ:** We use Coltene/Whaledent Para Post Taper Lux. We use this due to their high ratings, retentive head design, radiopacity, ease of removal and tapered end.
- MINN:** No response noted.
- UMKC:** We use four or five different types of Paraposts. Brasseler Vlock is used when a screw type post is needed.
- UNMC:** No response noted.
- SASK:** Primarily cast gold post and cores for anterior teeth at the choice of the Prosth Division. Amalgam cores for extensively damaged molars, ideally condensed into the upper portion of obturated canals, also using ScotchBond Multipurpose from ESPE/3M for amalgam bonding.
- SUI:** No response noted.

3. What bonding material are you using with your fiber posts and why?

- COLO:** No response noted.
- CRE:** The material that comes in the kit with the post is the material that we bond with. We still expect the preparation to incorporate a sound ferrule effect around the remaining tooth structure.
- IOWA:** The one that comes with the system. A dual cure cement. Example: Clearfil esthetic cement with Clearfil DC bond.
- MAN:** Bonding CPS's and PPC's with Zinc Phosphate cement due to the longer working time for novice students or resin modified glass ionomer (RelyX Luting cement).
- MARQ:** Since no one use(s) light cured or self-cured, we use either Variolink II (Ivoclar) or dual cure ParaCore by Coltene/Whaledent (our resin core material).
- MINN:** No response noted.
- UMKC:** We used Panavia and RelyX for bonding. The RelyX being 80% resin and 20% glass ionomer does not split.
- UNMC:** No response noted.
- SASK:** No response noted.
- SUI:** No response noted.

II. Lasers

1. What is your school's (and/or department's) view on the use of lasers in Operative Dentistry? Minimally Invasive Dentistry? Surface treatment for bonding? Cavity Preparation? DIAGNODent?

COLO: Lasers may have a place in restorative dentistry. We are not yet convinced that the benefits of teaching and using them in an undergraduate restorative dentistry program outweigh the costs. We are not convinced that better dentistry occurs because of their use. We are continuously assessing laser technologies in all aspects of diagnosing and treatment in restorative dentistry. We do have a rather robust use of lasers (both in patient treatment and clinical research) in our graduate periodontics program. These lasers are used for soft tissue treatment.

CRE: We are not using lasers in the area of Operative Dentistry treatment.

IOWA: We use diode laser in our student classes for soft tissue recontouring. The grads have some seminars and they have a unit available in the clinic.

MAN: We do not utilize lasers in Operative Dentistry. Didactically, the use of lasers is taught as a minimally invasive dental procedure.

MARQ: We feel that currently they have minimal applications.

MINN: No response noted.

UMKC: Our department does not advocate the use of lasers in restorative dentistry.

UNMC: We do not use lasers in our clinics with the exception of the DIAGNODent. We do practice minimally invasive techniques, but with conventional methods. Our opinion is to avoid its (laser) use prior to bonding.

SASK: We have not seen convincing evidence that the investment in lasers for operative dentistry cutting hard tissue has any advantages over rotary and hand instrumentation, indeed lacks some of the refining ability that conventional instrumentation can achieve. Likewise, the diagnostic value of DIAGNODent has not been convincingly established.

SUI: No response noted.

2. Are lasers being taught for applications in operative/restorative dentistry at your school? If so, how? Didactic, Pre-clinical, and/or in Clinic?

COLO: No.

CRE: No.

IOWA: We do not use lasers for hard tissue remodeling. Only diode laser lecture at junior level (new): the lecture reviews basic physics, clinical applications, safety, soft tissue recontouring technique.

MAN: Only taught didactically.

MARQ: We have lectures given in our Biodontics program about lasers. We don;'t use lasers in the student clinic.

MINN: No response noted.

UMKC: We do not teach the use of lasers didactically or in the pre-clinic or clinic.

UNMC: No response noted.

SASK: Not at all.

SUI: No response noted.

3. What credentials does your school require for those who teach and use the lasers?

COLO: None.

CRE: No response noted.

IOWA: We have a laser certified faculty. Others are trained, but not certified. (Taken CE courses and lectures in how to use the laser, indications, etc.)

MAN: Nobody teaches with lasers within our faculty.

MARQ: No response noted.

MINN: No response noted.

UMKC: Those using lasers (Perio Dept and AEGD) are trained one-on-one by faculty.

UNMC: No response noted.

SASK: No response noted.

SUI: No response noted.

4. Are there lasers available for teaching and patient care?

COLO: Only in our graduate periodontics program.

CRE: No.

IOWA: Yes the diode laser unit is available to be used in the Junior and Grad clinic under faculty supervision for soft tissue recontouring.

MAN: No.

MARQ: No response noted.

MINN: No response noted.

UMKC: Yes, the graduate Perio Dept and AEGD use lasers for soft tissue treatment, including frenectomies, biopsies, and gingivectomies.

UNMC: No.

SASK: No.

SUI: No response noted.

III. DIAGNODent (first question is an update from a 2003 agenda item)

1. Does your school currently teach the DIAGNODent in its caries diagnosis curriculum?

COLO: The use of DIAGNODent is taught in our clinical cariology courses. Unfortunately, the routine use of this instrument does not occur in our normal patient diagnosis and treatment planning procedures.

CRE: Just as an exposure to what it is, what it tries to do, and its limitations.

IOWA: We stress for diagnosis the importance of clean, dry teeth, with magnification. We recommend as an adjunct to use a dull explorer with gentle touch, no jabbing a sharp explorer. As adjuncts we discuss transillumination, lasers (DIAGNODent and QLF), LED (Caries ID), and electrical conductance. Students are lectured on how to evaluate these systems by sensitivity and specificity. Currently the students do not get a chance to use these adjunct tools in the clinic.

MAN: Yes, we teach didactically the use of DIAGNODent in lectures based on caries diagnosis.

MARQ: We discuss the DIAGNODent and its application.

MINN: No response noted.

UMKC: Yes.

UNMC: Yes, it is taught in our Cariology Class in a lecture on caries diagnosis.

SASK: No, other than it would be mentioned as a diagnostic aid of limited value, but of interest in several courses.

SUI: No response noted.

2. Does your school possess any DIAGNODent units?

COLO: Yes, we have three.

CRE: Yes, however, they are very, very rarely used on the clinic floor.

IOWA: Yes, but they have mainly been used for research, not for clinical use.

MAN: No.

MARQ: Yes.

MINN: No response noted.

UMKC: We have one unit.

UNMC: We have 4 units including one newly purchased one.

SASK: No.

SUI: No response noted.

3. What sort of hands on exposure do your faculty/students have to the DIAGNODent?
(Example: lectures, demo, and/or actual patient treatment)

COLO: DIAGNODent use is taught in our clinical cariology courses. Students receive instruction through lectures, demonstrations and clinical patient applications. Students learn to interpret the results in these organized courses. They are free to use this instrument for caries diagnosis in our routine undergraduate patient clinics.

CRE: Not very much at all. We did a couple of studies with DIAGNODent system a couple of years ago, and presented the results at the AADR. In each of the studies we found that sensitivity and specificity were not favorable.

IOWA: Mentioned in lecture, not for clinical use.

MAN: Students only learn of the DIAGNODent in a lecture capacity. No pre-clinical or clinical teaching with a DIAGNODent.

MARQ: Lectures.

MINN: No response noted.

UMKC: Students are exposed to DIAGNODent in lecture only. The instructor passes it around the class and lets the students hold it and try it out on their fingernail cuticles.

UNMC: Following the lecture on use of DIAGNODent, there is an opportunity for hands-on use of the unit.

SASK: There would be discussion about the relative merits of various diagnostic techniques for caries detection in several courses within the College, and student assignments to review the literature on the area.

SUI: No response noted.

4. By word of mouth, some practitioners are advocating the use of DIAGNODent by dental hygienists in their practices. Although final "confirmation" of caries is done by the dentist, does use of DIAGNODent qualify as diagnosis of caries? Any support from the literature?

COLO: This device provides tooth condition information as it was designed. There is more to caries diagnosis and treatment than the readings from one instrument. Caries is a problem and caries as a diagnosis often are considered the same. Caries as a diagnosis implies, however, that a cause has been determined. Proper treatment of caries can only occur when the cause has been determined. This

device only gives the dentist one more tool to make a clinical treatment decision. All other factors that affect proper treatment of caries must be considered.

CRE: Independent of other tests like radiographs, transillumination, changes in surface texture, I must say No.

IOWA: The company advocates for use with a hygienist to increase your production \$\$\$. Regardless of who uses it we recommend it to be an ADJUNCT and not your main source for diagnosis. Literature shows that it is over sensitive... low specificity, meaning that if you trust it all the time you are drilling into areas where there is not true lesion or cavitation.

MAN: I am unfamiliar with the above statement and concerns.

MARQ: It is just another tool to use to aid in diagnosis. As a stand alone means of diagnosis, it is often misused. It is a means to check the progression of a potential lesion.

MINN: No response noted.

UMKC: One instructor stated that he has observed a dental hygienist using the DIAGNODent in a private practice. He tells the students the diagnosis of caries using the DIAGNODent is not conclusive.

UNMC: We would use DIAGNODent as an adjunct in our diagnostic process. The DIAGNODent units are used mostly by our hygiene students and occasionally by our dental students.

SASK: Not aware of hygienists using DIAGNODent in practice. The literature is not convincing, in fact would seem to be skeptical.

SUI: No response noted.

IV. Gold

1. Has the use of Cast Gold as a restorative treatment increased, decreased, or remained the same over the past 5 years in your pre-doctoral clinics? Explain this trend; or lack of change.

COLO: If this questions implies restorations such as cast gold inlays, full gold crowns, etc. Then the answer is decreased. However, cast high noble metal (gold?) is used as a foundation for all of our PFM restorations. We teach both in lecture and pre-clinic courses the preparation and restoration of teeth for cast gold. We still teach cast gold inlays, onlay, partial and full cast crowns. We expect students to understand the indications and contraindications for providing these restorations in patient care and to use/provide them where appropriate.

CRE: Remained the same - the philosophy is that the cast gold is a superior restoration the teaches disciplined preparation and restoration techniques.

IOWA: Unchanged essentially. Reasons: time, patient pool, \$\$\$, esthetics to mention a few. Attitude towards gold.

MAN: Cast gold inlays and onlays have overall decreased as a treatment modality in the clinics, although students are still taught pre-clinically the preparation design of gold inlays in addition to indirect composite/ceramic inlays. Clinically, not very

many inlays, regardless of material, are treatment planned in the clinics. Patients tend to opt for direct restorations over indirect restorations. Full veneer gold crown preparations are still taught pre-clinically and utilized as a treatment modality for our patients. Gold crowns in the posterior are still advocated as a better option, especially in subgingival margins and heavy occlusion. The use in the clinic has remained the same over the years.

MARQ: About the same.

MINN: No response noted.

UMKC: The use of cast gold is estimated to have remained the same for the past five years. Some reasons are the difficulty in achieving adequate tooth reduction for second molars, more useful for heavy occlusion, bruxism, etc.

UNMC: The use of cast gold has decreased somewhat.

SASK: The use of gold has changed little in recent years, whether as cast gold posts, full gold crowns or PFM crowns. It is likely that a small decrease has occurred due to the increased use of bonding systems and the improved durability data for posterior composite restorations. The indications for gold have remained essentially the same. There are few inlays and onlays prepared either in gold or porcelain. Full coverage cast restorations remain the preferred choice after endodontic treatment and where restoration size and bruxism forces dictate their use.

SUI: No response noted.

2. What are the most common applications of this technique listed in frequency of use or in decreasing order? (Examples: Crown, FPD, Onlay, $\frac{3}{4}$ crown, Class II Inlay, Other: specify)

COLO: Full gold crowns; cast gold onlay; FPD; partial veneer gold crown; cast gold post and core; Class II gold inlay; endodontic access hole in full gold crowns.

CRE: Crown - onlay - FPD - inlay and $\frac{3}{4}$ crown rarely.

IOWA: Full crowns are the most frequently done restoration and this has not changed. However, this is primarily taught in Prosthodontics. Partial veneer crowns/onlays - we teach and do - in about 12 cases a year.

MAN: Crown, FPD, Inlay.

MARQ: FCC, Onlay, FPD (rarely), $\frac{3}{4}$ crown (rarely), inlay (rarely).

MINN: No response noted.

UMKC: Full partial dentures make up about 75% to 80% of the market with full gold crowns about 28%. Onlays, inlays, $\frac{3}{4}$ crowns have been replaced by all-ceramic restorations, possibly due to the higher cost of Type II and Type III gold and the desire for more esthetic restorations.

UNMC: Crown > Fixed Partial Dentures > Onlay > $\frac{3}{4}$ Crown > Inlay.

SASK: Crowns either single or as part of FPD, cast gold posts. All other indirect restorations would be sporadic.

SUI: No response noted.

3. If you do Gold Crowns in your clinics, please estimate the percentage of total gold crowns done last year.

COLO: 25% of all indirect restorations provided.

CRE: Gold crowns account for 38% of the crown procedures done here.

IOWA: See answer to question 2 above.

MAN: 40% gold crowns and FPD.

MARQ: 20%.

MINN: No response noted.

UMKC: See answer to question 2 above.

UNMC: Of the 800+ crowns done by the class that graduated in May 2009, 40.5% were gold crowns. These were done in both Operative and Prosthodontic clinics. In just the Operative clinic, during the past year 40.9% of crowns were gold castings.

SASK: No response noted.

SUI: No response noted.

4. Are students able to receive Direct Gold (foil) training in your school?
If so, please describe the method of teaching (regular curriculum, elective curriculum, gold study group visits, individual experience by a faculty mentor, other-specify).

COLO: No direct gold instruction offered in any form in the school. There is mention of the technique in one or two lectures only to explain the nature of these restorations should students discover these restorations in patients.

CRE: There is nor formal process of teaching gold foil. In the very rare instances that a student expresses interest, one of the mature, experienced professors will spend a half a day explaining the technique.

IOWA: No, gold foil is not taught in our curriculum. Sometimes is requested by grads especially for the process of Operative Board Certification.

MAN: No, the Direct Gold Foil technique is not taught to students anymore and not used clinically as a restorative treatment option.

MARQ: No.

MINN: No response noted.

UMKC: Direct gold is not included in the curriculum, however, certain (older) faculty mentors are willing to work with the students.

UNMC: Direct Gold is discussed in Dental Materials (D-1 year) and again in the Operative II (D-2 year), where the technique is shown in lectures, but no time is spent on the technique in preclinical laboratories. One of our faculty is the President-elect of the American Academy of Gold Foil Operators.

SASK: No.

SUI: No response noted.

5. Did any students do at least one DIRECT GOLD restoration in your clinical last year? If so, how many had this experience and describe or categorize the experiences.(Example: Class V, Class I, Class VI, Crown repair, other-specify).

COLO: None.

CRE: No.

IOWA: No.

MAN: Last gold foil procedures took place in 1994.

MARQ: No.

MINN: No response noted.

UMKC: No response noted.

UNMC: Yes, every year there are one or more students who do a direct gold restoration in the clinic under the supervision of faculty who have experience with the technique. We have had up to 20 restorations placed in a year, during the past year it was 5 or 6. Virtually all the direct gold restorations are repairs to gold crowns.

SASK: No.

SUI: No response noted.

V. Cavity Liners

1. What is the standard cavity-lining material for placement under amalgam restorations, taught and practiced at your school? (Are all amalgams, regardless of size and location, being bonded, or are glass ionomer liners/cements used?)

COLO: Shallow preparations - all-in-one enamel/dentin bonding agent. Deeper penetration - glass ionomer lining cement or RMGI lining material. Deepest preparations - calcium hydroxide liner/base followed by glass ionomer lining cement. Please see two articles for evidentiary support: *Treatment of deep carious lesions by complete excavation or partial removal: A critical review.* J Am Dent Assoc, 2008;139:705-712. *Keys to clinical success with pulp capping: A review of the literature.* Operative Dentistry, 2009;34-5:615-625.

CRE: Liners are not routinely placed under SA restoration. If the restoration is deep and close to the pulp, CaOH is placed followed by a glass ionomer, or less often,

CaOH followed by IRM. If the restoration is deep and not close to the pulp, glass ionomer is placed, or less often, IRM. SA restorations are not bonded.

- IOWA:** The standard cavity liner material for placement under amalgam restorations is Vitrebond. RMGI cement just in the deepest part of the pulpal or axial floor of the preparation when is needed for pulp protection. We do not bond amalgams anymore. We use Superseal (Sultan) to block the permeability of freshly cut dentin.
- MAN:** Yes, all amalgam restorations are being taught and clinically bonded.
- MARQ:** All amalgams are bonded. For pin point or near exposures, we place CaOH (Dycal) and resin modified glass ionomer (Vitrebond).
- MINN:** No response noted.
- UMKC:** Studies have shown that after a period of from one to two weeks to up to 3-5 years, there was no difference in post operative sensitivity and secondary caries between amalgams treated with no liner or varnish compared to amalgams treated with an adhesive bonding agent sealer. Therefore, in order to save the number of steps and the cost of an amalgam restoration, we recommend the following:
1. For all cavity preparations of ideal depth, no sealer or liner is necessary.
 2. For preparations deeper than normal but with at least 1.0 mm of dentin between the pulp and amalgam, no sealer or liner is necessary.
 3. For preparations deeper than normal but with less than 1.0 mm of dentin between the pulp and the amalgam, a liner using a resin modified glass ionomer is recommended as a thermal insulator.
 4. For preparations with less than 0.5 mm of dentin between the pulp and the amalgam, a thin calcium hydroxide liner is recommended followed by a thermal insulator or resin modified glass ionomer.
 5. For preparations with a direct pulp exposure on a vital pulp, a calcium hydroxide liner of about 0.5mm thickness is recommended followed by a thermal insulator or resin modified glass ionomer.
- UNMC:** We do not routinely place a liner under amalgam restorations. If placed it is because the supervising faculty requests or approves it, generally because it is thought there is little dentin remaining over the pulp. When used, it will most often be a resin-modified glass-ionomer product, such as Vitrebond™.
- SASK:** We have been using bonding procedures using 3M ESPE SingleBond as well as ScotchBond Multipurpose since 1986 as a cavity sealant under all amalgams where isolation can be achieved using rubber dam. In the event of a non-cooperative patient or isolation problems, quick cotton roll isolation and Copal resin varnish is used. As a lining material we use calcium hydroxide (Dycal) for small pulp exposures or in close proximity to the pulp, followed by 3M ESPE Vitrebond resin modified glass ionomer for covering the Dycal and any other deeper areas of exposed dentin (4-5 mm or more). In the case of minimal preparations with an ideal depth (2mm in bicuspid and 3 mm approximately in molars), etching and bonding with SingleBond would be the norm. Glass ionomer liners are not used as a base to replace bulk volume of dentin, but purely to cover Dycal or to seal deeper layers of dentin to reduce the likelihood of post operative sensitivity.
- SUI:** No response noted.

2. What are schools teaching as acceptable used for flowable composite? (Liners under composites? For Class V Lesions? etc.?)

COLO: This material is allowed to be used in two situations - to restore small shallow Class V lesions and to restore small Class I or PRR preparations.

CRE: Uses: PFS within enamel, repair acrylic temporary. Not used for gingival seat in Class II or as a liner under composites.

IOWA: Flowable composites are taught to use as a repair material for small pits or voids in composite resins or Bys-Acryl temporary restorations and as a marginal repair or reline material. For preventive resin restorations (PRR). Sometimes to seal after performing a fissurotomy in pit and fissures or in a very small defect in non-stress areas. We do not use them as common liners and also they are not taught to be used in Class V lesions.

MAN: Some instructors teach using flowable composites in the box/gingival seat of the Class II posterior composite resin technique. Other instructors utilize flowable composite to seal the pit/fissures after placement of a PRR.

MARQ: Liners. Provisional Repairs (Integrity). Conservative Class I's (barely entering dentin).

MINN: No response noted.

UMKC: Flowable composite is used in Preventive Resin Restorations and Class I and Class V restorations. Due to the sticky nature of TPH, some instructors use flowable as a liner in Class II restorations. Other instructors would not use in a Class II unless the possibility of a void due to handling was greater than the increased polymerization shrinkage of the flowable.

UNMC: Flowable composites are used as sealants, block out of small undercuts, margin repairs, small Class I and V restorations, but generally not as liners.

SASK: We no longer find many uses for flowable composite. We used to use flowable under composites but now prefer the use of resin modified glass ionomers such as Fuji 2 LC which have all the benefits of a "stress-breaking" liner and also or fluoride release in an "open sandwich" or "closed sandwich" gingival seat situation in the restoration of deep proximal Class II boxes. The inferior mechanical properties of flowable composite compared to conventional nanofilled hybrid composites make their use somewhat redundant.

SUI: No response noted.

VI. Effect of Beverage on Enamel/Dentin Erosion

1. Is information regarding the sugar/acid content and erosive properties of soft/energy drinks being given in an Operative Dentistry course to your dental students?

COLO: This information is provided to students in our cariology and clinic cariology courses. These cariology courses are in the Department of Restorative Dentistry, but not in the Division of Operative Dentistry. Therefore, they are not being taught directly within operative dentistry courses.

- CRE:** No, it is addressed in an Oral Diagnosis and Treatment Planning course.
- IOWA:** Information regarding the sugar/acid content and erosive properties of soft/energy drinks is first given to the dental students in the Cariology course at a freshman level. We have a nutritionist/dietician faculty member that teaches this area from freshman to junior years. The Operative Department has established a mandatory caries risk assessment for the entire dental student patient care. All patients that come to the school through the oral diagnosis clinic and family dentistry clinic receive a caries risk assessment and recommendations that include evaluation of their diet habits. The caries risk assessment is based on the ADA evaluation of risk factors and the recommendations are based on the CAMBRA statement for management of caries. There are no specific questions about beverage on dentin and enamel erosion but acidity of soft/energy drinks is addressed and individual recommendations are suggested. Xerostomia and erosion are covered in lectures to Junior students in a different Department (Oral Pathology), not Operative. Also, during the PBL exercises for the junior students, they are given cases to manage erosion in enamel and dentin.
- MAN:** Yes, information on acid and sugar content of soft drinks/energy drinks is given in a lecture pre-clinically to students. Evidence-based research articles are included for the students to become familiar with the research that exists based on the above subject.
- MARQ:** It is not given in our Operative (Preservation and Restoration of Tooth Structure) Course, but in our Foundations of Oral Health course.
- MINN:** No response noted.
- UMKC:** The students are taught about the content and effects of sugar/acid in soft drinks during the Operative I course.
- UNMC:** This is covered in detail in our Cariology course and discussed in Operative courses.
- SASK:** It is being discussed by the Operative Division in PBL format in conjunction with the Cariology components of the "Preventive Dentistry" course.
- SUI:** No response noted.

VII. Licensing Examinations

Licensing examinations continue to constantly change. Florida has accepted and adopted NERB. California has accepted WERB and will allow a PGY1 alternative. New York has a mandated PGY1 and Minnesota has just announced the elimination of patients in testing. (See ADA on-line news of July 14, 2009, Dr. Bicuspid on-line article of July 8, 2009)

1. Should CODE take an official position and what is that position? What is the rationale for such a position? Pros/Cons.

COLO: CODE should provide academic and scientific evidence regarding any operative dentistry/restorative dentistry component of these examinations. CODE members, through CODE, should provide contemporary, evidence-based reports to the examination agencies that provide rationale for performing and not performing certain operative dentistry procedures on these examinations. Ultimately, CODE should support non-patient-based licensure examinations, as all other medical-based examining boards are able to do.

- CRE:** CODE should investigate the licensing issue, and propose a recommendation to the licensing agencies.
- IOWA:** Yes, CODE should have an official position: our first recommendation would be the Accredited Dental Schools assume the responsibility for the clinical competency of their students as general practitioners. Therefore CODE would support the elimination of patients in a clinical board exam: CODE would support a National OSCE Board Exam which could include: Standardized Patient Cases: Diagnosis and Treatment Planning; Dentoform Exercises (limited); and a Written portion including jurisprudence.
- MAN:** Our Canadian dental schools write the two-part Canadian NDEB examination (written and OSCE).
- MARQ:** These are my opinions and not necessarily that of Marquette University School of Dentistry.
1. I feel that CODE should be an advocate for moving away from patient- based licensure exams (ethical issues) and go with an OS or Portfolio Evaluation for licensure
 2. We should advocate for one national exam in lieu of regional exams.
- MINN:** No response noted.
- UMKC:** Yes, we should take a position, and that position should be that testing does not involve the use of patients. Patients get abused. Additionally, a PGY1 is not a good idea.
- UNMC:** Coming to a consensus on this topic will be difficult given all of the opinions that exist.
- SASK:** The use of patients in examinations has profound ethical issues and creates a difficult environment for candidates to perform optimally. We believe that the Canadian National Dental Examining Board Written and OSCE exams are an excellent alternative.
- SUI:** No response noted.

2. Should dental schools be responsible for the content of the examinations? Pros/Cons.

- COLO:** No, but dental schools must have a voice in the shaping and development of these examinations. It is definitely appropriate and courteous for the examination boards to seek the advice of dental schools in shaping these examinations.
- CRE:** Probably not, as this could affect the integrity of a 3rd party testing the candidates. Schools and/or CODE could suggest the content.
- IOWA:** Dental schools should contribute to the content of the examination by representation on the National OSCE Board Exam Committee. Representation should include private practice, military/public health, and dental schools.
- MAN:** No response noted.
- MARQ:** No, but the dental schools, if they are accredited through a thorough accreditation process, should be able to advise the state board on whether or not a student is competent.

- MINN:** No response noted.
- UMKC:** No, licensing boards can be responsible for the content. Dental school faculty can serve as advisors and should be on the licensing boards.
- UNMC:** Responsible, probably no, but should have some input on its content.
- SASK:** No response noted.
- SUI:** No response noted.

Regional CODE Agenda

To be established by the respective Region and Regional Director. Please also report on responses , individual and a summary, to the Regional Agenda from all participants.

2009 REGIONAL CODE AGENDA

REGION II RESPONSES

(Evidence cited where applicable)

Region II School Abbreviations

COLO	University of Colorado	MINN	University of Minnesota
CRE	Creighton University	UMKC	University of Missouri - KC
IOWA	University of Iowa	UNMC	University of Nebraska
MAN	University of Manitoba	SASK	University of Saskatchewan
MARQ	Marquette University	SUI	Southern Illinois University

1. BEVELS

Does your School teach or not teach bevels on the gingival and proximal cavo surfaces margins for posterior Class II composite resin restorations? What is the science behind the teachings - i.e., cite the literature, etc. What are the observations?

COLO: Bevels are never placed on the occlusal surface of posterior composite preparations. Bevels are placed on the vertical proximal margins if doing so enhances the margin quality, is likely to improve bonding success, and/or provides improved esthetics. The gingival margin is beveled only if there is adequate enamel to bevel without removing all of the gingival enamel. Sometimes the gingival margin is “beveled” to remove a minuscule amount of weak, poorly attached enamel at this margin so this enamel does not fracture off during bonding. Dentin is never beveled in these preparations.

SASK: Bevels are never placed on the occlusal surface, the cavity wall ideally being prepared at 90° butt joint. The gingival cavosurface wall of the proximal box may be gently beveled with a margin trimmer if there is a solid enamel base as found in a minimal preparation slot type box. Beveling of the buccal and lingual walls is difficult in small preparations where contact is not broken. With good pre-wedging it is possible to use a very fine diamond to create a small bevel. We are not unified in our approach to this. Creating bevels using a bur in minimal preps can nick the proximal surface of the adjacent tooth unless a barrier such as an “interguard” is used. The best contact between two adjacent teeth is enamel because earlier studies have shown that composite resin wears more rapidly than enamel both on the occlusal surface and also the proximal surface. There is a view here that proximal enamel contacts should not be broken and the proximal

wall smoothed with a hand instrument such as a small chisel. There is an opposing view that it is legitimate to break contact using a fine diamond with good pre-wedging or prior application of a ring matrix retainer. This creates a small bevel to increase to bond strength at the cavosurface end-cutting the enamel prisms. This can also facilitate the placement of a matrix, which can be difficult if the contact is not broken. We are not aware of any hard science to validate either approach, i.e. broken contact versus unbroken, bevel versus 90° cavosurface proximal wall butt joint with composite resin. Intuitively, both seem rational, however, in reality, there is less use of hand instrumentation, so finishing enamel cavosurface margins with fine rotary diamonds may prevail.

Suggestions for CODE.

1. What can the organization do to improve its effectiveness?

COLO: How about sending information letters or flyers about CODE and it's work once per year to dental school Dean's and Restorative Dentistry department chairs. I know the schools get the CODE annual report but a one page letter may be more affective.

CRE: Unsure - more time invested by its members may improve its effectiveness; however, where is the time available?

IOWA: Focus on a limited but meaningful agenda that will contribute to Operative Dentistry education and profession; Initiative to have Operative Dentistry become an ADA recognized specialty. Sharing of evidence-based teaching materials and information.

2. Any comments or suggestions to improve the Web site?

<http://www.unmc.edu/code/>

NOTE: to locate the web site via a search engine, enter Academy of Operative Dentistry and then use the link CODE and ADEA.

No response noted.

3. Other comments/suggestions?

No response noted.

CODE REGIONAL MEETING REPORT FORM

REGION

III South Midwest

LOCATION AND DATE OF MEETING:

University: University of Mississippi School of Dentistry

Address: Jackson, MS

Date: November 5 - 6, 2009

CHAIRPERSON:

Name: Dr. Scott Phillips

Phone #: 601-984-6042

University: Mississippi School of Dentistry

Fax #: 601-984-6039

Address: Jackson, MS 39216-4505

E-mail: smphillips@sod.umsmed.edu

List of Attendees: Please see reverse of this page for List of Attendees to the regional meeting

Suggested Agenda Items for Next Year:

1. Are any new technologies relating to the CAD simulators and, grading, or imaging technology being utilized or considered at your school?
2. The FDA recently reclassified dental amalgam and its component parts as Class II medical devices (moderate risk). Has this caused any concern about the future use of amalgam in your school or state? Clinically, has there been a change observed in the ratio of amalgam to composite resin procedures?
3. How are amalgam, adhesive resin, and indirect restorative techniques organized into the preclinical curriculum? When (semester/year) are they taught? Has there been any change in the number of hours in the curriculum dedicated for each restorative material?

LOCATION AND DATE OF NEXT REGIONAL MEETING:

Name: Dr. Alan Ripps

Phone #: 504-941-8261

University: LSU Health Sciences Center

Fax #: 504-941-8218

Address: New Orleans, LA 70119

E-mail: aripps@lsuhsc.edu

Date: TBD (late October)

Please return all completed enclosures to
Dr. Larry D. Haisch, National Director, UNMC College of Dentistry;
40th and Holdrege Streets; Lincoln, NE 68583-0740.
Office: 402 472-1290 Fax: 402 472-5290 E-mail: lhaisch@unmc.edu

Deadline for return: 30 Days post-meeting

Also send the information on a disk and via e-mail with all attachments.
Please indicate the software program and version utilized for your reports.

CODE Region III Attendees Form

NAME	UNIVERSITY	PHONE #	FAX #	E-MAIL ADDRESS
Terry Fruits	Oklahoma	405-271-5735	405-271-3006	terry-fruits@ouhsc.edu
Robert Miller	Oklahoma	405-271-5736	405-271-3006	robert-miller@ouhsc.edu
Chris Beninger	Baylor	214-828-8211	214-874-4544	cbeninger@bcd.tamhsc.edu
George Cramer	Baylor	214-828-8468	214-874-4544	gcramer@bcd.tamhsc.edu
Gary Frey	Texas-Houston	713-500-4475	713-500-4108	Gary.N.Frey@uth.tamhsc.edu
Ryan Quock	Texas-Houston	713-500-4276	713-500-4108	Ryan.Quock@uth.tmc.edu
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Alan Ripps	Louisiana	504-941-8261	504-941-8218	aripps@lsuhsc.edu
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**2009 NATIONAL CODE AGENDA
REGION III
SUMMARY RESPONSES TO NATIONAL AGENDA**

(Editor note: Questions condensed for printing purposes)

I. Fiber Posts.

Four of the seven schools currently teach the use of fiber posts. Some of the schools teach it in the undergraduate program and one teaches it only in the AEGD or Grad Endo program. Systems use include Bisco DT XRO, Bisco Light Post, SybronEndo Peerless Post, Dentsply International GT PostSystem, and Coltene/Whaledent Parapost system. The bonding materials used are All-Bond Dual core, 3M/ESPE Unicem Resin, ParaCem Resin, Optibond Solo Plus, One-Step Plus, Bisco Duo-Link cement, and RelyX ARD.

II. Lasers

Currently, if lasers are being utilized, it is for soft tissue management only. Lasers are taught basically only in didactic sessions. If any under-graduate clinical use is available, it is used under very strict faculty supervision by predoctoral students. Lasers are more frequently used in a graduate clinic setting (AEGD and Pros). Training of faculty is handled either by the manufacturers representative or a fellow in the Academy of Laser Dentistry. Five of the seven responding schools indicated the presence of lasers in their schools.

III. DIAGNODent (first question is an update from a 2003 agenda item)

DIAGNODent is taught in the didactic and lecture setting. There is little to no use in the clinical setting except as an adjunct to other conventional caries assessment tools. Six of the seven schools reported having DIAGNODent units, however, they are very frequently used. Limited hands-on use for the students, mostly information only. Consensus of opinion is that DIAGNODent should not be used solely to detect caries. More proven conventional tools are available.

IV. Gold

The use of Cast gold has decreased , primarily due to the patient's request for more esthetic restorations. Full gold crowns continue to be the primary use for cast gold restorations. FPDs, inlays/onlays, and partial crowns follow. With seven schools reporting, approximately 30% of the total crowns processed were gold. None of the schools in our region routinely teach Direct Gold in any form. It is mentioned and one school has a faculty member that will do individual training if requested. Direct gold restorations are rare according to the data submitted.

V. Cavity Liners

Deeper preparations require calcium hydroxide and RMGI. Routine pulp protection is Gluma Desensitizer at one school. Other schools do not routinely use any liners or bases. Flowable composites are used primarily for pit and fissure sealants, or to improve the handling of the cavity preparation.

VI. Effect of Beverage on Enamel/Dentin Erosion

This information is taught in Cariology, Preventive Oral Hygiene, Operative Dentistry, and Periodontal courses. Information is dispensed didactically and in lecture form.

VII. Licensing Examinations

Of the seven schools responding, the opinions varied. Consensus is that the live patient requirement should be dropped. However, due to the variation of the individual schools related to CODE, the organization probably could not come to a majority voice, therefore, it should not become involved. Dental schools should be allowed input into the information contained in the licensure examinations, however, they should not be solely responsible for the content of the examinations. As long as the licensure board informs the schools of the requirements, and the schools agree to inform the boards of their requirements, the examinations should proceed properly.

2009 NATIONAL CODE AGENDA

REGION III RESPONSES

(Evidence cited where applicable)

Region III School Abbreviations

BAY	Baylor University	OKU	University of Oklahoma
LSU	Louisiana State University	TENN	University of Tennessee
MISS	University of Mississippi	UTSA	University of Texas - San Antonio
	UTH		University of Texas - Houston

2009 NATIONAL CODE AGENDA

(Please cite the evidence where applicable. If utilizing reports/forms/schedules from your Regional schools, please submit these as PDF files for utilization in the Annual Fall Regional Report)

I. Fiber Posts.

1. Are you teaching fiber post for endodontic build-ups in your school?
Graduate and/or undergraduate programs?

BAY: Undergraduate program does not use fiber posts for buildups. AEGD, Graduate Endodontics - yes.

LSU: Yes. They are taught in the Pros and Endo Departments.

MISS: Fiber posts are not taught as the routine direct type of post system to use clinically as a part of the conventional lecture/lab fixed course. However, they are available in the undergraduate and graduate clinic as a faculty request only item for use on a limited basis under strict faculty supervision for anterior teeth only.

OKU: Fiber posts and the associated bonding techniques are not currently being taught in the predoctoral curriculum. However, on rare occasions they are utilized in the student clinics in a one-on-one situation. They are being utilized somewhat more in our AEGD program, but not frequently. This is a subject that is currently under discussion and the decision will have to be made in cooperation between the Fixed Prosthodontics and Endodontic departments as to when, and if, to incorporate this subject into the predoctoral preclinical curriculum. There is some concern over the effects of post flexure in cases with little coronal tooth structure remaining. This situation can lead to failure, and the need to replace the post and restoration. The frequency cited benefit that the failure is repairable because the post fractures instead of the tooth is assuming that the replacement post and restoration will not fail again, and again. The main cases that are being treated in our clinics with this type of post are those that have a lot of tooth structure and a more than adequate ferrule. The Endodontic faculty are interested in possibly using fiber posts to reduce root fracture due to their flexibility, and to improve the opportunity for removal of the post and retreatment of the endodontic treatment is needed in the future. Many of our Fixed Prosthodontic faculty members are hesitant to utilize the fiber post due to the affects of their flexure on the retention of the restoration and on the marginal seal of the restoration.

TENN: Yes, undergraduate program. Fiber post systems are available to graduate Prosthodontic program, but their preference is to utilize a cast post and core.

UTSA: Undergraduate

UTH: Here, currently fixed indirect restorations (and necessary build-ups) are taught pre-clinically and in 3rd year clinic by the Prosthodontic Department. Supervision of such procedures is covered by Restorative Department faculty in the 4th year. Restorative Department: in 4th year general practice bays, fiber posts are available for use. Prosthodontic Department: in 2nd year pre-clinic and 3rd year clinic, fiber posts are not taught. Fiber posts are not taught at the graduate level either. Pre-fab metal or cast versions are taught. Endodontic Department: Faculty generally supportive of the use of fiber posts for building up endo-treated teeth.

2. Which system are you using and why?

BAY: AEGD-Bisco DT XRO™ - comes in all-in-one system. Easy to use. Graduate Endodontics - SybronEndo Peerless Post™ and Dentsply International GTPostSystem™ metal and fiber posts. Why...?

LSU: Parapost fiber post system. Primarily because of radiopacity and that they've been using the Parapost metal system for years.

MISS: We have the Parapost fiber white system by Coltene/Whaledent. We use that system because it is the one the fixed prosthodontic faculty were most familiar with and recommended.

OKU: When fiber posts are utilized: the Bisco Fiber Post is the most frequently used in our AEGD program, possibly because they received free supplies from the company. They did not indicate that any particular post system is preferred at this time. For most post situations we use: 1) prefabricated Tri-R Posts. They fit our Gates Glidden preparations (which is standard in our endo technique). They maximize the design of tapered and parallel posts: having 3 parallel segments of diminishing size; 2) Cast dowel post and cores are used for most anterior single rooted teeth.

TENN: We use Bisco's DT Light Post. The biomaterials department feels that any fiber post fabricated by RTD France would be acceptable. Basis for the selection of this post is partly due to the study done by the University of Montreal on the designing a post to adapt to the anatomy of the root canal. (*Anatomical post design meets quartz fiber technology: rationale and case report.* Boudrias P, Sakkal S, Petrova Y. Compend Contin Educ Dent. 2001 Apr;22(4):337-340). Other reasons for the selection of the DT Light Post are: we receive special pricing for the school making the system relatively inexpensive for us to use. Our biomaterials department prefers the ability (to) bond the post into the canal. With the elastic modulus being similar to dentin, the chance of root fracture using fiber posts is less. If anything fails, it will more than likely be the post. In the event of post failure, the DT post system also has a companion post removal kit. An adequate ferrule is still necessary.

- UTSA:** Bisco DT Light Post. The fiber posts have long term clinical success reports from Europe and South America. Of the tooth colored post systems fiber posts appear the least complex for the endodontist to remove if necessary.
- UTH:** Currently 4th year instructors have Coltene/Whaledent ParaPost Taper Lux system. This may not be specifically preferred by faculty, but it is the system made available in clinic.

3. What bonding material are you using with your fiber posts and why?

- BAY:** AEGD - All-Bond III Dual core - high bond strength, good long term data. Do not want to rely on light cure alone. Graduate Endodontics - ?
- LSU:** 3M/ESPE UnicemResin. Ease of use and ...
- MISS:** ParaCem resin cement by Coltene, also.
- OKU:** When we use fiber posts, we always use a self-etching resin cement such as Unicem or G-Cem and, of course, a composite core. Self-etching is predictable and easy, but may not have the highest bond strength.
- TENN:** We use Optibond Solo Plus SE (self-etch) as the bonding agent and Duo-link for the cement. We currently use Optibond Solo Plus (light-cure) as our standard bonding agent for composites. We elected to go with the self-etch version for post and cores to 1) eliminate the need for etching and rinsing; and 2) for moisture control (in a confined space we don't have to worry if the dentin is too dry or too wet prior to the application of the bonding agent). Duo-Link was chosen for the automix dispensing due to low cost and that it is manufactured by the same company that distributes the post we use.
- UTSA:** One Step Plus dentin bonding agent. Bisco Duo-Link cement. The adhesives are the same brand as the fiber post.
- UTH:** Generally RelyX ARC is the bonding material used. It is used because we do not have Rely-X Unicem capsules available.

II. Lasers

1. What is your school's (and/or department's) view on the use of lasers in Operative Dentistry? Minimally Invasive Dentistry? Surface treatment for bonding? Cavity Preparation? DIAGNODent?

- BAY:** We have no lasers in use at present in any dentistry departments.
- LSU:** Most of the faculty are unfamiliar with the use of lasers. We did manage to get the school to purchase the Ivoclar Navigator Diode 3W laser. We are so far introducing it to the faculty with training from Ivoclar. On occasion we have used it in clinic with some students. The surgery is only performed by faculty. Our use has been only for troughing for impression purposes.
- MISS:** Restorative biomaterials faculty conducted some preliminary research on surface treatment with lasers for bonding, however, results were inconclusive. Currently lasers are not being utilized for cavity preparations. All laser is used for soft tissue removal or recommended crown lengthening. Periodontal

faculty does advocate use of lasers. Students are exposed to soft tissue removal also in operating room setting where this is done with an electro-surgery unit.

OKU: We attempt to incorporate new technologies wherever we can in the student's curriculum. A hard tissue laser was being used at the school for research purposes in the past. Currently, lasers are only being used and taught to predoctoral dental students for soft tissue management. At this time we do not utilize the DIAGNODent instrument for diagnosis.

TENN: Currently, we are using lasers for soft tissue recontouring and in bleaching studies. We do not currently have a laser for hard tissue applications due to expense.

UTSA: Operative has not yet identified a place for a dental laser that is sufficiently independent to justify the cost.

UTH: Lasers in the curriculum in general here are in the stage of infancy. There is a general openness to the possibilities of lasers in the profession and our school, but no strict over-arching views are held. With the past year, three faculty have been added to the Department of Restorative Dentistry with laser experience, two of which have an M.S. degree in lasers and one who had been certified in private practice. It might be expected that as they and others lend expertise (and training) to the faculty, a clearer stance on the use of lasers in dentistry may begin to develop.

2. Are lasers being taught for applications in operative/restorative dentistry at your school? If so, how? Didactic, Pre-clinical, and/or in Clinic?

BAY: No.

LSU: Currently they are not taught about lasers in our department. On rare occasion we will use it in clinic for a student. Lately we've been using it more since the Pros Department likes it. However, they can't use it until I've scheduled a training session with Ivoclar.

MISS: Yes, being taught in the courses in periodontics, operative in didactic lectures. In clinic, restorative faculty communicates with periodontal faculty to recommend soft tissue or bone removal prior to restorative procedure. Student appoints patient in periodontics clinic and then in restorative clinic after adequate healing time. Students primarily use diode laser for this.

OKU: Didactically, the use of soft tissue lasers (the Diode Laser specifically) has been incorporated into the DS III Restorative Lecture Series. "Gingival Retraction - Electrosurgery & Lasers" seminar in the spring semester. Also, the new AEGD residents receive didactic and hands-on training in Electrosurgery and the Diode soft tissue laser in their first few "orientation" weeks of their curriculum. Preclinically, the soft tissue laser has been a regular part of the "Technology Day" curriculum for DS IVs and residents in the spring semester. Clinically, for DS III and IVs, the Diode soft tissue laser is available for both the AEGD resident clinic, and the Fixed Prosthodontic patient clinics - demonstrated or used under faculty supervision - as an alternative soft tissue removal or gingival retraction technique for selected cases.

TENN: Use of lasers is mentioned in didactic courses in operative and fixed prosthodontics in the D2 and D3 courses and in an Advanced Operative course in the D4 year. In pre-clinic, the lab session in the D3 esthetics course is under construction to include hands-on training with both lasers and electrosurgery. In clinic, the use of lasers is demonstrated by faculty in specific cases and the student assists. A hands-on CE course is also given by faculty on use of lasers and electrosurgery.

UTSA: No. Lasers are not available in the operative didactic pre-clinic or pre-doctoral clinic with the exception of DIAGNODent. There are DIAGNODent devices in the building, but they are not in routine use on the clinic floor. We teach a significantly higher threshold than DIAGNODent suggests before we allow the students to cut into a fissure system. We teach pit and fissure sealant in questionable fissures in patients with high caries risk.

UTH: Currently lasers are not taught as part of the core undergraduate curriculum at this school, although the existence and possibilities are mentioned in lectures from the various disciplines (including Operative). In the summer of 2009 an elective for upperclassmen was piloted by the aforementioned laser experts. This course was didactic with limited hand-on laboratory experience. All lasers used were on temporary loan from industry or private practitioners for specific use in the course. Concepts taught in the elective are not currently available for application by students in the clinic.

3. What credentials does your school require for those who teach and use the lasers?

BAY: None - no lasers used here in dental courses.

LSU: Minimal training from the company representative or other faculty familiar with its use.

MISS: Initial training is completed by manufacturer followed by yearly training and safety renewal through UMC. Hands-on CE course provided by Sullivan Schein, who distributes Biolase, now will be offered March 19, 2010. A laser safety officer is assigned to SOD who communicates with head of Laser Safety at UMC. This person is responsible for door sign, all safety equipment, and log of use of each laser. Lasers must be used in enclosed space where doors can be shut.

OKU: Faculty and residents who use and teach the use of the Diode soft tissue laser have been trained by a "Fellow" of the Academy of Laser Dentistry. They received the required didactic and hands-on training, and a certified training certificate. This training is a minimum of 8 hours of CE.

TENN: In-service training sessions are periodically given for faculty, which include safety issues. Faculty must have this training before using the units in clinic, and must teach the students about these issues as they are demonstrating use of the lasers on patients in the clinic.

UTSA: Lasers are not used in either graduate periodontics or in the pre-doctoral clinics. There are no established credentialing requirement since lasers are not used in the school.

UTH: Credentialing in laser use, as with all clinical privileges here, is done through the office of the Associate Dean for Clinical Affairs. Guidelines for credentialing in laser use are not strict; CR or post-graduate training in lasers is taken into consideration.

4. Are there lasers available for teaching and patient care?

BAY: No.

LSU: Yes. We have one diode laser which we can bring to our faculty practice or use in clinic with a student case.

MISS: Yes, Biolase currently in pediatric residents dental clinic at Batson Hospital, but will be moved to faculty practice or student implant clinic, Waterlase MD in faculty practice, CO2 and Diode lasers located on 3rd floor periodontics clinic.

OKU: Three Odyssey Diode Lasers are available within the school: 1) in the Restorative Dentistry office for all restorative dentistry department use; 2) in the AEGD clinic, and 3) in the Graduate Periodontics clinic.

TENN: We have four Diode lasers available.

UTSA: No.

UTH: At the undergraduate level, one of the faculty in Restorative Dentistry currently has a laser unit on loan for research. On occasion he has been called into clinic to perform soft tissue procedures with the laser (frenectomy, excision for biopsy, etc). Students are not allowed to use this unit. The AEGD program is known to possess 1 diode soft tissue laser for teaching and treatment. The Periodontics Department has been investigating the possibility of purchasing a laser.

III. DIAGNODent (first question is an update from a 2003 agenda item)

1. Does your school currently teach the DIAGNODent in its caries diagnosis curriculum?

BAY: The DIAGNODent is discussed in various lectures as an aid in caries diagnosis but it is not used in the clinical setting.

LSU: Yes. In our Cariology course and lectures to the hygiene students.

MISS: The use of the DIAGNODent is not being formally taught in the caries courses. The limited amount of instruction is coming from the faculty in the Oral Diagnosis Department, The reason that we have limited utilization of the equipment is closely associated with the admissions protocols. For maximum effectiveness of the DIAGNODent or competitor, the teeth should be free of plaque and debris. The hygiene appointment is not conducted until after the diagnosis appointments. The majority of utilization is coming from specific part-time faculty and minimum usage by full-time faculty.

OKU: We describe the DIAGNODent and its uses in didactic material and lectures. We do not use DIAGNODent caries detection device in our clinic, we mainly use visual cues and radiographs to detect pit and fissure caries.

- TENN:** The theory and use of the DIAGNODent is mentioned in several lectures in operative, pathobiology, and oral diagnosis. There is no lab or clinical use of the instrument however.
- UTSA:** We discuss in lecture why we find the low threshold of DIAGNODent might led the dentist to cut teeth that do not need preparations. Drs. Summit and Overton do not understand why so much effort is placed into reaching a conclusion to cut away enamel. If there is a question about the diagnosis either do nothing or place a sealant in the fissure. The likelihood that the patient will suffer a catastrophe from under treatment of a questionable fissure appears to be minuscule with this approach. To start the restoration/re-restoration cycle too early is the greatest tragedy for the patient.
- UTH:** Diagnosis of caries is taught in a variety of arenas here. In Operative Dentistry pre-clinic courses, the concept of adjunct methods, like the DIAGNODent, is introduced via lectures. In Operative Dentistry Clinic, depending on attending faculty, adjunct methods like DIAGNODent may be mentioned (although the non-availability of a unit prevents demonstration or use). Treatment planning, which is covered didactically and clinically (2nd/3rd year) by the Department of Diagnostic Sciences, does not currently advocate the use of the DIAGNODent. Students who participate in the Laser Elective course do have didactic and hands-on exposure to the DIAGNODent.

2. Does your school possess any DIAGNODent units?

- BAY:** Although there are a few DIAGNODent units at the dental school, they are not in use in the clinics at this time.
- LSU:** Yes. We also should be receiving one or two more units.
- MISS:** We have two DIAGNODent units in the Oral Diagnosis clinics.
- OKU:** We had one or two units, but I am not sure if, and where, they are being utilized.
- TENN:** One.
- UTSA:** There are at least 2 units in the building.
- UTH:** No working units are known of.

3. What sort of hands on exposure do your faculty/students have to the DIAGNODent?
(Example: lectures, demo, and/or actual patient treatment)

- BAY:** The DIAGNODent is only discussed in lectures at this time. They are not in use for patient treatment.
- LSU:** Very limited. Demos and some actual patient treatment solutions.
- MISS:** Again, there is clinic demonstrations and usage on actual dental school patients, but more by specific part-time faculty.
- OKU:** As mentioned above, we discuss the DIAGNODent device in lectures. We also introduce the students to this type of technology during a "Technology Day"

program that invites manufacturers of certain products to come and display their products in our clinics. They allow hands-on use with extracted teeth during this program.

TENN: Lectures only, though there is some use of the unit in the AEGD.

UTSA: None.

UTH: Students who participate in the Laser Elective course do have didactic and hands-on exposure to the DIAGNODent. Hands-on experience is via a lab with extracted teeth.

4. By word of mouth, some practitioners are advocating the use of DIAGNODent by dental hygienists in their practices. Although final "confirmation" of caries is done by the dentist, does use of DIAGNODent qualify as diagnosis of caries? Any support from the literature?

BAY: We do not believe nor teach that the use of the DIAGNODent qualifies as diagnosis of caries. Some practitioners may use it as an adjunctive aid in the diagnosis of caries, but we do not advocate this at this time.

LSU: It is not an absolute in determining caries but a good supplement in determining the presence of caries. Usually if it gives a low number there is a pretty good chance there is no caries. On the other hand a high reading is not always an indicator of caries. See list of references.

KaVo DIAGNODent 2095

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- ⁸ Reich, E., et al.: "Clinical Caries Diagnosis Compared to DIAGNODent Evaluation." 46th ORCA Congress, 1999, Abst. #54, p. 299
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- ¹² Lussi, A., and Hibst, R.: "Methods for Occlusal Caries Detection Used in Daily Practice," Indiana Conference 1999
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MISS: The mere use of the DIAGNODent should not qualify as actual diagnosis of decay although the perception from the company's marketing information may indicate the contrary. When auxiliary personnel are using the instrument, it could be considered as gathering data that should be interpreted by the dentist as dental disease or not.

- OKU:** At this time, we are not comfortable relying solely on the DIAGNODent device for caries detection. It could be utilized to provide additional information for areas that the clinician is unsure of the diagnosis. Unfortunately, this type of instrument or technology also seems to be one that is ripe for possible abuse and/or misuse.
- A large number of the studies examining the effectiveness of the DIAGNODent for caries detection suggest that it be used only as an adjunctive method along with visual cues and radiographs. It has not been proven to be accurate enough to be the only determining factor for caries detection. (See articles 1, 2, 3, 4, 6, 7, 8, 10, 11, 12, 14, 15, 16, 18, 19 and 20)
 - It seems to be effective at identifying dentinal carious lesions, but not so effective for the identification of early enamel carious lesions (5, 8, 17)
 - The device does not seem to be effective in estimating the size or volume of a carious lesion (1, 9, 13)

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TENN: Use of the unit alone is not sufficient to diagnose caries.

UTSA: A Pub Med search for “DIAGNODent” offered 142 articles. The abstracts from the articles dated 2008 and 2009 were reviewed. The general conclusion of the Abstracts were that DIAGNODent was a reasonably effective adjunctive diagnostic tool when clinical judgement was applied. There was a wide range of DIAGNODent “numbers” ranging from 5-10 on a root caries paper to 20-40 for fissure caries evaluation so it does not appear that the exact “good” (treat vs. no treatment) number is possible to determine with the device. There were no papers identified that involved hygienists as diagnosticians.

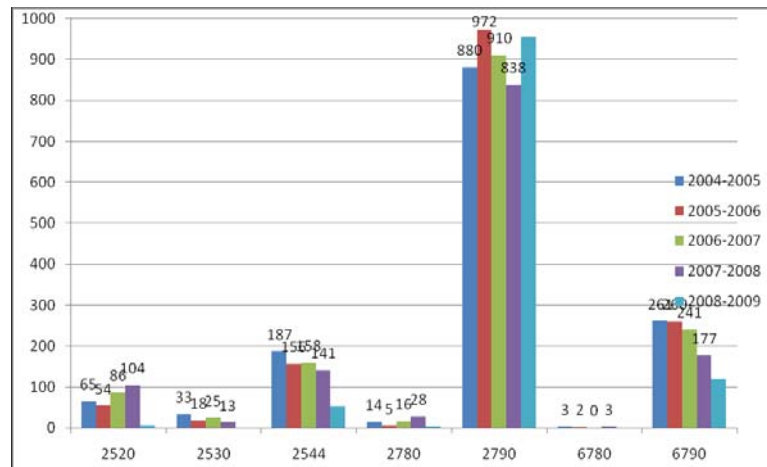
UTH: A cursory examination of current literature finds an increasing number of articles reporting the DIAGNODent usefulness. One common theme in several articles is that visual inspection is still the standard method for detecting pit and fissure caries. DIAGNODent may be a useful adjunct. But other methods should be incorporated to avoid false positives. *See Huth et al, Costa et al 2008, Chu et al 2009, Braga et al 2009, de Paola 2009.*

IV. Gold

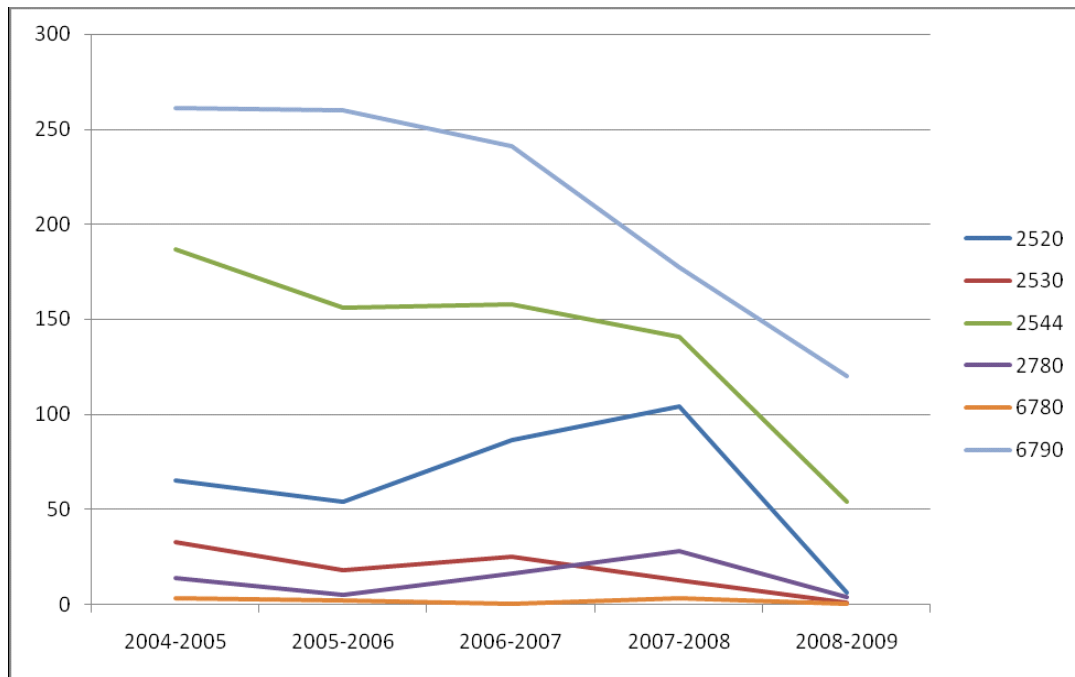
- Has the use of Cast Gold as a restorative treatment increased, decreased, or remained the same over the past 5 years in your pre-doctoral clinics? Explain this trend; or lack of change.

BAY: The following data show trends in indirect restorations completed by dental students at our school.

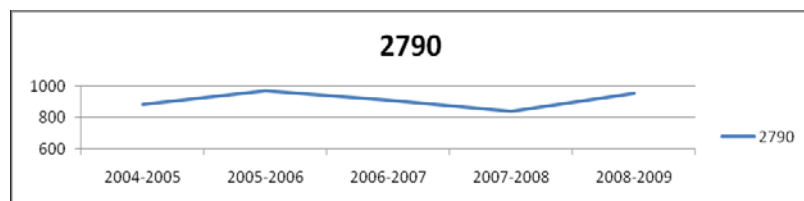
	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009
2520	65	54	86	104	6
2530	33	18	25	13	1
2544	187	156	158	141	54
2780	14	5	16	28	4
2790	880	972	910	838	956
6780	3	2	0	3	0
6790	261	260	241	177	120



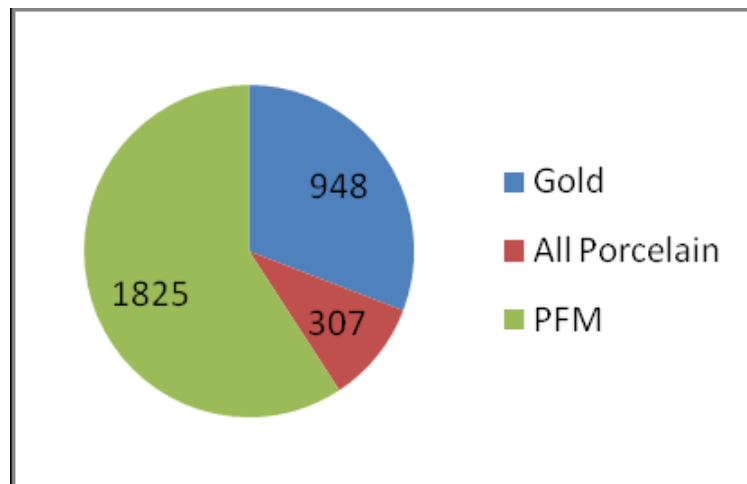
	2520	2530	2544	2780	6780	6790
2004-2005	65	33	187	14	3	261
2005-2006	54	18	156	5	2	260
2006-2007	86	25	158	16	0	241
2007-2008	107	13	141	28	3	177
2008-2009	6	1	54	4	0	120

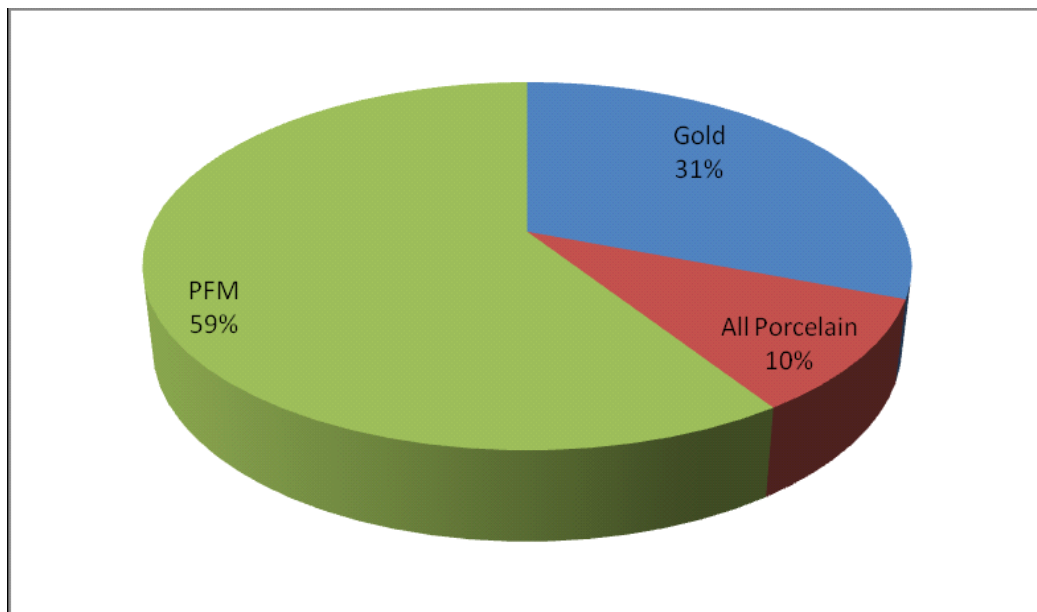


	2790
2004-2005	880
2005-2006	972
2006-2007	910
2007-2008	838
2008-2009	956



Gold	948
All-porcelain	308
PFM	1825





The use of cast gold as a restorative treatment at our school has decreased significantly if looking at the numbers of cast gold inlays, onlays, 3/4 crowns, and 7/8 crowns. The number of full gold crowns used in patient treatment has stayed relatively constant or increased slightly over the last five years. The significant decrease in number of inlays, onlays, and partial veneer coverage crowns has probably been due to the fact that they are not procedures that are required to be performed by the students and therefore are not treatment planned by students or faculty.

LSU: It has decreased drastically. Since Hurricane Katrina we had to reduce our didactic and clinical experiences at least 20%. We completely stopped teaching gold inlays and onlays preclinically and stopped requiring the students to restore with gold. In Baton Rouge we did not have facilities or equipment to allow a class the ability to construct a casting, We still do not have resources for our preclinical courses to make these castings. We are starting to add this to our curriculum with the exception of casting the metal. Due to the cost of the higher gold content alloys the cost is prohibitive. We are currently using a gold alloy with only 40% gold content which doesn't allow us to adequately burnish margins. Another problem is finding clinical faculty with experience in working with these restorations.

MISS: The frequency of cast gold restorations has remained about the same with some years having a slight decrease due to patient needs or demands. However, an interesting trend was that in 2008 a total of 7 full gold bridges were completed and 8 gold bridges delivered in 2009. Due to the increase in public demand for higher end esthetic procedures, it is harder to sell an all metal crown, however, in non-esthetic areas, if patients are well educated on the advantages of full gold over PFM they tend to want what is the better of the two, with the fee staying the same for both. Students often do not stress the advantages of full gold accurately to the patient and that is often the reason for fewer treatment planned than what possibly could be. Our diagnosis and treatment planning faculty are very adept at explaining the advantages of full gold over PFM to patients especially when there are interocclusal space concerns in non-esthetic areas such as second molars.

- OKU:** In respect to Type III, IV alloys, we have noticed a slight decrease in the past years at a rate of 1-2 units less every year. Patients are requesting more esthetic alternatives like metal ceramic restorations and students prefer the metal ceramic because the in-house Support Lab will do most of the lab steps. If it is a “cast gold” unit, they are required to do all the lab steps. That will change this year in that after 85 points (10-12 units), they will be required to send everything to the Support Lab.
- TENN:** Use of cast gold has steadily decreased. More patients want porcelain. Also the cost of gold has made Procera much more economical since we set the charge of copings at \$30. Also we have an in-house CEREC unit and one of the leading trainers for this technology on our faculty (Dr. Simon); therefore we are providing more of this treatment for patients than many other clinics. We provide over 100 units per year in 2 half days of clinic. The restorations are less expensive (\$25/ceramic block) for the patient as there is no lab bill and patients get the restorations sooner.
- UTSA:** 2003-2004 = 32% gold; 2004-2005 = 33% gold; 2005-2006 = 32% gold; 2006-2006 = 30% gold; 2007-2008 = 33% gold; 2008-2009 = 28% gold
Short teeth, old prosthodontics, and 2nd molars are probably the reasons that gold use has been stable over the last 5 years, but we do not have significant proof of these conclusions. The prosthodontists, as a group, are very much in favor of gold for 2nd molar teeth.
- UTH:** Electronic Patient Records (EPR) went online beginning in August 2006. Our Director of Clinical Education was able to provide data beginning August 2007.
August 2007 - July 2008: 29.8% gold inlay/onlay - 50 (18 two-surf inlay, 9 three-surf inlay, 3 three-surf onlay, 20 four-surf onlay); 70.2% non-gold inlay/onlay - 118 (1 two-surf ceram inlay, 1 three-surf ceram inlay, 1 one-surf resin inlay, 66 two-surf resin inlay, 40 three-surf resin inlay, 4 three-surf resin onlay, 6 four-surf resin onlay); 35.3% gold single crowns - 89 (2 3/4- crown, 87 full gold); 64.7% non-gold single unit crowns - 163 (7 all-ceram, 87 PFM high noble, 64 PFM base metal, 5 implant PFM); 31.9% gold bridge abutment - 22; 68.1% non-gold bridge abutment - 47 (38 PFM high noble, 9 PFM base metal).
August 2008-July 2009: 27.9% gold inlay/onlay - 96 (18 two-surf inlay, 24 three-surf inlay, 3 two-surf onlay, 17 three-surf onlay, 34 four-surf onlay); 72.1% non-gold inlay/onlay - 248 (5 three-surf ceram inlay, 1 two-surf ceram onlay, 2 three-surf ceram onlay, 8 four-surf ceram onlay, 2 one-surf resin inlay, 119 two-surf resin inlay, 87 three-surf resin inlay, 10 three-surf resin onlay, 14 four-surf resin onlay); 20.9% gold single unit crowns - 236 (*1 primarily base metal, 235 gold); 79.1 % non-gold single crowns - 895 (130 all-ceram, 309 PFM high noble, 450 PFM base metal, 6 implant PFM); 6.6% gold bridge abutment - 19 (3 3/4 crown, 16 full crown); 93.4% non-gold bridge abutment - 269 (1 resin-to-metal, 21 all-ceram, 113 PFM high noble, 134 PFM base metal).
Summary: Between school years August 2007-July 2008 and August 2008-July 2009, EPRs show the following trends: Proportionate usage of gold decreased, in some categories more so than others. In the inlay/onlay category, only a slight decrease in the use of gold was represented - 29.8% > 27.9%. In the single unit crown category, usage declined from 35.3% > 20.9%. In the bridge abutment category, proportionate usage declined the most, from 31.9 > 6.6%.

2. What are the most common applications of this technique listed in frequency of use or in decreasing order? (Examples: Crown, FPD, Onlay, ¾ crown, Class II Inlay, Other: specify)

BAY: Full gold crowns are the most common application followed by gold FPD, Onlays, Class II Inlays, and finally ¾ crowns.

LSU: The only restorations of this nature would be a full gold crown, Rarely have we seen ¾ crowns or inlays or onlays done in clinic.

MISS: Full crown is by far the most frequent, followed by full gold FPD then the onlay much less frequently. Class II inlays are seldom done anymore.

OKU: In order of frequency of use: (number of units completed in one year) FGC individual crowns and FPD retainers - 357; MOD onlay - 29; FGC pontics - 15; ¾ crowns - 8; 7/8 crown -1; We also do cast dowels in Type IV gold alloy - 47.

TENN: 1-Crown, 2-FPD, 3-Onlay, 4-¾ crowns, 5-Class II inlay

UTSA: Operative Dentistry has no clinical expectations for indirect restorations. Prosthodontics run the indirect restoration market at our school. Metal ceramic crowns are the most common indirect restoration. Cast gold full veneer crowns represent the vast majority of gold efforts. A few gold FPDs are done in the senior clinics, but once again the majority of FPDs are metal-ceramic. There is no longer an FPD expectation in the junior year and seniors only have to do a single FPD to meet minimal expectations. Credit for 3 crowns is given a junior that does an FPD so a few are done each year. We have a CAD/CAM advocate on the Operative Dentistry staff that did a few ceramic inlays/onlays with the students for which the students received operative point credits. The head of the Lab assures me that gold onlays, inlays and partial veneer gold crowns were very rare events, but I could not get the exact count.

UTH: For the last school year (August 2008-July 2009): crown 236 > Onlay 54 > inlay 42 > FPD abutment 19 units.

3. If you do Gold Crowns in your clinics, please estimate the percentage of total gold crowns done last year.

BAY: Of the full coverage restorations done in the last year, 31% were gold. 59% were porcelain-fused-to-metal and 10% were all porcelain.

LSU: Over the past years we are providing about 35-40% full gold crowns compared to PFM. This rate has been fairly constant. We've done less than a dozen gold onlays or inlays in the past 4 years.

MISS: Last year's seniors - (4th year only, 2009) - completed 99 total full gold crowns and 277 PFMs - approximately 26% of all crowns delivered were full gold..

OKU: 410 units (36%).

TENN: 30%.

UTSA:

2003-4	32% gold	2006-7	30% gold
2004-5	33% gold	2007-8	33% gold
2005-6	32% gold	2008-9	28% gold

UTH: According to our EPR, from August 1, 2008 - July 31, 2009, 20.9% of all crowns were gold and 79.1% were non-gold (all-ceramic or PFM). 236 full cast crowns vs 895 non-gold crowns.

4. Are students able to receive Direct Gold (foil) training in your school?
If so, please describe the method of teaching (regular curriculum, elective curriculum, gold study group visits, individual experience by a faculty mentor, other-specify).

BAY: No, training in preparation design and placement of direct gold restorations is not offered here.

LSU: Direct gold restorations are not even mentioned in our school.

MISS: No, at this time we do not teach Direct Gold in any form in regular or elective curricula.

OKU: No.

TENN: No. Only a brief mention in lecture in D1 year.

UTSA: Dr. Summitt would be willing to offer an individual experience in direct gold for an interested student.

UTH: This school year, following the retirement of our resident gold foil expert, marked the first year that the gold foil technique is not taught here. Previously the faculty expert taught a Gold Foil Elective, which typically garnered some participation.

5. Did any students do at least one DIRECT GOLD restoration in your clinical last year? If so, how many had this experience and describe or categorize the experiences.(Example: Class V, Class I, Class VI, Crown repair, other-specify).

BAY: No direct gold restorations were placed by our students in our clinics during the past year.

LSU: In the past 30 years we've rarely seen one done in clinic. Sometimes an instructor may help someone close a defect or endo access with direct gold. Once state boards stopped requiring it, we also stopped.

MISS: We did not have students do any direct gold procedures in the clinic last year.

OKU: No.

TENN: No.

UTSA: No direct gold clinical expectations exist at our school. Dr. Summitt has assisted students in the past with foils, but none were done in the junior student clinic in 2008-2009.

UTH: According to our EPR, no direct gold restoration have been done in the past two years.

V. Cavity Liners

1. What is the standard cavity-lining material for placement under amalgam restorations, taught and practiced at your school? (Are all amalgams, regardless of size and location, being bonded, or are glass ionomer liners/cements used?)

BAY: Calcium hydroxide in deep cavity preparations covered by RMGI used in both amalgam and composite restorations, minimal dentinal coverage. Not all amalgam restorations are bonded. Liners or cements are not routinely used except in deep preparations.

LSU: Routinely we don't use any liners or bases under amalgam. We do not bond amalgam restoration except in rare circumstances. We do teach the use of RMGI liners in deep cavity preparation to prevent possible post operative sensitivity. This affords a better seal of the tubules.

MISS: < .5mm of dentin remaining to pulp - use CaOH and can also use GI liner. > .5mm dentin remaining, can use GI liner if deep carious area. Large amalgam restorations are bonded with All Bond and amalgam restorations where ideal retention has not been obtained. Glass ionomer (GC liner) used in many areas including under deep composite restorations, amalgam restorations where indicated.

OKU: Our standard pulp protection under all amalgam restorations is the application of Gluma Desensitizer. We apply it for 20-30 seconds, rinse with water and dry the tooth prior to placing the amalgam restoration. We have had very good success with eliminating most postoperative sensitivity with this technique. In preparations in which we estimate that there is less than 1 mm dentin remaining over the pulp, we apply a 0.75-1.0 mm thick layer of Vitrebond RMGI. In preparations in which we estimate that there is less than 0.5 mm of dentin remaining over the pulp, we apply a very thin layer of calcium hydroxide, and then cover that with a 0.75 - 1.0 mm thick layer of Vitrebond RMGI.

TENN: The standard cavity-lining material we use for placement under amalgam restorations is glass ionomer. The brand name is Fuji. We do not bond amalgams at this time.

UTSA: Small and moderate sized amalgam restorations are placed directly on dentin without any effort at placing a liner. Deep penetrations, crown foundations and large amalgam restorations are placed with Amalgambond Plus with HPA. Preparations near the pulp receive Dycal, Vitrebond over the Dycal. Amalgambond Plus with HPA, Amalgam.

UTH: In general, there is no strict standard for cavity-lining material under amalgams at our school. In pre-clinical Operative courses, all of the following concepts are introduced: Copal varnish (ex. Copalite); Amalgam bonding agents (ex. Scotchbond Multi-purpose Plus); GI/RMGI liners in deep cavity (ex. Vitrebond). It is also acknowledged that sometimes nothing is placed as a liner under amalgam restorations. Clinically, all of these options are available and are used.

2. What are schools teaching as acceptable used for flowable composite? (Liners under composites? For Class V Lesions? etc.?)

BAY: We do not teach flowable liners under composites. Flowable composites may be

used in very conservative Class I, II, and V restorations. Use of flowable composites on the gingival floor of Class II restorations is not taught or used here in 3rd year Operative. Some 4th year (General Dentistry) faculty teach it and practice it in clinic. Literature seems to be equivocal on the matter.

- LSU:** We aren't advocating the use of flowable resins except sometimes as a fissure sealant.
- MISS:** Biomaterials - does not advocate use of composite flowables. Preclinical faculty - teach this liner for composites in specific cases (large Class I's and II's) and for small PRR's. Clinical faculty - teach as liner for composites in special circumstances as well as for certain Class V restorations depending on depth (shallow is okay). Also used to repair crown and bridge temporaries. Routine Class II's do not use flowable sandwich technique.
- OKU:** The only use that we currently teach for a flowable resin composite is to restore occlusal pit and fissure preparations in very narrow conservative pit and fissure cavity preparations. We consider these to be one form of a preventive resin restoration. If any part of the occlusal preparation becomes wide, and will expose the restoration to extensive wear or occlusal stress, we restore that portion with a microhybrid resin composite and restore the remaining narrow portions of the preparation with the flowable resin composite. We do not use a flowable resin composite as liners for composite restorations because of a lack of convincing data that would indicate that it is more effective than simply restoring the preparation with a microhybrid resin composite. We use either a microhybrid resin composite or a resin modified glass ionomer for the majority of Class V lesions. Although it has been proposed that the flowable materials "flex" with the tooth flexure to decrease microleakage or debonding in Class V restorations, we are not aware of a preponderance of evidence to support that theory.
- TENN:** We are teaching that the use of flowables is acceptable to improve handling and allow injection into the cavity preparation. They also allow flexibility for abfraction lesions. They improve flow with required lower filler content (35.5% - 45.5%). There are many on the market. Flowables can be used as liners under any type of restoration here, where you have a need to even out the excavated caries defect. We prefer to use glass ionomer for this, however, flowables can be used in open and closed sandwich techniques when building up a composite in Class V's.
- UTSA:** Due to the very poor physical properties (high setting contraction, high coefficient of thermal expansion, high hygroscopic expansion) of flowable composites, we do not use them under composites or for Class V lesions. Flowables are available in the clinic to repair BIS-acryl provisional restorations.
- UTH:** In general, flowable composites have been taught both preclinically and clinically for use as liners under more highly filled composites and for shallow preparations only in enamel. Clinical judgement is important in deciding on the use of any material. In pre-clinical Operative, students are taught to take into consideration the wear/strength properties of flowable composites to help to determine appropriate use.

VI. Effect of Beverage on Enamel/Dentin Erosion

1. Is information regarding the sugar/acid content and erosive properties of soft/energy drinks being given in an Operative Dentistry course to your dental students?

- BAY:** Yes, information on the sugar and acid content as well as erosive properties of soft drinks and energy drinks is given to our students in both the pre-clinic Operative Dentistry lecture course as well as in the Clinical Operative Dentistry lectures.
- LSU:** In our Cariology course we emphasize diet and its affect on teeth.
- MISS:** The students are initially exposed to the concept of acidic and erosive properties of drink in the Preventive Oral Hygiene course taught in the freshman year. During the clinical years, patients are identified that have high caries incidence and/or evidence of dental erosion in the Oral Diagnosis clinics. These patients are questioned about their habits and recommendations are made at that time. The concept is reinforced in the prevention/periodontal clinics where identified patients are requested to complete a diet diary. This is later evaluated by the student and faculty and recommendations are made to modify patient behaviors. One recent focus has been on timing of hygiene procedures with ingestion of acidic and/or erosive (substances). The concept is that brushing should be delayed while the enamel or tooth surface is softened or most vulnerable.
- OKU:** Not in much detail. Most of this information is taught in our Cariology course that the students take just prior to the start of the operative dentistry courses.
- TENN:** The sugar/acid content and erosive properties of soft/energy drinks are given in Periodontal Course:103 to our D1 student doctors. The 50 minute presentation is titled, "Substrate: Diet and Caries." The presentation consists of the following items: Diet, Major sources of added sugars in the American diet, Dietary Guidelines for Americans (2005), The Nutrition label, Calculating your carbohydrate to look at obesity and appropriate nutrition, (the above items give the student doctors an understanding of all sugars in the diet and effect on the dentition and body), Discussion of soda pop (acid) and sugar affect/effect on the dentition, Nutrition label on the soda pop can, Soda pops/Dental erosion: Who is at risk for extrinsic tooth erosion? What is the pH of a variety of soda pops/energy drinks?, Soda Pops/Caries: Understanding the risk assessment tool related to consumption of soft/energy drinks/milk, Prevention, Quality of life.
- UTSA:** YES.
- UTH:** Historically, lectures in pre-clinic Operative Dentistry have highlighted the sugar/acid content and erosive properties of soft/energy drinks. Dr. Bill Tate has highlighted specific pH levels of common soft/energy drinks, as well as the implications regarding tooth erosion.

VII. Licensing Examinations

Licensing examinations continue to constantly change. Florida has accepted and adopted NERB. California has accepted WERB and will allow a PGY1 alternative. New York has a mandated PGY1 and Minnesota has just announced the elimination of patients in testing. (See ADA on-line news of July 14, 2009, Dr. Bicuspid on-line article of July 8, 2009)

1. Should CODE take an official position and what is that position? What is the rationale for such a position? Pros/Cons.

- BAY:** No, CODE should not take an official position regarding licensing examination format and/or content, or the replacement of licensing examinations with a PGY1 alternative. Each state should decide on the type

of examination it wants for licensure of dentists who practice within its borders and CODE, as a national organization, should not voice an opinion as it will surely alienate some states. CODE will accomplish more by remaining neutral on this issue.

- LSU:** Not an official position. As long as we know what to expect we can prepare the students to take the boards. Because of litigation and following up on patients who have problems, we can understand the problems involved with live patients.
- MISS:** We do believe CODE should get involved in a controversy that should be left up to the state licensing boards to decide. It would probably not put CODE in a good position either way since they would be entering a political controversy rather than one that could be defended by evidence based facts.
- OKU:** The recent trend has been to explore alternatives to using live patients on licensing examinations (and organizations like ASDA have endorsed elimination of a patient-based exam), but we feel that this probably will not happen nationwide for some time. Whether or not CODE takes a position would depend on the positions of individual member schools. Some individuals at our school would support replacing patients with typodonts for licensing exams, others view this as a regression; we believe that the majority don't think performance on a typodont necessarily equates to similar performance on a live patient. Moreover, we feel that it would be difficult to return to typodonts as an exam modality after two years of treating live patients. We might go so far as to support the elimination of licensing exams altogether **IF** the dental schools would assume more responsibility for the dismissal of students who are not making the grade. Today, as you know, dental schools bend over backwards to retain many students who should rightfully be dismissed - and early in their careers. Until we do a better job of assuming that duty, licensing examinations remain the most accepted way to "protect the public". Since most candidates eventually pass boards, this so-called "protection" is more accurately a deferral (with hopefully some remediation along the way).
- TENN:** Organized Dentistry's position is that it is unethical to use patients for irreversible and possibly harmful care delivered during an exam. This cannot be undone, can only be dealt with. It could be harmful to patients by requiring additional care, e.g., endo, post & core and PFM restorations or tooth loss requiring implant and restoration or fixed or removable appliances.
- UTSA:** The public might conclude that the boards prevent dentists that are short in basic skills from entering practice. The facts are that new graduates that fail a board typically pass it on the second attempt without any more training than they had the day before they failed it the first time. The instructor with the best long-term corporate memory for our university thinks that only one student with a diploma from here has failed to get a state board somewhere. That former student elected to do something different from dentistry and just did not try again. A patient based licensing examination is probably not in the best interest of the public or the candidate. Too much energy, time and effort is spent at the end of the senior year looking for the ideal WREB patient rather than trying to expand the skill sets and clinical experiences of the novice dentist. It could be that CODE should try to eliminate the patient portion of the examination which clearly places the welfare of the patient below that of the candidate.

UTH: Assuming that even within CODE there are regional directors (evidenced by responses to National Agenda?), it may prove daunting for CODE to have an official position on licensing examinations at the national level. Further complicating this is the issue itself: licensing is currently regulated at the state level, so there are as many different perspectives as there are states.

2. Should dental schools be responsible for the content of the examinations? Pros/Cons.

BAY: Dental schools should voice an opinion and concerns about content of licensing examinations and the individual state board of dental examiners should carefully consider their input.

LSU: Pro. I've sat on state board of examiners and have been involved in their decision on what should pass or fail. They are willing to work with us in testing what we teach. Their standards were even more lax than what we demand.

MISS: Dental schools should not be solely responsible for the content of the examination but should be consulted with on grading criteria and content changes that occur when certain procedures are difficult to find in a given patient population. Good open communication must be maintained with state boards in order for the schools to have input in these licensing examinations.

OKU: Schools are already in effect responsible to some degree for exam content. Insofar as WREB tries to reflect current teaching, schools do have this input. Also, WREB seats at least one faculty member on each of the committees responsible for exam content. In effect, those faculty members are "school spokespersons" charged with ensuring that WREB is aware of changes in teaching methodology, materials, and techniques. Schools also have input through their respective state boards which are the actual entities who accept/reject a licensing examination. Any school or faculty member has the option of contacting WREB and making exam suggestions through its various committees. We don't know the relationship between schools and other state or regional examinations, but if it is based on the WREB model, there is an avenue for input. As to responsibility for input, schools again need to determine as a group what they consider to be desirable procedures for competency testing. If one school supports inclusion of a casting, for example, but others do not, how would inclusion be determined/justified? The only reasonable way would be for schools to adopt a unified stance on exam content. If this is even possible (highly doubtful, in our opinion), CODE again provides an ideal avenue for gathering such information and sharing it with testing agencies.

TENN: Schools must be allowed reasonable input; however, they should not be responsible for follow-up care unless the patient is already a patient of record.

UTSA: (We), like other schools, argue against it when WREB tries to test something we do not teach.

UTH: It would make sense for dental schools to have some say in the content of the examinations, since we are the ones teaching the concepts to dentists trained in this country. Calibration among schools would seem to be important, this may be difficult.

Regional CODE Agenda

To be established by the respective Region and Regional Director. Please also report on responses , individual and a summary, to the Regional Agenda from all participants.

2009 REGIONAL CODE AGENDA REGION III RESPONSES (Evidence cited where applicable)

Region III School Abbreviations

BAY	Baylor University	OKU	University of Oklahoma
LSU	Louisiana State University	TENN	University of Tennessee
MISS	University of Mississippi	UTSA	University of Texas - San Antonio
	UTH		University of Texas - Houston

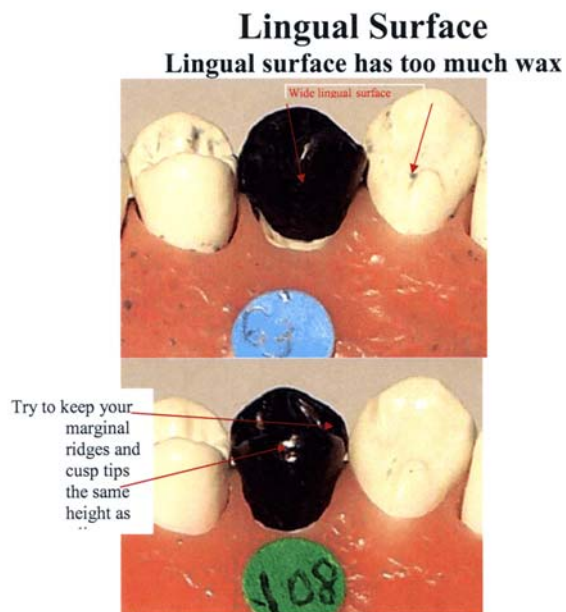
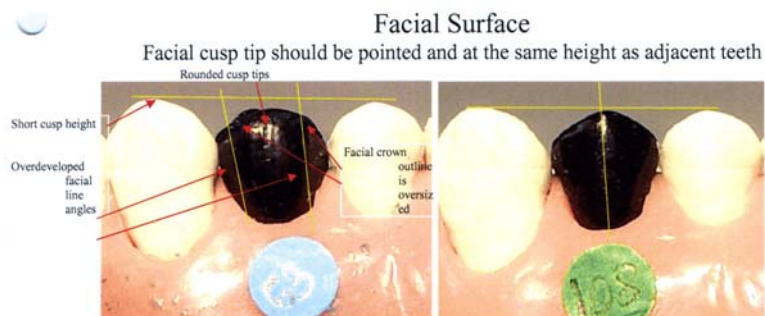
I. Are any new technologies relating to the computer assisted dental simulators and, grading, or imaging technology being utilized or considered at your school?

- BAY:** Dental Anatomy is photographing individual student waxing projects from various angles and comparing them side by side with the “ideal” tooth wax-up photographed at the same angles. Errors and differences between the student’s project and the “ideal” are noted under the individual photographs. Below is a sample of the evaluations with the “ideal” (#108) tooth shown below the student project. (See A-1 and A-2).
- LSU:** We are working with a new CAD/CAM system from Europe. We haven’t gotten it yet, but it seems more of a lab equipment than direct patient care. We are in the middle of planning to remodel our preclinical labs with audio/visual, and new simulators. This isn’t a new technology.
- MISS:** Nothing in relation to simulation or grading or imaging technology and grading. We do not know of any reliable systems available. We are interested in digital impressions as a new technology here. We will be renovating our clinical lab in the next 2 years and our focus on added technologies will be in this area.
- OKU:** None in relation to simulators or grading. We are utilizing the LAVA system by 3M for digital impressions. This is being incorporated on a case-by-case basis in our student clinics.
- TENN:** Serona has a grading program that is currently being tested.
- UTSA:** We have full CAD/CAM technology, training and clinical experience available for students. No digital grading systems or digital impression systems available at this time. Axium has been fully integrated into the clinics as of this past summer. We are planning to use Axium in the preclinical labs, with log-in for tooth projects, and creating a data base of patient scenarios. We recently purchased a portable digital magnifying video scope, the Explorer by CamSight, (www.camsight.com/explorer.html) with plans to utilize it in preclinical and clinical training. We plan to create a video bank of clinical procedures which students could access through their laptops and personal digital players. Also could be used for morphing tooth preps and restorations in pre-clinical labs, film students performing procedures to analyze their techniques and handskills, and possibly

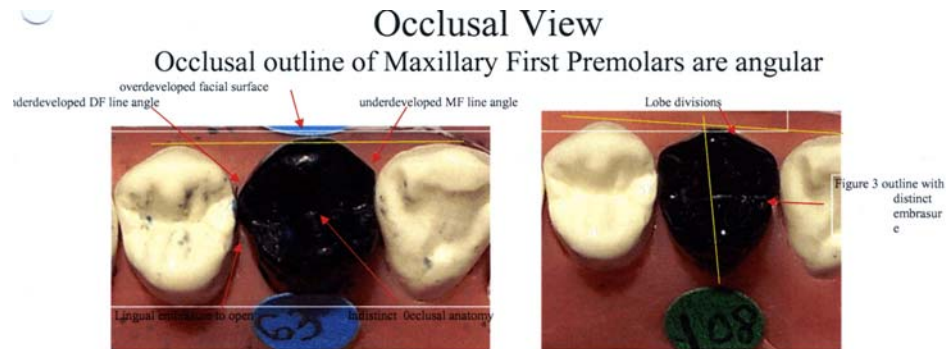
research the “concrete” vs “abstract” learning modalities.

UTH: None that we’re aware of, although in the process of building the new school replacement building, vendors of simulators and haptics technology have been brought in.

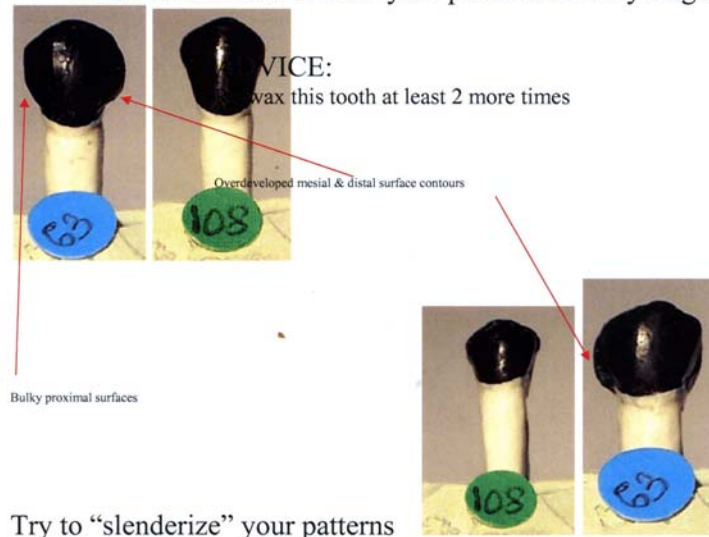
Baylor A-1:



Baylor A-2:



Proximal Contours & Waxing Skills
Take more time to smooth your patterns at every stage



II. The FDA recently reclassified dental amalgam and its component parts as Class II medical device (moderate risk). Has this caused any concern about the future use of amalgam in your school or state? Clinically, has there been a change observed in the ratio of amalgam to composite resin procedures?

BAY: We have no concern about the future use of amalgam, Clinically speaking, many more posterior composite restorations are placed compared with amalgam restorations.

LSU: There has been a great decrease in the number of amalgam restorations done in our clinics. This is related to esthetics more than any fear of amalgam. In the second and third year there is an even distribution of amalgam to composite restorations. There is no requirement in the senior year. They do whatever they treatment plan.

MISS: There has been no concern over the recent FDA decision on amalgam classification. Current opinion is that composite is becoming more widely used at Mississippi. Our EDR data show the Class of 2010 to date has done 62% amalgam and 38% composite (posterior restorations only). The Class of 2011 to date has done 49% amalgam and 51% composite (posterior restorations only), but

this only reflect 4 months clinical experience. Since going to the electronic record in June 2007, data show 57.6% amalgam and 42.4% composite selection for posterior direct restorations for all students.

OKU: There has not been any additional concern over the future use of amalgam at our school or in our state. The material's benefits far outweigh any currently proven risks associated with it. In our opinion, the biggest risk that we see for the future of amalgam use may be related to controlling the amounts of amalgam and mercury going out with the effluent wastes from dental facilities. Clinically, at our school, there has been some change in the ratio of amalgam to resin composite procedures over the past few years. This is mainly in respect to the treatment of pit and fissure sealants. The resin composite does offer a more conservative restorative option to amalgam in many instances for pit and fissure caries. We are using many more Preventive Resin types of restorations and conventional resin composite restorations for the treatment of conservative pit and fissure caries. There also has been somewhat of an increase in the use of conservative "slot" prep Class II resin composites.

TENN: No; though clinically, there has been a change observed in the ratio of amalgam to composite resin procedures. We are still doing slightly more amalgams than composites, probably because SRTA still requires a candidate to pass a Class II amalgam and therefore that is still one of our competency exams also.

UTSA: We are still teaching both amalgam and resin composite techniques in the pre-clinical operative dentistry course. We emphasize their technical differences, and how that would impact in the clinic. Amalgam foundation restorations and multi-surface restorations are bonded with Amalgambond Plus (using HPA). The trend in the clinics seem to be in favor of more resin composites being placed.

UTH: Electronic Patient Records (EPR) reports: August 06-July 07: 23.4% amalgam/76.6 resin [79 amalgam (exclusively posterior) vs. 259 resin (134 anterior, 125 posterior)]; August 07 - July 08: 34.7% amalgam/65.3% resin [1291 amalgam (exclusively posterior) vs. 2433 resin (1116 anterior, 1317 posterior)]; August 08-July 09: 31.3% amalgam/68.7% resin [2240 amalgam (exclusively posterior) vs. 4918 resin (1865 anterior, 3052 posterior)]. Over the three year period represented here, there does not seem to be a significant change in the proportionate use of amalgam as a direct filling restoration at the UTDB. We have not noticed any significant change in the attitude towards amalgam at the UTDB.

III. How are amalgam, adhesive resin, and indirect restorative techniques organized into the preclinical curriculum? When (semester/year) are they taught? Has there been any changes in the number of hours in the curriculum dedicated for each restorative material?

BAY: Pre-clinical Operative Dentistry is taught over the course of two semesters. The first semester pre-clinical operative lecture and laboratory courses are taught in the spring of the D1 year and the lecture and laboratory courses finish in the fall semester of the D2 year. In the D1 year, amalgams are taught first; Class I, II, and V amalgam preparations and restorations make up about 68% of the lecture and laboratory courses. Class III composite preparations and restorations make up about 12%, and Class I, II and V composite preparations and restorations make up about 15%. The other 5% of the lecture and laboratory courses consist of orientation, instruction on instrument identification and use as well as instruction on handpiece use and care. In the D2 year, amalgam preparation design and

restorative procedures are reviewed first. Later in this semester, complex pin related amalgam preparation design and restorations are taught as well as the use of Ti-Core™ build-up material. This combined instruction accounts for about 31% of the lecture and laboratory sessions. Posterior composite preparations and restorations account for about 19% of the lecture and laboratory instruction time while anterior composites account for 16% of the time. The last 34% of the lecture and laboratory instruction time is spent on indirect gold inlay and onlay preparation design and restorations.

LSU: Preclinically they are taught both amalgam and composite restorations in the same course. In the last 5 years we start with posterior composite restorations. Our original thoughts were the preparations are not as demanding and by the time we start amalgam they have developed more hand-skills. This year we are going back to starting with amalgam. With composites we still insisted on detail with the preparations to “push” the student into working harder. We do feel it is easier to carve amalgams by hand than to bur carve anatomy in composite. Whichever material we start in our preclinical course, that material usually receives the most time.

MISS: I) Caries 1 - (simple & complex amalgams) - Spring D1 year
 II) Esthetic Problems - (composite & esthetic bonding procedures) - Fall D2 year
 III) Caries 3 - Indirect restorations - (onlays & full gold crowns) - Winter D2 year
 No changes in number of hours dedicated for each restorative material recently.

OKU: Preclinic Operative Dentistry I
 Spring semester of first year: Direct Resin Composite, Amalgam, and Resin Modified Glass Ionomers are taught. There has been a change in that we spend more time on resin composite restorations than we did five to ten years ago.
Preclinical Operative Dentistry II
 Fall semester of the second year: Direct Resin Composite, amalgams, and Resin Modified Glass Ionomers are taught.
Fixed Prosthodontics I
 Fall semester of the second year: Indirect Gold; Onlays, 3/4 Crowns, Full Crown. The main changes in this course and all Fixed Prosthodontic courses is more emphasis on preparation and provisional fabrication, and less time spent with lab work and cementation procedures.
Fixed Prosthodontics III
 Fall semester of the third year: Indirect all-ceramic crowns. There is more time spent on all ceramic crowns than in the past.

TENN: All are taught simultaneously in the D1 year with preps for Class I, II, III, V and crown preps being taught on the DentSim initially. The follow-up D1 lab concentrates on amalgam preps and restorations in the 1st and 2nd semesters with composite preps and restorations brought in minimally in the 2nd semester. In the D2 year the students concentrate more on adhesive resin preps and restorations, both simple and complex, including buildups and post and cores. In the summer of the D3 year there is an esthetics course concentrating on veneering, more complex direct resin restorations and indirect esthetic restorations. Number of hours: increase in composite, decrease in amalgam by approximately 20%.

UTSA: Students are exposed to resin composites during the DS-1 Dental Anatomy and Occlusion course, as sculpting projects in addition to waxing. The Operative Dentistry course is conducted during the DS-2 year, and involves didactic and lab training with both materials. There is emphasis on caries simulating the projects (creating cavitations and “bonding” in caries sim material, dye-colored Triad that

is light cured). This allows students to develop their handskills and problem solving in managing “demineralized” tooth structure during preparation. We also emphasize immediate and delayed repair techniques, along with replacement dentistry philosophies, by creating simulated recurrent caries lesions from previously completed Class II projects. We emphasize resin composite a bit more, but feel that amalgam still provides the student with necessary additional handskill opportunities.

UTH: 1614 Operative Dentistry I (Spring/1st year) - amalgams and then adhesive resin taught.
2614 Operative Dentistry II (Fall/2nd year) - amalgams reviewed, adhesive resin focused on, and then finish with indirect resin restorations.
2615 Inlay/Onlay (Spring/2nd year) - cast inlay/onlay preparations and restorations, review of indirect resin restorations.
3651 Esthetics in Dentistry (Spring/3rd year) - indirect ceramic restorations
This current continuum has been in place for almost 10 years. For the next school year, we anticipate one major change - 2615 Inlay/Onlay will be merged together with the Fixed Prosthetics course (currently taught by Prosthodontics Department) - the new course will be titled “Single Unit Indirect Restorations.”

Suggestions for CODE.

1. What can the organization do to improve its effectiveness?

No response noted.

2. Any comments or suggestions to improve the Web site?

<http://www.unmc.edu/code/>

NOTE: to locate the web site via a search engine, enter Academy of Operative Dentistry and then use the link CODE and ADEA.

No response noted

3. Other comments/suggestions?

No response noted

CODE REGIONAL MEETING REPORT FORM

REGION IV Great Lakes

LOCATION AND DATE OF MEETING:

University: University of Detroit Mercy

Address: Detroit, MI 48219-0900

Date: October 22 - 23, 2009

CHAIRPERSON:

Name: Dr. Ed Deschepper

Phone #: 317-274-5331

University: Indiana University

Fax #: 317-274-2419

Address: Indianapolis, IN 46202

E-mail: edeschep@iupui.edu

List of Attendees: Please see reverse of this page for List of Attendees to Regional Meeting

Suggested Agenda Items for Next Year:

No response noted.

LOCATION AND DATE OF NEXT REGIONAL MEETING:

Name: Dr. Camila Sabatini

Phone #: 716-829-6343

University: SUNY- Buffalo

Fax #: 716-829-2440

Address: Buffalo, NY

E-mail: cs252@buffaol.edu

Date: TBD

Please return all completed enclosures to
Dr. Larry D. Haisch, National Director, UNMC College of Dentistry;
40th and Holdrege Streets; Lincoln, NE 68583-0740.
Office: 402 472-1290 Fax: 402 472-5290 E-mail: lhaisch@unmc.edu
Deadline for return: 30 Days post-meeting
Also send the information on a disk and via e-mail with all attachments.
Please indicate the software program and version utilized for your reports.

CODE Region IV Attendees Form[illegible]

**2009 NATIONAL CODE AGENDA
REGION IV
SUMMARY RESPONSES TO NATIONAL AGENDA**

(Editor note: Questions and responses condensed for printing purposes)

I. Fiber Posts.

Most schools are teaching about (fiber posts) and some are getting hands-on in lab, but none are using in the undergraduate clinics. Systems used are varied. (Fiberkor, FiberLux, Light Posts). Most common reason is that they were given by companies. Bonding materials used are varied. (Bisco, GI, Calibra, Prime&Bond NT)

II. Lasers

Most schools are not using any type of hard tissue lasers (except SUNY-Buffalo). Most are at least exposing students to DIAGNODent. Most schools are not teaching lasers. SUNY-Buffalo only school using lasers in clinic. Credentials required for those who teach lasers are Certification or experience. Most schools do not have lasers available for teaching and patient care.

III. DIAGNODent (first question is an update from a 2003 agenda item)

Most of our schools teach DIAGNODent didactically. Also most of our schools have DIAGNODent units, however not necessarily used in clinics. Most faculty/students have some exposure to DIAGNODent, however only a couple of school use it in clinic on patients. Most schools see DIAGNODent as an adjunct to diagnosis, not a diagnosis confirmation.

IV. Gold

Most of our schools have experienced a decrease in the use of cast gold as a restorative treatment due to esthetic demands of patients. Most of our schools use cast gold in this order: Crown, FPD, Onlay, $\frac{3}{4}$ crown, Class II Inlay. The estimated percentage of total gold crowns is in the range of 30 - 50%. Most of our schools responded that the students do not receive Direct Gold (foil) training unless it is by elective or faculty mentor. Very few schools did any Direct Gold restorations last year.

V. Cavity Liners

Varied response for cavity-lining material from resin modified glass ionomer to copal varnish to none at all. Very few schools "bonding" amalgam to tooth structure. No routing use of glass ionomer. Most of our schools are teaching liners under composites, preventive resins, sealants. Michigan is the only school using cavity liners for Class V lesions (small abfraction lesions).

VI. Effect of Beverage on Enamel/Dentin Erosion

All schools in our Region are teaching this as an Operative or Preventive course.

VII. Licensing Examinations

Licensing examinations continue to constantly change. Florida has accepted and adopted NERB. California has accepted WERB and will allow a PGY1 alternative. New York has a mandated PGY1 and Minnesota has just announced the elimination of patients in testing. (See ADA on-line news of July 14, 2009, Dr. Bicuspid on-line article of July 8, 2009)

Most of our schools say CODE should have no official position. We are not a political organization and states should decide. Some of our school say yes to schools being responsible for the content of the examinations and some say no.

2009 NATIONAL CODE AGENDA
REGION IV RESPONSES
(Evidence cited where applicable)

Region IV School Abbreviations

CWRU	Case Western Reserve University	OSU	Ohio State University
UDM	University of Detroit Mercy	PITT	University of Pittsburgh
UIC	University of Illinois - Chicago	SUNY	State University of NY - Buffalo
IUSD	Indiana University	WVU	West Virginia University
MICH	University of Michigan	UWO	University of Western Ontario

I. Fiber Posts.

1. Are you teaching fiber post for endodontic build-ups in your school? Graduate and/or undergraduate programs?

CWRU: No response noted.

UDM: We teach fiber post systems at the undergraduate level through our fixed prosthetic courses as an alternative to cast or prefabricated metal posts. Students receive didactic lectures and hands-on exercise in the sim-lab.

UIC: Fiber posts are not used either in the undergrad or graduate clinics. Students do receive didactic lectures of all different systems available including fiber posts.

IUSD: Graduate Endo (preferred post system); Grad Pros (just starting).

MICH: Undergraduates - didactic only. Graduate clinic - didactic and clinical use, depending on the individual case. Case selection is critical.

OSU: No response noted.

PITT: No response noted.

SUNY: We teach pre-fabricated metal posts. That is what the students at the D3 and D4 level have available for use on the clinic floor. The D2 students, in the technique course, learn cast posts in addition to the pre-fabricated metal posts. The use of fiber posts (Unicore, Ultradent) has been introduced by some of our faculty primarily at the AEGD clinic and selective cases at the pre-doctoral level. Its use is however not a departmental policy yet. We support and promote their use and we'll probably adopt it as a departmental policy in the future.

WVU: Fiber posts are included in lecture and one is placed in a preclinical lab. Rarely used in the clinic.

UWO: No response noted.

2. Which system are you using and why?

CWRU: No response noted.

- UDM:** We have recently integrated ParaPost Fiber Lux post system from Coltene/Whaledent for clinical use. We have limitations only for specific cases with faculty check out. We have evaluated multiple systems. One of the major reasons why we have selected ParaPost system was related to the fact that we have been using the same system for prefabricated metal posts over the years.
- UIC:** We usually indicate prefabricated posts for molars, and in those instances we use the ParaPost system. In the graduate program, cast posts is used for most patients due to the specific needs of our complex prosthodontic patient population, who is normally missing a large portion of the clinical crown, and the need to secure long-term stability of a core that has minimal remaining tooth structure to retain it.
- IUSD:** Coltene/Whaledent. Endo Department recommended.
- MICH:** Only being used in the graduate restorative dentistry clinic. They have tried most systems, but currently favor Light Posts from Bisco (no supporting information given).
- OSU:** No response noted.
- PITT:** No response noted.
- SUNY:** We currently use the ParaPost system. It's the post system that the school has used for years.
- WVU:** Fiberkor, free sample from manufacturer.
- UWO:** No response noted.

3. What bonding material are you using with your fiber posts and why?

- CWRU:** No response noted.
- UDM:** We are using Calibra esthetic resin cement system from Dentsply as the only resin cement available at our dispensary. Prime&Bond NT Dual Cure is the bonding agent component of the system. The nanofillers contained in Prime&Bond NT adhesive reinforce the hybrid zone providing high bond strength to both dentin and enamel. We are also evaluating other possible systems such as RelyX from 3M.
- UIC:** Not applicable.
- IUSD:** Bisco bonding system.
- MICH:** A variety of systems are used.
- OSU:** No response noted.
- PITT:** No response noted.
- SUNY:** Currently, we are using the resin cement Multilink Automix to cement prefabricated posts. This is an excellent cement with laboratory and clinical success.

WVU: Used glass ionomer in preclinical lab, use composite cement (Calibra) in clinic.

UWO: No response noted.

II. Lasers

1. What is your school's (and/or department's) view on the use of lasers in Operative Dentistry? Minimally Invasive Dentistry? Surface treatment for bonding? Cavity Preparation? DIAGNODent?

CWRU: No response noted.

UDM: The Department of Restorative Dentistry does not teach the use of lasers in Operative Dentistry.

UIC: The use of hard tissue lasers has not been considered by our Restorative Department. We use evidence to help our decision. Although most studies in hard tissue lasers report positive effects of laser therapy, this technology still has its limitations. Safety, efficacy and effectiveness still need improvement. This technology still requires further development and testing, especially in regards to the surface treatment. Research has shown improved patient acceptance due to the fact that less or no anesthesia is needed, and the multiple capabilities of the laser favor its use in practice, but the traditional methods of performing the same procedures still are more economical on a patient basis. The decision to include laser in our college will also depend upon financial consideration.

IUSD: Not using, no intention of using at this time. We have DIAGNODent, but are not using in undergraduate or graduate clinics. Students are exposed to this in lab setting.

MICH: Not using for these applications.

OSU: No response noted.

PITT: No response noted.

SUNY: We advocate the use of lasers for Operative Dentistry procedures. Didactic information on the use and applications of lasers is introduced to the D3 students in the Operative course. In addition to that, there is an elective course on lasers offered to the D3 students. We've recently increased emphasis on Minimally Invasive Dentistry (MID) and Preventive Dentistry as the main philosophy in treatment planning. Students learn about MID and Preventive Dentistry during their D1 year in the cariology course. They continue to receive information on these topics during the D2 year in the Direct Restorations course, and the D3 year in the Operative course. We are currently using two-step etch and rinse Prime&Bond NT as our main bonding system. We use Ultradent's phosphoric acid etchant for tooth conditioning. Minimally invasive preparations are taught to the students during their D1 year in the Direct Restorations course. Principles dictating preparations include slightly round internal line angles for amalgam preparations. Preparations for composites are being taught as "pathology-directed only" with no need for retentive features or specific dimensions or shape of the preparations. This same information is reinforced in the D3 year Operative Dentistry course. We advocate the use of DIAGNODent as one of the several screening devices available for caries diagnosis and we believe that students

should be exposed to it as early as during their D1 year in the Cariology course. As a part of that course, several caries detection methods are presented and their use advocated moving away from the outdated concept of using an explorer for clinical caries detection.

WVU: No experience yet but interested and hope to use in the future. Minimally Invasive Dentistry? Very interested. Should be a very good preparation technique. Surface treatment for bonding? Not very interested, except maybe for pit and fissure sealants to clean out the defects. Cavity Preparation? Some are interested but not able to use yet. DIAGNODent? See below.

UWO: No response noted.

2. Are lasers being taught for applications in operative/restorative dentistry at your school? If so, how? Didactic, Pre-clinical, and/or in Clinic?

CWRU: No response noted.

UDM: No.

UIC: We do not teach the use of hard tissue lasers for any purpose. It is mentioned in didactic lectures only.

IUSD: Not using lasers in Operative or Restorative Dentistry.

MICH: The graduate restorative dentistry clinic and the faculty practice have lasers available for soft tissue surgery for tissue contouring as a replacement for electrosurgery. Undergraduate students get a lecture on lasers but are not using them clinically.

OSU: No response noted.

PITT: No response noted.

SUNY: Didactic information on the use and applications of lasers is introduced to the D3 students in the Operative course. In addition to that, there is an elective course on lasers offered to the D3 students. AEGD residents use lasers routinely for procedures such as gingival retraction, hemostasis and field control during impression procedures.

WVU: Yes, senior students took a two day Academy of Laser Dentistry course that included lecture and hands-on training. No patients were involved.

UWO: No response noted.

3. What credentials does your school require for those who teach and use the lasers?

CWRU: No response noted.

UDM: Not applicable.

UIC: Not applicable.

IUSD: In research area, you have to have to pass a computer course.

- MICH:** Not applicable.
- OSU:** No response noted.
- PITT:** No response noted.
- SUNY:** The faculty possess either certification or significant laser experience. However, formal monitoring of credentials hasn't been instituted.
- WVU:** Hospital requires formal training to have laser privileges. (All faculty must have hospital privileges.) Recently, several faculties along with the senior students took an Academy of Laser Dentistry course. Several are currently certified and several others should be very soon.
- UWO:** No response noted.

4. Are there lasers available for teaching and patient care?

- CWRU:** No response noted.
- UDM:** No.
- UIC:** There are no lasers available in pre-patient care or patient care.
- IUSD:** No, research only.
- MICH:** Soft tissue use only - in the graduate restorative dentistry clinic and the faculty practice.
- OSU:** No response noted.
- PITT:** No response noted.
- SUNY:** Yes, we currently own two Oddysey Diode lasers in the AEGD clinic. Also, these units are available for faculty to use for selected teaching cases at the pre-doctoral clinic level.
- WVU:** Only for patient care by faculty; students may observe.
- UWO:** No response noted.

III. DIAGNODent (first question is an update from a 2003 agenda item)

1. Does your school currently teach the DIAGNODent in its caries diagnosis curriculum?

- CWRU:** No response noted.
- UDM:** DIAGNODent is only mentioned as a complementary aid in diagnosing caries for the first year dental students.
- UIC:** Yes, the Restorative Department introduces the DIAGNODent through lectures, assigned readings, and pre-patient care sessions. During the pre-patient care

session students have the opportunity to use the DIAGNODent to evaluate extracted teeth. The teeth are then opened to evaluate the extent of the carious tooth structure present allowing the students to make a comparison of DIAGNODent readings with clinical findings. This technology is not available in patient care clinics.

IUSD: No, but used in research.

MICH: Undergraduate - didactic only.

OSU: No response noted.

PITT: No response noted.

SUNY: Yes, didactic information is provided to the students in the Cariology course (D1) as well as in the Operative course (D3).

WVU: Yes.

UWO: No response noted.

2. Does your school possess any DIAGNODent units?

CWRU: No response noted.

UDM: No.

UIC: No, the local representative allows us to use the device for a couple of days. The units are used in pre-patient care session for D2 students and dental hygiene students.

IUSD: Yes, in research.

MICH: Yes - in the graduate restorative dentistry clinic.

OSU: No response noted.

PITT: No response noted.

SUNY: Yes, the school currently has three DIAGNODent and two Caries ID Units. We are currently in the process of buying 4 - 6 additional DIAGNODent units.

WVU: Yes, several.

UWO: No response noted.

3. What sort of hands on exposure do your faculty/students have to the DIAGNODent? (Example: lectures, demo, and/or actual patient treatment)

CWRU: No response noted.

UDM: Briefly in lectures only. Not hands-on exercise.

UIC: The D1 and D2 students have assigned reading followed by discussions regarding

new technology for detection of carious lesions. During their second year, a pre-patient care session gives students the opportunity to use a DIAGNODent to evaluate extracted teeth. A demo is performed with one of the students serving as the patient. We do not employ this technology in our clinics. It is felt that there is significant potential for misuse of this technology relating to poor specificity. There is potential to introduce invasive treatment resulting from “false positive” readings.

IUSD: Lectures and demonstrations.

MICH: Undergraduate: Lectures - yes. Hands-on exposure - No. The graduate restorative dentistry clinic has done a couple of research projects using the DIAGNODent, but it is not used routinely in any of the undergrad, graduate, or faculty clinics.

OSU: No response noted.

PITT: No response noted.

SUNY: Didactic information is given in class. Faculty and students have been made aware of the tutorial information available directly through the KaVo website on how to use it. Last year, didactic information regarding its use and applications was provided to the faculty during the “summer faculty enrichment” sessions offered by the school. Unfortunately, no hands-on courses were offered last year. We are looking at incorporating it during the next year’s summer faculty enrichment courses.

WVU: This is taught in didactic/pre-clinical courses. It is used by some faculty in our clinics.

UWO: No response noted.

4. By word of mouth, some practitioners are advocating the use of DIAGNODent by dental hygienists in their practices. Although final “confirmation” of caries is done by the dentist, does use of DIAGNODent qualify as diagnosis of caries? Any support from the literature?

CWRU: No response noted.

UDM: Controversial.

UIC: DIAGNODent is considered only an adjunct device or an aid in detecting early stages of carious lesions. Caries diagnosis involves more than the act of finding a carious lesion. Diagnosis should also involve the evaluation of patient risk factors and disease activity. (*Anges et al, Caries Res, 2005; Valera et al, Am J Dent, 2008*)

IUSD: Again, by word of mouth, practitioners are using in an opposite method than intended. Used to justify restorations, not for monitoring progress of early lesions.

MICH: No.

OSU: No response noted.

- PITT:** No response noted.
- SUNY:** It's a screening device and as such there should not be a problem with hygienists using it. The dentist ultimately needs to confirm the findings.
- WVU:** No! Used as an adjunct diagnostic device. Any support from the literature? I believe so.
- UWO:** No response noted.

IV. Gold

1. Has the use of Cast Gold as a restorative treatment increased, decreased, or remained the same over the past 5 years in your pre-doctoral clinics? Explain this trend; or lack of change.

- CWRU:** No response noted.
- UDM:** It has probably decreased due to patient's increased demand of esthetic restorations.
- UIC:** The advent of alternative restorative material that can be bonded as well as other materials that can provide esthetic advantage for patients has impacted the treatment planning considerations in the clinic setting. The pre-doctoral clinical educators respond to changes that are occurring in the clinic, and therefore the course material has been modified to reflect this reality. The result is a decrease in the use of cast gold in the pre-doctoral clinics.
- IUSD:** Probably decreased. More patients wanting metal ceramic or ceramic crowns. More emphasis on "posterior" esthetics.
- MICH:** The numbers of full gold crowns (2,790) done in the student clinics over the last 5 years are as follows: 2004 = 401; 2005 = 424; 2006 = 437; 2007 = 448, 2008 = 409. The numbers have varied from year to year with a peak 2006-2007 and a decrease last year, but overall have remained relatively consistent. The decrease in 2008 could be related to the depressed economy in the state of Michigan, but the number for 2008 is similar to 2004.
- OSU:** No response noted.
- PITT:** No response noted.
- SUNY:** The use of cast gold restorations has basically remained the same over the past five years. Unfortunately, it seems like we might have been somewhat slow to move into newer technologies such as the acquisition of equipment for all-ceramic restorations.
- WVU:** Decreased - students believe composites can solve all problems short of a crown. Several part-time faculty promote composites beyond our current policies.
- UWO:** No response noted.

2. **What are the most common applications of this technique listed in frequency of use or in decreasing order? (Examples: Crown, FPD, Onlay. ¾ crown, Class II Inlay, Other: specify)**
- CWRU:** No response noted.
- UDM:** Cast Post and Cores, Gold Crowns, Gold Onlays, Gold Inlays.
- UIC:** Crown - FPD - Onlay - Inlay - 3/4 Crown.
- IUSD:** I would say this is in decreasing order in our school: Crown, FPD, Onlay, 3/4 Crown, Class II Inlay.
- MICH:** In 2008, the following numbers of procedures were done in the student clinics: FGC = 409; Gold Onlays = 31; Gold Inlays = 8; Gold FPD units = numbers not available, but overall FPD units have decreased since 2004, probably due to the increased usage of implants to replace missing teeth. The economy may also be factor.
- OSU:** No response noted.
- PITT:** No response noted.
- SUNY:** Crown, FPD, Onlay, Inlay.
- WVU:** FGC, Onlay, FPD, Class II Inlay.
- UWO:** No response noted.
3. **If you do Gold Crowns in your clinics, please estimate the percentage of total gold crowns done last year.**
- CWRU:** No response noted.
- UDM:** About 30%.
- UIC:** Our undergraduate clinic last year completed approximately 5% FGC, 80% PFM and 15% All-ceramic crowns.
- IUSD:** Approximately 50 - 60%.
- MICH:** Question not clear.
- OSU:** No response noted.
- PITT:** No response noted.
- SUNY:** About 30% of all restorations made last year were gold alloy crowns.
- WVU:** Gold - 25-33%; All-ceramic - 1%; Ceramometal - remainder.
- UWO:** No response noted.

4. **Are students able to receive Direct Gold (foil) training in your school?
If so, please describe the method of teaching (regular curriculum, elective curriculum, gold study group visits, individual experience by a faculty mentor, other-specify).**

CWRU: No response noted.

UDM: No.

UIC: No, there is no training in gold foil in our curriculum.

IUSD: Yes. It is an elective.

MICH: Only 1 direct gold restoration was done in 2008. This would have been taught via individual experience with a select faculty member. Only very few of the current clinical faculty have training to perform/teach direct gold restorations. There is also the problem of maintaining proper equipment for clinical usage, maintaining an inventory of direct gold (and accompanying security procedures) for a procedure that is done so rarely.

OSU: No response noted.

PITT: No response noted.

SUNY: No.

WVU: Yes, individual experience by a faculty mentor.

UWO: No response noted.

5. **Did any students do at least one DIRECT GOLD restoration in your clinical last year?
If so, how many had this experience and describe or categorize the experiences.(Example: Class V, Class I, Class VI, Crown repair, other-specify).**

CWRU: No response noted.

UDM: No.

UIC: There is no formal training, however, there are a few faculty members who have the experience, access to materials and equipment, and are able to demonstrate the procedure to students in a limited number of circumstances in the clinic setting.

IUSD: Yes, approximately 10 students. Class I.

MICH: Only 1 one-surface direct gold restoration was done in 2008. Class type is unknown.

OSU: No response noted.

PITT: No response noted.

SUNY: No.

WVU: One, Class I.

UWO: No response noted.

V. Cavity Liners

1. What is the standard cavity-lining material for placement under amalgam restorations, taught and practiced at your school? (Are all amalgams, regardless of size and location, being bonded, or are glass ionomer liners/cements used?)

CWRU: No response noted.

UDM: The standard cavity-lining material for placement under amalgam restorations is Barrier® Dentin Sealant from Waterpik. It is similar to Copalite®. Few amalgams are being bonded. A light-cured resin-modified glass ionomer liner (Vitrebond Plus®) is commonly used in deeper amalgam preps.

UIC: The standard cavity liner material is RMGI (Fuji lining LC), under moderate depth preparations. Calcium hydroxide is used only in very deep areas of preparations(< 0.5 mm from the pulp) and is always covered with RMGI (due to CaOH's relatively poor physical properties). Gluma desensitizer is recommended as a sealer. The Restorative Department does not support the concept of bonded amalgams or the use of bonding systems to seal dentin.

IUSD: Dycal and/or Copalite. No bonded amalgams and no ROUTINE use of glass ionomer liners.

MICH: Preparations in outer 1/3 of dentin: no liners are indicated. (Cavity varnish is still being taught in lecture, though clinical usage is inconsistent due to varying opinions of the clinical faculty.) Preparations in the middle 1/3 of dentin: Glass ionomer liner *may* be used if fluoride is desired or sensitivity is anticipated. Preparations that result in indirect or direct pulp caps: calcium hydroxide (Life or Dycal) is placed directly over the pulp or deepest area, keeping thickness to a minimum. Glass ionomer liner is placed directly over the calcium hydroxide and slightly surrounding the CaOH margins to help prevent dislodgement of the CaOH. Thickness is kept to a minimum. Chemical cure glass ionomer liners are still being used for logical purposes (so students do not have to check out and lug a curing light back to their cubicle just to place a liner). Are all amalgams, regardless of size and location, being bonded, or are glass ionomer liners/cements used? Amalgams are not being bonded routinely. Glass ionomer liners are only used in deeper penetrations (see above criteria).

OSU: No response noted.

PITT: No response noted.

SUNY: We are not using cavity liners under amalgam restorations. If necessary, a glass ionomer base is used for thermal isolation, dentin replacement and anti-cariogenic properties. Bonded amalgams are being used by some of the faculty, but their use is not a departmental policy.

WVU: Vitrebond, when a liner is needed. Copal varnish should be used under all amalgams. Build-ups might utilize Amalgabond.

UWO: No response noted.

2. What are schools teaching as acceptable used for flowable composite? (Liners under composites? For Class V Lesions? etc.?)

- CWRU:** No response noted.
- UDM:** The students are informed about flowable composite and they use it once in the preclinic, but there is seldom a clinical indication for it.
- UIC:** Flowable composites are not used or recommended in our clinics as liners due to their high degree of polymerization shrinkage and lack of fluoride release. They are indicated for preventive resin restorations.
- IUSD:** Liners under Class II usually (line proximal boxes). Sealants. Not Class V lesions.
- MICH:** Liners under composites? No, due to conflicting research. For Class V lesions? Rarely - only for very small lesions suspected to be due to abfraction. Flowable composites are occasionally used for very conservative occlusal PRR's/sealants.
- OSU:** No response noted.
- PITT:** No response noted.
- SUNY:** Flowable composite liners are used routinely at our clinics to provide an intermediate flexible layer under composite restorations. That is the primary use for these materials. Their use for selective Class V restorations is not a departmental policy given the concern of polymerization shrinkage. Other applications of flowable composites are temporary crown repairs, restoration's remargination repairs and sealants.
- WVU:** Used as a liner under composites, less than 1 mm thick, especially in a box. Also, for PRR.
- UWO:** No response noted.

VI. Effect of Beverage on Enamel/Dentin Erosion

1. Is information regarding the sugar/acid content and erosive properties of soft/energy drinks being given in an Operative Dentistry course to your dental students?

- CWRU:** No response noted.
- UDM:** Yes, during first and second year of dental school.
- UIC:** Yes, the effects of sugar/acid content and erosion are introduced to the students through assigned reading, lecture, and pre-patient care discussion. This information is then reinforced through several case-based scenarios and risk assessment portfolios. Risk modification, prevention, and remineralization are stressed by the Department of Restorative Dentistry.
- IUSD:** Yes, Preventive Department covers.
- MICH:** Yes.
- OSU:** No response noted.
- PITT:** No response noted.

- SUNY:** Yes, didactic information of this type and a number of contributory factors for the development of carious and non-carious lesions is provided to the students in the D1 Cariology course. Further didactic information is also provided to the D2 students in the Direct Restorations course and the D3 students in the Operative course. Clinically, one of our goals is to implement an improved “Caries Risk Assessment” form that will become part of the patient’s permanent record. This will be completed by 01/01/2010. The students should use the questionnaire to assess risk of the patient and complete a treatment plan accordingly, as well as serving as an aid for patient education. Every six months, a Caries Risk Reassessment should be completed by updating the information on this form.
- WVU:** It is presented by an Operative faculty in the biochemistry course.
- UWO:** No response noted.

VII. Licensing Examinations

Licensing examinations continue to constantly change. Florida has accepted and adopted NERB. California has accepted WERB and will allow a PGY1 alternative. New York has a mandated PGY1 and Minnesota has just announced the elimination of patients in testing. (See ADA on-line news of July 14, 2009, Dr. Bicuspid on-line article of July 8, 2009)

1. Should CODE take an official position and what is that position? What is the rationale for such a position? Pros/Cons.

- CWRU:** No response noted.
- UDM:** Yes, however, some faculty members think that CODE should not take an official position on licensing examinations.
- UIC:** After reviewing the CODE website, no position was found in the mission statement or bylaws in regard to licensing examinations, so it seems to be outside the goals of CODE. However, other dental groups have made statements in support of and against various types of exams required by states for licensure. With this in mind, CODE can certainly take a position and make it known. The question is how will CODE determine what its position is? Will all the member dental schools and colleagues be polled? Who will answer the survey? As educators we should all be interested in creating a system of certification that is protective of the public, valid and reliable. The current system achieves none of these criteria. CODE could help achieve these goals.
- IUSD:** Personal opinion. I am for using mannequins for board exams. PROS: infection control, standardized patient, treating a lesion on patient is not complete care of patient, no need for patient compliance (showing up). CONS: does not test patient management.
- MICH:** No, CODE is not a political organization.
- OSU:** No response noted.
- PITT:** No response noted.
- SUNY:** Yes, CODE should assume a position on the topic of licensure examination. The mandated PGY1 that the State of New York has assumed is, in our opinion, the best position to take. A number of factors can influence the outcome of a single

clinical licensure examination and it is therefore not an accurate representation of a student's performance. Also, students could really benefit from an additional year of general dentistry training before they obtain a license.

WVU: I do not know.

UWO: No response noted.

2. Should dental schools be responsible for the content of the examinations? Pros/Cons.

CWRU: No response noted.

UDM: No consensus on this aspect from our department. However, some faculty members believe that dental schools should be at least partially responsible for the content of the examination because it is the schools that produce the candidates for the examinations.

UIC: This responsibility should be clearly defined: would dental colleges be responsible for which procedures are performed during the exam, for the criteria used for evaluation of procedures, and for adverse outcomes of treatment rendered during the exam? If dental schools are responsible for the procedure and the evaluation, the idea of impartiality could be lost compared to third party evaluating student candidate. Having this consideration in mind, the examination committee ought to be comprised of educators, practitioners, researchers and the lay public.

IUSD: No, it is a conflict of interest. Testing bodies should know what is being taught, however. Test should reflect current evidence-based standards of care.

MICH: No.

OSU: No response noted.

PITT: No response noted.

SUNY: Yes, the schools should have a number of minimum general requirements that the student should complete during that year of additional training.

WVU: No, we can provide input, but they (the examinations) are the states' responsibility.

UWO: No response noted.

Regional CODE Agenda

To be established by the respective Region and Regional Director. Please also report on responses , individual and a summary, to the Regional Agenda from all participants.

NO REGIONAL CODE AGENDA REPORTED

Suggestions for CODE.

1. What can the organization do to improve its effectiveness?

- Convey importance of maintaining an Operative Discipline within dental schools to school deans.
- Develop test for early identification of students with weak hand skills.
- Develop suggested curriculum of what we should be teaching instead of/in addition to what we are teaching.
- Occasional national meeting as part of ADEA or the Operative Academy, not sure.

2. Any comments or suggestions to improve the Web site?

<http://www.unmc.edu/code/>

NOTE: to locate the web site via a search engine, enter Academy of Operative Dentistry and then use the link CODE and ADEA.

No response noted

3. Other comments/suggestions?

No response noted

CODE REGIONAL MEETING REPORT FORM

REGION V- Northeast

LOCATION AND DATE OF MEETING:

University: New York University

Address: New York, New York

Date: October 7-9, 2009

CHAIRPERSON:

Name: Richard Lichtenthal

Phone #: 212-305-9898

University: NYU

Fax #: 212-305-8493

Address: New York, NY

E-mail: rml1@columbia.edu

List of Attendees: Please complete the CODE Regional Attendees Form (following page)

Suggested Agenda Items for Next Year:

No response noted.

LOCATION AND DATE OF NEXT REGIONAL MEETING:

Name: TBA

Phone #:

University:

Fax #:

Address: New York City, New York

E-mail:

Date: October 6-7, 2010

Please return all completed enclosures to
Dr. Larry D. Haisch, National Director, UNMC College of Dentistry;
40th and Holdrege Streets; Lincoln, NE 68583-0740.

Deadline for return: 30 Days post-meeting

Office: 402 472-1290 Fax: 402 472-5290 E-mail: lhaisch@unmc.edu

Also send the information on a disk and via e-mail with all attachments.

Please indicate the software program and version utilized for your reports.

CODE Region _____ V _____ Attendees Form

NAME	UNIVERSITY	PHONE #	FAX #	E-MAIL ADDRESS
Klara Alperstein	Temple	215-707-8360		klara.alperstein@temple.edu
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Margherita Fontana	Michigan	734-647-4182		mfontan@umich.edu
Diana Galris	UMDNJ	973-720-0621		galrisdl@umdnj.edu
David Glotzer	NYU	212-998-9625		dlg2@nyu.edu
James Kaim	NYU	212-998-9720	212-995-4867	jmk2@nyu.edu
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Richard Lichtenthal	Columbia	212-305-9898	212-305-8493	rml1@columbia.edu
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Peter Yaman	WREB	734-764-1532		pyam@umich.edu
Larry D. Haisch	Natl Director	402-472-1290	402-472-5290	lhaisch@unmc.ed

2009 NATIONAL CODE AGENDA
Region V
SUMMARY RESPONSES TO NATIONAL AGENDA

(Editor note: Questions and responses condensed for printing purposes)

I. Fiber Posts.

Most schools teach the use of the fiber post didactically but don't use it clinically. One school teaches and uses the fiber post clinically. Aestheti-Post system is used with RelyX dual cure cement.

II. Lasers

The varied use of lasers in operative dentistry is taught didactically but generally not used clinically for tooth preparation. It is utilized in some areas, i.e. pediatric dentistry, sealant preparation, etc. As well as adjunctive use in caries detection instruments and for soft tissue management. Lasers are available in some schools for use in specialized areas by faculty with expertise. It does not, however, appear to be part of the mainstream approach to operative dentistry at this time.

III. DIAGNODent (first question is an update from a 2003 agenda item)

As with many new technologies, most schools teach DIAGNODent and other caries detection instruments (Caries ID0 didactically, but do not use them extensively in clinical dentistry. Many do not have them. A few schools teach and use them in clinical practice with faculty supervision. Training of students and faculty varies greatly both in preclinical simulation and clinically. All agree that it is used only as a adjunct to clinical diagnosis of caries, with the final treatment decision made by the dentist regardless of who records the information.

IV. Gold

The schools are split about 50/50. In some it has decreased due to the demand for esthetic restorations and in others it has recently been on the increase. The increase may be due to the diminished life expectancy of ceramic/composite restorations. Largely the increase is for the full gold crown in the molar area and Class II inlays and onlays in the posterior region. No school teaches the Direct Gold restorations on a routine basis and in some schools it is utilized, ad hoc, for repair of existing gold restorations and mentioned didactically for its historical interest.

V. Cavity Liners

Liners are generally not used unless the cavity preparation is less than 0.5 mm of the pulp. Glass ionomer is the liner of choice. In the case of imminent or pinpoint pulp exposures, calcium hydroxide (direct or indirect pulp cap) is placed initially with a glass ionomer liner placed over that. Little consensus was reached regarding the use of flowable composites.

VI. Effect of Beverage on Enamel/Dentin Erosion

All schools include this topic as some part of the predoctoral dental curriculum.

VII. Licensing Examinations

Reflective of national scene, there is no consensus on this questions among the Region V schools.

2009 NATIONAL CODE AGENDA

REGION V RESPONSES

(Evidence cited where applicable)

Region V School Abbreviations

BU	Boston University	PENN	University of Pennsylvania
CLMB	Columbia University	SUNY	State University of NY - Stony Brook
CONN	University of Connecticut	TEMP	Temple University
DAL	Dalhousie University	TUFT	Tufts University
HARV	Harvard University	UMD	University of Maryland
HOW	Howard University	UMNJ	University of New Jersey
LAV	University of Laval	UMON	University of Montreal
MCG	McGill University	USN	US Naval Dental School
NYU	New York University	UTOR	University of Toronto

2009 NATIONAL CODE AGENDA

(Please cite the evidence were applicable. If utilizing reports/forms/schedules from your Regional schools, please submit these as PDF files for utilization in the Annual Fall Regional Report)

I. Fiber Posts.

1. Are you teaching fiber post for endodontic build-ups in your school?
Graduate and/or undergraduate programs?
2. Which system are you using and why?
3. What bonding material are you using with your fiber posts and why?

BU: The use of fiber posts is discussed. They are rarely used in clinic. Brasseler Cerapost was used when we used Empress esthetic crowns. We use Lava crowns now and the need no longer exists. Posts were bonded with Panavia or Calibra.

CLMB: Fiber post usage is discussed didactically and not used broadly in the general clinic. They are used clinically, on occasion, in the Esthetic Area of Concentration. Our experience has not been very satisfactory, mainly because of technique sensitivity.

CONN: Yes, in the undergraduate program. We use the Aesthet-Post system with RelyX - dual cure cement.

DAL: No response noted.

HARV: No response noted.

HOW: No response noted.

LAV: No response noted.

MCG: No response noted.

- NYU:** Yes, we are teaching fiber posts in lecture in the undergraduate and graduate programs. We have discontinued the use clinically in the predoctoral program. Our decision to discontinue the use of fiber posts was based on the technique sensitive nature of the material and the resulting failures. While we were using the Fiberkor system we had used Calibra cement, based on the recommendations of the Biomaterials department. We currently use RelyX.
- PENN:** Fiber posts are not being taught or used clinically.
- SUNY:** Fiber posts are currently not taught in either program.
- TEMP:** In the second year restorative course a lecture is given in paraposts and cast post and cores and fiber posts are included only as a choice among prefabricated posts. In the third year restorative course a lecture in “post and core decisions” mentions ceramic, carbon and fiber including advantages and disadvantages. In the clinical setting we do not use fiber posts.
- TUFT:** Fiber posts are not taught in the undergraduate program.
- UMD:** No response noted.
- UMNJ:** No, we are not teaching fiber posts.
- UMON:** No response noted.
- USN:** No response noted.
- UTOR:** No response noted.

II. Lasers

- 1. What is your school’s (and/or department’s) view on the use of lasers in Operative Dentistry? Minimally Invasive Dentistry? Surface treatment for bonding? Cavity Preparation? DIAGNODent?**
- 2. Are lasers being taught for applications in operative/restorative dentistry at your school? If so, how? Didactic, Pre-clinical, and/or in Clinic?**
- 3. What credentials does your school require for those who teach and use the lasers?**
- 4. Are there lasers available for teaching and patient care?**

- BU:** Although lasers are discussed in operative and fixed prosthodontic lectures, there doesn’t seem to be a real need for them right now. The cost is a factor. They are clearly not superior to any existing procedure. Lasers do not have a clinical application at BU
- CLMB:** Laser technology and application is taught didactically. Laser technique for operative dentistry is not yet recommended for tooth preparation in adult operative dentistry. It is used clinically in pediatric Dentistry for minimally invasive preparation for PRR and some Class V composite restorations. The laser technology utilized in caries detection instruments is used clinically as a diagnostic adjunct only. It is used clinically for soft tissue adjunctive treatment, supervised by faculty who are “certified” by varied CE courses. Students observe and use the available equipment clinically on a case-by-case basis with faculty supervision.
- CONN:** Lasers are not permitted by the hospital due to the open environment in the clinic - not isolated area- possible eye damage. The clinics are owned and controlled by

the hospital. They are not taught and are not available.

DAL: No response noted.

HARV: No response noted.

HOW: No response noted.

LAV: No response noted.

MCG: No response noted.

NYU: Currently we do not use lasers for surgical procedures nor are we teaching lasers. We do have lasers available for our esthetic honors program, but they are used strictly for soft tissue and occasionally for osseous recontouring. DIAGNODent is available and used in the clinic as an adjunct to the detection of some caries. D1 students receive a lecture describing the concept and utility of lasers in dental practice. There is extensive preclinical and clinical education in DIAGNODent. The one or two faculty who are involved with lasers actually teach the use of lasers in continuing education programs. They have received certification by the laser group which is really not of much value.

PENN: Lasers are not taught or used in Operative Dentistry procedures at the School of Dental Medicine. Didactic information regarding the use of laser for soft tissue procedures is given. In the past, selective courses were given in laser utilization. Minimally invasive dentistry: philosophy of conservative cavity preparation design is embraced by the school. Conservative conventional cavity preparation for amalgam. More conservative cavity preparation for composite with diamond burs. Surface treatment for composite procedure: 2 steps- etch enamel with phosphoric acid, 2 step dentin bonding agent system on the dentin surface. DIAGNODent not used. Caries IF recently acquired and on clinic floor, now being used.

SUNY: We currently are not using or teaching any laser techniques at SUNY within the Operative Division.

TEMP: We feel that they can be useful in some conservative procedures in operative dentistry. One of the major uses is in crown lengthening for both gingiva and bone. Lasers can be used in minimally invasive dentistry with small cavity preparation, especially in pediatric dentistry, as well as for surface treatment. Some use is as a 'cleansing' tool prior to indirect pulp capping procedures, with great results. It is taught only didactically with other subjects related to minimally invasive procedures. It is not used clinically - only didactic information and is not available for teaching and patient care.

TUFT: Ideally we would like to introduce the use of lasers and attempts are being made towards this direction. We fully support minimally invasive dentistry. It is taught only as a part of the didactic curriculum. Lasers are available only in the Pediatric Department.

UMD: No response noted.

UMNJ: Lasers are not currently taught to clinical competency for operative dentistry. Traditional cavity preparations are taught for specific restorations such as amalgam, composite, inlays, onlays and full crown coverage.

UMON: No response noted.

USN: No response noted.

UTOR: No response noted.

III. DIAGNODent (first question is an update from a 2003 agenda item)

- 1. Does your school currently teach the DIAGNODent in its caries diagnosis curriculum?**
- 2. Does your school possess any DIAGNODent units?**
- 3. What sort of hands on exposure do your faculty/students have to the DIAGNODent? (Example: lectures, demo, and/or actual patient treatment)**
- 4. By word of mouth, some practitioners are advocating the use of DIAGNODent by dental hygienists in their practices. Although final “confirmation” of caries is done by the dentist, does use of DIAGNODent qualify as diagnosis of caries? Any support from the literature?**

BU: DIAGNODent and its use are discussed in caries risk lectures. We have no DIAGNODent units. There is a Midwest “Caries ID” caries detecting unit that is available for clinic use. The Caries ID unit was demonstrated by a company representative. It is so new, it was just recently opened. We do not yet have any clinical experiences to form the basis of an opinion. The feeling of the faculty is that it may work for occlusal caries but its value in proximal caries is doubtful.

CLMB: Adjunctive Caries diagnosis technologies are taught in cariology and operative dentistry. DIAGNODent and Caries ID are introduced in lecture and preclinical simulation and a third (AT) is being considered for study. There are units in the predoctoral and postdoctoral clinics. Faculty have been trained by the manufacturers who in turn train other faculty, who in turn supervise students in the clinics. The use of these devices are considered only an interesting adjunct to traditional methods of caries diagnosis, used to familiarize the students with the use of the technology (warts and all) and have been shown to be erratic in their effectiveness. It does not matter who takes the readings and records the data, the final treatment decision is made by the dentist. Differences in the diagnostic indications, presently, will continue to defer to the professional judgement of an experienced practitioner.

CONN: We do not teach the DIAGNODent in our curriculum. We possess 1 or 2 units. Faculty/students get no hands on experience. The use of hygienists in this regard sounds like employment as a marketing tool.

DAL: No response noted.

HARV: No response noted.

HOW: No response noted.

LAV: No response noted.

MCG: No response noted.

NYU: We teach the DIAGNODent in the caries diagnosis curriculum and possess DIAGNODent units. Faculty and students get exposure in lecture and video; they use it in the simulation lab and use it in the clinic. DIAGNODent is an adjunct instrument and not the sole determinant. If there is a questions as to whether we

would support the use of the machine by hygienists, the answer is yes. Dentists would make the final determination on whether to treat surgically or not.

- PENN:** The DIAGNODent system is taught in didactic caries diagnosis lecture. It is not used in the clinics. Caries ID by Dentsply has just recently been introduced in the clinic to augment caries diagnosis. It is brand new to the School of Dental Medicine. We have no DIAGNODent units. Only Caries ID (Dentsply) units are on the clinic floors. Faculty training through lecture, demonstration, and hands-on exercises is done. Actual patient treatment follows on the clinic floor with students. It is an additional tool to diagnose caries, but not to be used exclusively. The problem of over-diagnosis of caries exists.
- SUNY:** We do not currently teach DIAGNODent in the curriculum, have any units, use it in the clinics or support its use by dental hygienists.
- TEMP:** We teach the DIAGNODent in our curriculum. We've had four DIAGNODent units, but they are not used frequently and now are stored in our AEGD Division and used for educational purposes by some faculty. Students do not get much hands-on exposure, only by a motivated faculty member when time permits. We would not advocate its use by dental hygienists due to the false positive results obtained.
- TUFT:** No we do not use DIAGNODent. We do not teach DIAGNODent.
- UMD:** No response noted.
- UMNJ:** Students receive didactic information. There are no units available in the clinics. No hands-on experience is provided. The use of the DIAGNODent does not provide a definitive diagnosis of caries. The unit is to be used as an adjunct to the diagnosis of active caries along with a radiograph and the clinical judgement of the dentist. A dental hygienist can collect clinical data such as dental charting, take and mount x-rays, record periodontal probe depths and record DIAGNODent readings prior to the dentist evaluating the patient.
- UMON:** No response noted.
- USN:** No response noted.
- UTOR:** No response noted.

IV. Gold

- 1. Has the use of Cast Gold as a restorative treatment increased, decreased, or remained the same over the past 5 years in your pre-doctoral clinics? Explain this trend; or lack of change.**
- 2. What are the most common applications of this technique listed in frequency of use or in decreasing order? (Examples: Crown, FPD, Onlay, ¾ crown, Class II Inlay, Other: specify)**
- 3. If you do Gold Crowns in your clinics, please estimate the percentage of total gold crowns done last year.**
- 4. Are students able to receive Direct Gold (foil) training in your school? If so, please describe the method of teaching (regular curriculum, elective curriculum, gold study group visits, individual experience by a faculty mentor, other-specify).**
- 5. Did any students do at least one DIRECT GOLD restoration in your clinical last**

year? If so, how many had this experience and describe or categorize the experiences.(Example: Class V, Class I, Class VI, Crown repair, other-specify).

- BU:** The use of cast gold has decreased over time. Patients prefer porcelain, either CEREC or PFM crowns. As graduation approaches, students do more gold work. Cast gold is nearly always used for second molar crowns. The common applications are in the order mentioned above. Cast gold is 15% of all crowns. Training in direct gold is not given any more. Very few faculty know how to do them. No clinical experiences are available.
- CLMB:** The use of cast gold had generally held steady but recently has had a resurgence over the past 5 years. As some disappointing results with posterior esthetic restorations (ceramic and composite) have been recorded, a renewed interest on the part of the faculty, students and patient population has emerged. The onlay and full cast crown have been the restorations used most frequently. Approximately 15% of all crowns on molars were cast gold. Direct gold restorations are described in lecture presentation but are not done clinically except for an occasional repair of an existing gold restoration.
- CONN:** Most casting are done in prosthodontics. Most patients are not receptive either due to coat or tooth-colored alternatives. High medicaid population - only PFM and base metal crowns covered. Direct gold is used occasionally on an ad hoc basis, usually for crown repairs, usually as a demonstration by faculty with the individual student. No formal training, direct gold was removed from the curriculum when it was eliminated from the NERB examination.
- DAL:** No response noted.
- HARV:** No response noted.
- HOW:** No response noted.
- LAV:** No response noted.
- MCG:** No response noted.
- NYU:** The use of cast gold as a restorative treatment has increased over the past five years. In the previous years, the use of cast gold had declined for a time. However, there was a conscious effort over the past five years to increase its use. Common application of this technique is frequency of use in decreasing order is: onlay, crown and Class II inlay. The percentage of gold crowns done last year was 2.36%. Students receive no direct gold training and do not do any clinically.
- PENN:** The use of gold has increased. Faculty with Tucker technique training are on the clinic floor to work with students closely on gold cases. The most common applications are the crown and inlay. 10% of the crowns done last year were gold. Direct gold foil training is not given. Some information is given in didactic lecture during D1 and d3. Selective courses on gold have been given in the past. The only time a student would do a direct gold restoration would be to repair an existing one. This does not happen frequently on the clinic floor.
- SUNY:** The use of cast gold has decreased mainly due to the esthetic demands of patients. Common applications are the full gold crown > onlay > 3/4 crown > FPD. 10% of annual totals were cast gold units. No didactic training or clinical placement of direct gold occurs.

- TEMP:** The use of cast gold has decreased. The emphasis on esthetic restorations/CR inlay and onlay as well as ceramic ones. In Philadelphia, a law was passed that patients must sign off an amalgam, meaning that they have to sign a paper which describes the disadvantages of amalgam. They ask for other materials - but not gold. The most common applications are crown and onlay. 15% are done per year. A three-hour hands-on course in direct gold is given in the AEGD program, but it is not done clinically.
- TUFT:** Here it has remained the same. It is true that the patients at the school request more esthetic all porcelain restorations. On the other hand, Tufts promotes the use of gold crowns especially for second molars due to the longevity of the specific restorations and the conservative preparation. Common application are as listed above. The percentage of the total was 5%. Direct gold is taught didactically only. It is not part of the preclinical or clinical training or experience.
- UMD:** No response noted.
- UMNJ:** Cast gold has increased - enrollment in the cast gold elective has increased. Common applications are the crown, onlay and Class II inlay. There is a faculty who is available to provide gold foil technique as an elective. No clinical direct gold experiences is available.
- UMON:** No response noted.
- USN:** No response noted.
- UTOR:** No response noted.

V. Cavity Liners

- 1. What is the standard cavity-lining material for placement under amalgam restorations, taught and practiced at your school? (Are all amalgams, regardless of size and location, being bonded, or are glass ionomer liners/cements used?)**
 - 2. What are schools teaching as acceptable used for flowable composite? (Liners under composites? For Class V Lesions? etc.?)**
- BU:** Vitrebond is the standard. It is placed when a cavity preparation may be less than 2 mm from the pulp. For pin point carious exposures, (Rubber dam in place) Dycal is placed, then Vitrebond. Flowable composites are placed in areas where curing a hybrid resin may be difficult - gingival floor of Class II's, many Class V's. CEREC restorations may be bonded in place with a flowable composite, *very infrequently*.
- CLMB:** No liners are placed under any restoration unless the preparation is within .05 mm o the pulp. A light cured glass ionomer liner is used in this circumstance. We have included flowable composites in the lecture portions of dental materials and operative dentistry but do not use then clinically as liners or for Class V restorations.
- CONN:** Depending on the remaining dentin thickness, there may be no liner placed under amalgam. We have not used varnish (Copalite) for many years. If a liner is placed, it would be a glass ionomer liner (Vitrebond). If calcium hydroxide (Dycal) is used, it will be covered with a glass ionomer.
- DAL:** No response noted.

- HARV:** No response noted.
- HOW:** No response noted.
- LAV:** No response noted.
- MCG:** No response noted.
- NYU:** No liners used or advocated under standard preparations for amalgam unless tooth exhibited prior sensitivity or preparation is very close to the pulp - less than 0.5 mm. We do not teach the use of flowable composites. We do not place liners under composites other than the usual bonding procedure of “unfilled resin.”
- PENN:** Cavity lining material: glass ionomer liner material is used when the preparation is in close proximity to the pulp. Bonded amalgam: some amalgam restorations are bonded, but not all. This is not done to increase retention of amalgam, as studies do not show significant improvement. The bonding of amalgam is done to decrease post operative sensitivity. Flowable composite material is not being taught to be used as a liner or to restore teeth.
- SUNY:** We do not place any cavity liners routinely under amalgam restorations. Liners are indicated in very deep lesions with less than 0.5 mm dentin remaining and sub-clinical pulp exposure. (Placement of calcium hydroxide liner with glass ionomer cement is indicated) or deep cavities where less than 1.0 mm of healthy dentin is remaining (placement of glass ionomer cement liner is indicated). Flowable composites are not being taught or used routinely.
- TEMP:** The standard material is Vitrebond (3M). No, not all amalgams have cavity liners. Only those close to the pulp/RDT taken into account for thermal sensitivity issues. We are not big on flowable composites. They are used in lieu of sealants for very small Class V and occasionally on a Class II proximal box in Class II posterior composites.
- TUFT:** We use glass ionomer liners underneath deep restorations. The use of Dycal is recommended in the case of direct and indirect pulp capping as a thin layer. We do not use varnishes of any kind. We are teaching and using flowable composites.
- UMD:** No response noted.
- UMNJ:** Calcium hydroxide is the standard liner for lesions within 0.5 mm of the pulp as an indirect pulp cap prior to the application of a base (glass ionomer) and amalgam restoration or composite. The base is not mandated under a composite. DBA is routinely used prior to the placement of an amalgam even though it is known that there is no bonding of amalgam. The benefit of the DBA is related to the protection it provides to the dentinal tubules. Flowable composite is not routinely used as a restorative material. Students are taught to restore Class V lesions with a compomer or composite.
- UMON:** No response noted.
- USN:** No response noted.
- UTOR:** No response noted.

VI. Effect of Beverage on Enamel/Dentin Erosion

1. Is information regarding the sugar/acid content and erosive properties of soft/energy drinks being given in an Operative Dentistry course to your dental students?

BU: It is given as part of the caries risk assessment program.

CLMB: The subject is covered in Cariology and Epidemiology.

CONN: Yes, in the context of discussions on caries risk.

DAL: No response noted.

HARV: No response noted.

HOW: No response noted.

LAV: No response noted.

MCG: No response noted.

NYU: Since our department is Cariology and Operative Dentistry, this is discussed in lecture and well covered during the presentation.

PENN: Yes, in Operative Dentistry and also in Community Health.

SUNY: No, the topic is not taught in Operative Dentistry. The topic is reviewed in Pediatric Dentistry and Oral Biology.

TEMP: No. A seminar on the subject is planned for the AEGD students in the spring.

TUFT: The information is being given in Operative Dentistry as part of the didactic curriculum.

UMD: No response noted.

UMNJ: Information is provided in the General Dentistry courses as well as nutrition.

UMON: No response noted.

USN: No response noted.

UTOR: No response noted.

VII. Licensing Examinations

Licensing examinations continue to constantly change. Florida has accepted and adopted NERB. California has accepted WERB and will allow a PGY1 alternative. New York has a mandated PGY1 and Minnesota has just announced the elimination of patients in testing. (See ADA on-line news of July 14, 2009, Dr. Bicuspid on-line article of July 8, 2009)

1. Should CODE take an official position and what is that position? What is the rationale for such a position? Pros/Cons.

2. Should dental schools be responsible for the content of the examinations? Pros/Cons.

BU: No response noted.

CLMB: CODE should take a firm, consistent official position regarding the status of licensing examinations. It is our belief that 1) at the very least, the patient-based examinations be replaced with a totally simulated/didactic examination and 2) in general, the concept of a two day snapshot in time examination be eliminated as a basis for licensure and replaced with a requirement for participation in an accredited post doctoral program. Dental schools should have regular input regarding the content of the examinations. This discussion occurs regularly between NERB and Region V as well as between NERB and educators in the NERB states. Change takes place very slowly, but it has occurred.

CONN: No, CODE should not take a position. **CONS:** self-serving.

DAL: No response noted.

HARV: No response noted.

HOW: No response noted.

LAV: No response noted.

MCG: No response noted.

NYU: The licensing board serves two functions. The first is they are a testing agency empowered by a state to evaluate candidates to determine if they are qualified based on their small capsule of procedures on a particular day to practice dentistry in a particular state. The second is they act as an independent evaluator for a school regarding the performance of a student and have helped schools identify weakness in their programs. CODE could and should take a position based on the restorative portion of the examination that could include prosthodontics and definitely operative dentistry. If we accept the two functions or purposes of the licensing examination then we should certainly advise the testing agencies what it is appropriate to test. NYU is suggesting that in order to try and compromise with the ideas of meeting the desires and obligations of all the constituents including the dental schools, the testing agencies, the ADA, ADEA, ASDA, the candidates and the public that we serve we could suggest the following:

- A. Crown preparations. Typodonts provide a valid and reliable tool to demonstrate the mechanical ability of a student to produce a competent full coverage restoration. Requiring them to do three different teeth provides an increased reliability to the process. We would suggest that it be restructured so we don't create specialists only able to perform three preparations on three predetermined teeth but that the exam be such that the teeth to be prepared are announced on the day of the examination.
- B. Restorative. It is our opinion that we need to revisit the actual need for human subjects. ADEA and the ADA years ago passed a resolution to eliminate human subjects in testing. If that is not attainable then a compromise should be reached. There is no need to utilize two human subjects to demonstrate the ability to perform restorative dentistry. The need for a patient that some question does have value in assessing a candidates ability to deal with pain management, saliva, bleeding, etc., things that a manikin can not. However we should make it easier for the candidates and at the same time protect the public. Although two procedures provides reliability wouldn't three be even better. On the other hand if a student fails one procedure out of the two does

that mean he was lucky to pass the first or unlucky to fail the second. The patient who sits for this “unlucky” student is therefore submitted to unacceptable, non competent dentistry. This is something we should avoid. The perio exam also uses a patient and although the purpose is different there is significant overlap regarding patient management issues making that portion of the test with tow restorative patients even more redundant. We would therefore suggest one restorative procedure permitting a candidate to select any restorative procedure among: a class II composite, a class II composite, or a class II amalgam. This would significantly reduce the complaints regarding the use of human subjects, reduce the warehousing of exam patients, etc. We believe it would achieve the same result. The testing agency could add another manikin restorative procedure if the parties agree that it is really necessary. At this point the role of CODE is no longer viable as to the remaining content of any examination and that should be decided by the appropriate departments that are involved.

Dental schools should be responsible for the examination content in partnership with the testing agencies. It would be unfair to request a testing agency to evaluate a procedure that is administratively impossible or even extremely difficult to monitor. Yes, it seems a little difficult to defend that students are required to perform a class II amalgam on a patient when a number of dental practices have eliminated amalgam as a restorative material and some dental schools report that probably 80% or more of posterior restorative procedures performed are composite. Yet Class II composite is not an option. This question regarding testing for amalgam competency is approaching the time perhaps 30 years ago when the same issue regarding gold foil existed. Partnering with dental schools in determining the restorative components of the exam will make for a better evaluation system.

PENN: The decision to use patients or not is a legislative one (state dental boards) regardless of the institution or CODE decision. Data shows that mannequin exercise exams do not equate to competency. However, there is a strong feeling that the patient selection process is not actually protecting the public. Ultimately, it will be the state board that makes the decision. We do not teach according to the testing agencies or the examinations that are given. We have competency tests along the student learning process independent of the examinations. However, open dialogue between CODE and testing agencies have been effective in the past and should continue to keep agencies up to date with what is being taught in the schools.

SUNY: Our answer to both questions is yes.

TEMP: Presently it is not something that would be in our mandate as a body of Operative Dentistry educators. We do not think it lies within the school to provide context of the examination. The examining board should be separate from the “teaching” boy/dental school. We test our students via competencies by faculty calibrates in great detail.

TUFT: Yes. We strongly support the proposal. We strongly believe that feedback from different schools is essential in order to establish the best possible way of conducting the NERB examination. The idea of reducing the amount of patient procedures during the NERB is examined as well. There are benefits to having only one operative during the exam and not two as it is at the moment. Also, the Class II preparation performed for placing an amalgam filling during the NERB exam is wrong and against the basic principles of modern conservative dentistry. A lesion that simply breaks the DEJ is considered to be very small, and a slot preparation should be performed instead. Only more extensive lesions should be

appropriate candidates for Class II restorations with amalgam.

UMD: No response noted.

UMNJ: A national standard would be a great advantage for dentists being trained today. Our students are from all over the U.S. and they should be trained and qualified for practice anywhere in the U.S. Students end up preparing for specific tests they need to take in order to gain licensure in the state they choose to practice in. The testing by a third party is still the positive reinforcement of a minimal standard without any conflict of interest. How can the testing be more objective. Perhaps eliminating the patients from the examination process makes the process more standardized because of the simulated examination. Eliminating the patient also protects the patient from possibly being over treated according to the way in which dentistry is practiced today. Currently, a student demonstrates competency to the standardized test through his/her completion of the curriculum in an accredited dental school. Is this enough? We are not that sure. We would like to examine the data relative to dentists who have not taken the exam to determine whether there is a difference in malpractice issues, complaints brought to the state boards of dentistry, etc. Requiring a one year residency may also provide more clinical experience prior to allowing a recent graduate to practice independently. Every faculty and practicing dentist has an opinion on this issue and it is not an easily answered question. If there were a true consensus among the schools represented by CODE, then a position statement would be appropriate. Dental schools should train dentists to provide oral health care services to any U.S. citizen. The dental school's responsibility is to graduate competent practitioners. Indirectly, faculty have input if they also hold positions within third party examination organizations.

UMON: No response noted.

USN: No response noted.

UTOR: No response noted.

Regional CODE Agenda

To be established by the respective Region and Regional Director. Please also report on responses , individual and a summary, to the Regional Agenda from all participants.

NO REGIONAL CODE AGENDA REPORTED

Suggestions for CODE.

1. What can the organization do to improve its effectiveness?

No response noted.

2. Any comments or suggestions to improve the Web site?

<http://www.unmc.edu/code/>

NOTE: to locate the web site via a search engine, enter Academy of Operative Dentistry and then use the link CODE and ADEA.

No response noted.

3. Other comments/suggestions?

No response noted.

CODE REGIONAL MEETING REPORT FORM

REGION

VI (Southeast)

LOCATION AND DATE OF MEETING:

University: Virginia Commonwealth University School of Dentistry

Address: Richmond, VA

Date: October 7 -8, 2009

CHAIRPERSON:

Name: Dr. M. Baechle/Dr. E. Nance

Phone #: 804-828-7927/804-828-0557

University: Virginia Commonwealth University

Fax #: 804-828-3159

Address: Richmond, VA

E-mail: mbaechle@vcu.edu/etnance@vcu.edu

List of Attendees: Please complete the CODE Regional Attendees Form (following page)

Suggested Agenda Items for Next Year:

1. Are you using web-based tools for teaching Operative Dentistry and if yes, provide examples and comments including advantages/disadvantages.
2. What instruments, rubrics or other techniques do you use to develop student SELF-assessment skills throughout dental school? (How do you teach them to effectively critique themselves?)
3. What are the best instruments or techniques for developing and enhancing student hand skills?
4. How are you testing for competency during the CLINICAL phase of school in operative dentistry?
5. Do you have clinical restorative "requirements"? If yes, how does it mesh with CODA Standards?
6. What is the primary bonding agent type used in your undergraduate operative clinic? Specify by "generation".
7. Do you teach & use chlorhexidine or other material as a re-wetting agent, or to preserve the hybrid layer prior to applying bonding agent?
8. Are you using desensitizing agents such as Gluma under restorations or crowns?
9. What type of luting media is being used for conventional inlays, onlays, and crowns?

LOCATION AND DATE OF NEXT REGIONAL MEETING:

Name: TBA

Phone #: _____

University: Medical University of South
Carolina

Fax #: _____

Address: _____

E-mail: _____

Date: TBD

Please return all completed enclosures to
Dr. Larry D. Haisch, National Director, UNMC College of Dentistry;
40th and Holdrege Streets; Lincoln, NE 68583-0740.

Deadline for return: 30 Days post-meeting

Office: 402 472-1290 Fax: 402 472-5290 E-mail: lhaisch@unmc.edu

Also send the information on a disk and via e-mail with all attachments.

Please indicate the software program and version utilized for your reports.

CODE Region _____ VI _____ Attendees Form

NAME	UNIVERSITY	PHONE #	FAX #	E-MAIL ADDRESS
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Kevin Frazier	MCG	706-721-2881	706-721-8349	kfrazier@mcg.edu
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John C. Cosby	CRDTS	803-754-9160	803-754-9162	jccdmd@aol.com
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**2009 NATIONAL CODE AGENDA
REGION VI
SUMMARY RESPONSES TO NATIONAL AGENDA**

(Editor note: Questions condensed for printing purposes)

I. Fiber Posts.

Nine of the eleven schools teach fiber posts and most of these schools offer instruction in both the graduate and undergraduate curricula. Products used are made by Brasseler, Coltene/Whaledent, Bisco and 3M Kerr. Bonding materials used are those made by the post manufacturer or Rely-X.

II. Lasers

Three of the eleven schools teach and use lasers for some aspect of restorative treatment. Most schools are not convinced that lasers are as useful as more conventional techniques at this time.

III. DIAGNODent (first question is an update from a 2003 agenda item)

Seven of the eleven schools teach DIAGNODent. Four of eleven possess these units, student experience is gained by lectures and demonstrations. Six of eleven schools do not think DIAGNODent alone qualifies as a diagnosis of caries.

IV. Gold

Seven of eleven schools report a decrease in the use of cast gold in the past 5 years. Reasons include: patient preferences for esthetics, decreased use of partial coverage, under appreciation for gold's value, improvements in esthetic material properties and a favorable fee schedule for esthetic restorations. In those schools where it has remained the same, it is because of gold's long term success or because it has decreased prior to five years ago and has been holding steady. When performed, full crowns or gold FPD's are the most common application. The percentage of gold crowns done ranged from 10% - 40% with the greatest frequency in the 10% - 20% range. Only two schools had students perform direct gold procedures last year.

V. Cavity Liners

A wide range of cavity liners are used by our regional schools including Gluma, Vitrebond, Dycal/Copalite, Amalgambond and other adhesive liners. Not all schools bond amalgams. Flowable composite was reported to have several uses including as a cavity liner, sealant, PRR restorative, and a restoration repair material.

VI. Effect of Beverage on Enamel/Dentin Erosion

Nine of eleven schools provide information on the effect of ionic beverages on tooth structure.

VII. Licensing Examinations

All schools believe that CODE should take an official position on dental licensure because in part, we are responsible for teaching a significant portion of the board content.

Regional CODE Agenda

To be established by the respective Region and Regional Director. Please also report on responses , individual and a summary, to the Regional Agenda from all participants.

NO REGIONAL CODE AGENDA SUBMITTED

Suggestions for CODE.

1. What can the organization do to improve its effectiveness?

No response noted

2. Any comments or suggestions to improve the Web site?

<http://www.unmc.edu/code/>

NOTE: to locate the web site via a search engine, enter Academy of Operative Dentistry and then use the link CODE and ADEA.

No response noted

3. Other comments/suggestions?

No response noted

2009 NATIONAL CODE AGENDA

REGION VI RESPONSES

(Evidence cited where applicable)

Region VI School Abbreviations

UAB	University of Alabama	MMC	Meharry Medical College
UFL	University of Florida	UNC	University of North Carolina
MCG	Medical College of Georgia	NOVA	Nova Southeastern University
UKY	University of Kentucky	UPR	University of Puerto Rico
ULVL	University of Louisville	MUSC	Medical University of South Carolina
	VCU		Virginia Commonwealth University

2009 NATIONAL CODE AGENDA

(Please cite the evidence where applicable. If utilizing reports/forms/schedules from your Regional schools, please submit these as PDF files for utilization in the Annual Fall Regional Report)

I. Fiber Posts.

1. Are you teaching fiber post for endodontic build-ups in your school?
Graduate and/or undergraduate programs?

UAB: Yes. Graduate, Undergraduate.

UFL: Yes. Graduate, Undergraduate.

MCG: No.

UKY: Yes, Undergraduate.

ULVL: Yes. Graduate, Undergraduate.

MMC: Yes. Graduate, Undergraduate.

UNC: Yes. Graduate, Undergraduate.

NOVA: Yes. Graduate, Undergraduate.

UPR: Yes, Undergraduate.

MUSC: Yes, Undergraduate.

VCU: No.

2. Which system are you using and why?

- UAB:** D. T. Light-Post (Bisco, Inc.). The shape of these posts resembles the pulp canal. Paraposts (Coltene/Whaledent), parallel sides and tapered posts, are used occasionally.
- UFL:** The Endodontic Department lectures fiber posts in their preclinical course. The Operative Department introduced fiber posts into the Team Clinics with a PowerPoint tutorial and step-by-step directions for faculty and students, but the Prosthodontic Department oversees the post placement of the definitive restoration. System: ParaPost TaperLux with ParaCore (Coltene/Whaledent). It is a simple system to use with a tapered post and a core material that is the same material used as the resin cement (Coltene/Whaledent).
- MCG:** Fiber posts are not used routinely in undergraduate clinics. Multiple systems are available in the GPR Program.
- UKY:** Whaledent ParaPost FiberWhite, but we are transitioning to Whaledent ParaPost Fiber Lux. Easy-to-use, inexpensive, and it transilluminates (dual-cure potential).
- ULVL:** We are using the Parallel and Tapered Translucent Fiber Post System called ParaPost Fiber Lux/Taper Lux because it is an excellent alternative to metal posts when an esthetic metal-free restoration is desired. Some of the important characteristics of this post system are its outstanding strength similar as dentine, light transmitting for fast bonding, radiopaque, adapts to the taper of the radicular canal created by the endo-rotary instruments and very easy to retreat.
- MMC:** Dentiflex (Brasseler) and the Para Post-FibreLux (Coltene and a conditioned Pulp Adhesive).
- UNC:** We teach the use of fiber posts mainly because of the ability to flex with the tooth root. We specifically use Parapost Taper Lux and Parapost Fiber Lux. We use these because of flexibility, radiopacity, ability for light cure, potential for retreatment, parallel/taper or parallel design to minimize wedging effect.
- NOVA:** We are using the Peerless Post from Kerr because it follows our endodontic canal shaping protocol of a .040 or .060 taper for the canal. This way we do not have to remove any more tooth structure when the post is placed as the shape and fit are already complete. We believe this is conservative and keeps more dentin and maximizes integrity of the endodontically treated tooth. Additionally, the post shape is a series of inverted cones that act as mechanical retention of the post without modifying the post or treating the post. Because of the design we get good fill of the cement around the post as it tends to push the cement into the canal as it is being seated. Our PG residents in Endo and Pros have verified with evidence based research a good dense cement fill with a number of cements. The authors of the published articles include S. Kuttler and E. Lask.
- UPR:** Theory is covered in the 2nd year (Fixed course). An elective course with lab is offered to 4th year students. System used is Bisco (color change with water).
- MUSC:** 3#M Fiberpost. These are placed in fixed pros and endo clinics, not operative.
- VCU:** No response noted.

3. What bonding material are you using with your fiber posts and why?

- UAB:** C and B Resin cement (Bisco, Inc.). We already were using All Bond 2 resin as needed. We recently added C and B because it has been in the market a while and there is good clinical information on its use.
- UFL:** Parabond. The dual cure ParaBond Adhesive (Coltene/Whaledent).
- MCG:** No response noted.
- UKY:** Coltene/Whaledent ParaPost Cement. Easy-to-use and inexpensive.
- ULVL:** For the post “cementation” (bonding) we are using the ParaPost ParaCore system, which is a dual cure core and resin cement with an integrated bond system for a good sealing and protection. We have selected this system because it was the first one implementing the use of the 5 ml syringes with small auto mix tips (size 40 ISO) for easy and fast post cementation. Besides its excellent characteristics (cuts like Dentin, is radiopaque, releases fluoride among others), this is one material for 3 indications: post cementation, core build-ups, and crown/bridge cementation, (all in one) achieving the ideal restoration of the tooth treated endodontically: an optimal “Monoblock Bond Interface” between post-cement canal dentin-crown.
- MMC:** Parabond (Coltene) appears to work the best in student clinics and we get a good supply from Coltene.
- UNC:** Rely-X Unicem, dual cure, self-etching system, less complicated, light cure enhances self cure component and allows immediate continuation of procedures.
- NOVA:** No response noted.
- UPR:** Parabond Cement provided by Bisco and Unicem.
- MUSC:** Rely-X Uni-cem.
- VCU:** No response noted.

II. Lasers

1. What is your school’s (and/or department’s) view on the use of lasers in Operative Dentistry? Minimally Invasive Dentistry? Surface treatment for bonding? Cavity Preparation? DIAGNODent?

UAB: We teach the use of a laser for both hard and soft tissue applications. The course is offered as a D4 elective.

UFL: We tried the Waterlase MD for a period of time with limited success due to the fragile nature of the system on the clinic floor. The Waterlase MD was mainly used for soft and hard tissue removal during Class V restorations.

MCG: Lasers are not discussed for restorative dentistry. The school does have demonstrations in the Perio department for grad students on using laser for soft tissue surgery.

UKY: A brief discussion is given on laser application in lecture, but it is not used in pre-clinical or clinic.

- ULVL:** We do not use/possess lasers for use in Operative Dentistry. The studies below do not indicate that lasers are adequate for surface treatment for bonding or cavity preparation. There is also equivocal evidence for the use of DIAGNODent. *DIAGNODent: A systematic review of the performance of a laser fluorescence device for detecting caries: J Am Dent Assoc, Vol 135, No 10, 1413-1426, 2004.* It appears that the DIAGNODent could have several uses, such as refining a questionable diagnosis, directing preventive interventions or monitoring a suspected lesion over time. First, clinicians could use DIAGNODent subsequent to the traditional visual/tactile examination to refine a questionable diagnosis of caries on the occlusal surface of a tooth. Presumably, it would be used as a “serial diagnostic test” in instances in which the results of the visual examination are equivocal. The lack of specificity, together with the absence of a single diagnostic threshold suggest that the DIAGNODent should not be relied on as a clinician’s primary diagnostic method. *The intra/inter-examiner reproducibility of the new DIAGNODent pen on occlusal sites. Journal of Dentistry Vol 35, Issue 6, June 2007, pages 509-512.* This study revealed a wide measuring range of DIAGNODent Pen readings. Since there were no differences between dentist and student, it can be used as an adjunct tool by undergraduates as well. Nevertheless, based on the registered reproducibility the DIAGNODent Pen should be used additionally to visual inspection and dental radiographs. *DIAGNODent - an adjunctive diagnostic method for caries diagnosis in epidemiology. Community Dent Health. 2006 Dec;23(4):217-221.* The present study indicated that the DIAGNODent system would be applicable in field studies, provided consistent study conditions are maintained and unexpected values are interpreted with caution. The eyes have it. *How good is DIAGNODent at detecting caries? Evid Based Dent 2005;6(3):64-65.* **CONCLUSIONS:** In the limited studies available DIAGNODent demonstrated greater sensitivity but poorer specificity than visual caries diagnosis. Combined with the fact that little in vivo evidence is available for DIAGNODent performance, the greater number of false-positive diagnoses suggest it should not be relied on as a clinician’s primary diagnostic method. *Reproducibility of DIAGNODent 2095 and DIAGNODent Pen measurements: results from an vitro study on occlusal sites. European Journal of Oral Sciences. 115(3):206-211, 2007 Jun. [Comparative Study, Journal Article. Validation Studies] AB.* The aim of this in vitro study was to investigate the intra- and inter-device reproducibility of the DIAGNODent 2095 (DD2095) and the new DIAGNODent Pen (DDPen) on non-cavitated occlusal caries sites. In conclusion, both devices showed an imperfect reproducibility, which indicate the usage as adjunct tool only in clinical practice. (Comment: Evidence supports the notion that conventional detection methods are equal to or better than with the DIAGNODent. Perhaps the instrument is best used to ring up sales for some practitioners?)
- MMC:** They are not used in our clinics. Some sessions are planned for “Lunch and Learn” at some later dates with Colgate.
- UNC:** Operative Dentistry is not teaching or recommending the use of lasers in operative dentistry diagnosis or treatment. Reliable research conducted on DIAGNODent reveals high sensitivity and low specificity, i.e. false positives. About DIAGNODent: our curriculum teaches about various instruments that are on the market (including DIAGNODent). This teaching includes basic theory with regard to how they work and their level of sensitivity, specificity, validity and reliability. We have one unit. We currently do not provide hands-on exposure for all dental students. The research indicates no additional increase in accuracy over traditional methods of caries diagnosis and increased cost to the dentist/patient. DIAGNODent is recommended, not required, and nothing more than as an adjunct to caries diagnosis only. (*Oper Dent. 2009 May-April; 34(2):136-141.*

- NOVA:** Restorative Dentistry, Prosthodontics and Oral Medicine philosophically support the use of lasers. Annually, an elective course is taught to the predoctoral students/PG students and faculty on the utilization of lasers for soft and hard tissues. The laser course contains a didactic and clinical component. We are not using lasers routinely with all students. Those students that have taken the course are allowed to work with two designated faculty members to utilize the lasers on patients. Any faculty who has taken the course and is certified may use the lasers available in the school. One faculty member in our Oral Medicine clinic uses the laser on a regular basis for pain management. One faculty member uses the laser mostly for soft tissue. We are using the DIAGNODent on a regular basis and the students get credit for using it to aid in caries diagnosis.
- UPR:** Not necessary; too expensive.
- MUSC:** We don't have any and don't teach it.
- VCU:** We mention this in lecture, and encourage students to learn more about them, but we do not use any of them in the curriculum.

(The following questions [*], not included in the National Agenda, were asked by this Region only)

*** What is your school's (and/or Department's view) on the use of lasers in Surface treatment of bonding?**

- UAB:** After preparing with a bur or with a laser, we etch the prepared surfaces prior to bonding.
- UFL:** No response noted.
- MCG:** No response noted.
- UKY:** We do not use lasers.
- ULVL:** Questionable benefit. Bonding studies: *Bonding of self-etching and total-etch systems to Er:YAG laser irradiated dentin. Tensile bond strength and scanning electron microscopy. Brazilian Dental Journal. 15 Spec No:S19-20,2004.* Consistent hybrid layers were observed for conventionally treated specimens, whereas either absence or scarce hybridization zones were viewed for lased subgroups. Er:YAG laser irradiation severely undermined the formation of consistent resin-dentin hybridization zones and yielded lower bond strengths. CSEB self-etching primer appeared to be the most affected by the laser ablation on the dentin substrate, resulting in the weakest adhesion. *Effect of HEMA on bonding Er:YAG laser-irradiated bovine dentine and 4-META/MMA-TBB resin. Journal of Oral Rehabilitation. 29(8):749-755, 2002.* It was concluded that HEMA treatment following acid conditioning provided a slightly higher bond strength for both the Er:YAG laser-irradiated and non-irradiated dentines. However, the bond strength of Er:YAG laser irradiated dentine was significantly lower than that of the non-irradiated dentine. *Erbium, chromium:yttrium scandium gallium garnet laser for caries removal: influence on bonding of a self-etching adhesive system. Lasers in Medical Science. 23(4):435-441, 2008.* The highest bond strengths were observed with the sound dentine treated with burs and Carisolv. The bond strengths to caries-affected dentine were similar in all groups. Additionally, bonding to caries-affected dentine of the Er,Cr:YSGG laser and Carisolv groups was similar to bonding to caries-infected dentine. Thus, caries-affected dentine is not an

adequate substrate for adhesion. Moreover, amongst the caries removal methods tested, the Er,Cr:YSGG laser irradiation was the poorest in providing a substrate for bonding with the tested self-etching system.

- MMC:** No response noted.
- UNC:** No increase in the ability to predictably bond to tooth surfaces with lasers as compared with current well researched adhesive techniques.
- NOVA:** Not teaching this procedure at this time.
- UPR:** Not necessary, too expensive.
- MUSC:** We don't have any and don't teach it.
- VCU:** We mention these in lecture, and encourage students to learn more about them, but we do not use any of them in the curriculum.

*** *What is your school's (and/or Department's) view on the use of lasers in Cavity preparation?***

- UAB:** We use an ErCr:YSGG laser to perform minimally invasive dentistry (PRR's and small Class I's).
- UFL:** We found the system to be slow for dental preparations.
- MCG:** No response noted.
- UKY:** We do not use lasers.
- ULVL:** Questionable Benefit. *Cavity preparation: Shear bond strength of resin-modified glass ionomer cements to Er:YAG laser-treated tooth structure. Oper Dent. 31(2):2:2-8, 2006.* The cavity preparation device: 1-Er:YAG laser (350mJ/2Hz); 11-carbide bur (control group). The cavities prepared with a conventional bur (control group) presented higher bond strength values than those recorded for Er:YAG laser ($P<0.01$). No significant differences were observed between the restorative materials. Based on these results, it was concluded that Er:YAG laser adversely affected the shear bond strength of RMGI for both enamel and dentin.
- MMC:** They are not being used, however, the faculty has sat through several demonstrations by manufacturer representatives and they leave a lot of unanswered questions - speed of preparation, lack of undercuts for amalgams (yes, we still teach that method) and cost of instruments. Amalgam restorations are still on the SERTA examination.
- UNC:** We teach use of rotary hand instrumentation for cavity preparation (for) increased control of specific dimensions and outline form and increased efficiency. Lasers do not allow this level of control.
- NOVA:** We are not utilizing lasers for cavity preparations.
- UPR:** Not necessary, too expensive.
- MUSC:** We don't have any and don't teach it.

- VCU:** We mention these in lecture, and encourage students to learn more about them, but we don't use any of them in the curriculum.
2. Are lasers being taught for applications in operative/restorative dentistry at your school? If so, how? Didactic, Pre-clinical, and/or in Clinic?
- UAB:** YES, we use an ErCr:YSGG laser sometimes to perform minimally invasive dentistry (PRR's and small Class I's) didactically and preclinically.
- UFL:** YES, we are very supportive of minimally invasive dentistry and teach it at every level, but were not able to integrate the laser, not this philosophy.
- MCG:** NO, for diagnostic purposes - like DIAGNODent, we teach it in lecture. Lasers for tooth preparation are not available for teaching in the undergraduate courses. Lasers appear to offer some unique utility, but cannot completely substitute for conventional hand pieces for restorative treatment. They are valuable adjuncts for diagnosing caries lesions in sub-clinical applications via DIAGNODent and other laser/light mediated devices.
- UKY:** NO, we do not use lasers.
- ULVL:** NO, we do not use/possess lasers for use in Operative Dentistry.
- MMC:** NO, see above response.
- UNC:** NO, we do not teach the use of lasers because any need for modification or tissues or pits is more readily and efficiently (cost effective) accomplished with rotary instrumentation.
- NOVA:** YES, but we are not using lasers at this time for tooth preparations. Didactically and Preclinically.
- UPR:** NO, it's no necessary, too expensive.
- MUSC:** NO, we don't have any and don't teach it.
- VCU:** NO, but we mention them in lecture, and encourage students to learn more about them, but we do not use any of them in curriculum.
3. What credentials does your school require for those who teach and use the lasers?
- UAB:** There is a didactic and laboratory elective course offered to D4 students. During the course, students are taught the use of ErCr:YSGG and diode lasers, and the DIAGNODent. After the successful completion of the course, students are allowed to treat patients in the clinic using the laser and using the DIAGNODent. A protocol has been developed for the students to follow with respect to the patient, the procedure and tooth selection. In general, the student presents the patient information to the designated faculty member prior to the patient's appointment.
- UFL:** Certification by Biolase through World Clinical Laser Institute.
- MCG:** Formal training if we used them. The campus hospital requires strict credentialing for lasers used in its treatment environments.

UKY: We do not use lasers.

ULVL: No response noted.

MMC: No response noted.

UNC: No response noted.

NOVA: Those who teach and use lasers need to take the course in lasers that is approved by the Academy of Laser Dentistry (AOD) and are certified by the AOD. Once a year an elective course is taught to the predoctoral students/PG students and faculty on the use of lasers for soft tissue and hard tissue use that the predoctoral students can attend. The laser use is taught didactically and for use on patients. After the course, those attending are certified to take the national test to become Nationally Certified through the AOD.

UPR: No response noted.

MUSC: No response noted.

VCU: No response noted.

4. Are there lasers available for teaching and patient care?

UAB: Yes.

UFL: Yes.

MCG: No.

UKY: No.

ULVL: No.

MMC: No.

UNC: No.

NOVA: Yes.

UPR: No.

MUSC: No.

VCU: No.

III. DIAGNODent (first question is an update from a 2003 agenda item)

1. Does your school currently teach the DIAGNODent in its caries diagnosis curriculum?

UAB: No.

UFL: Yes.

MCG: Yes.

UKY: Yes.

ULVL: Yes.

MMC: No.

UNC: Yes.

NOVA: Yes.

UPR: No.

MUSC: No.

VCU: Yes.

2. Does your school possess any DIAGNODent units?

UAB: No.

UFL: Yes.

MCG: Yes.

UKY: Yes.

ULVL: No.

MMC: No.

UNC: No.

NOVA: Yes.

UPR: No.

MUSC: No.

VCU: No.

3. What sort of hands on exposure do your faculty/students have to the DIAGNODent? (Example: lectures, demo, and/or actual patient treatment)

UAB: No response noted.

UFL: Lectures, demonstrations, patient treatment.

MCG: Lectures.

UKY: Lectures, demonstrations.

ULVL: Lectures.

MMC: Lectures, demonstrations.

UNC: Lectures.

NOVA: Lectures, demonstrations, patient treatment.

UPR: No response noted.

MUSC: Lectures.

VCU: No response noted.

4. By word of mouth, some practitioners are advocating the use of DIAGNODent by dental hygienists in their practices. Although final “confirmation” of caries is done by the dentist, does use of DIAGNODent qualify as diagnosis of caries? Any support from the literature?

UAB: Yes.

UFL: Yes, literature -Yes

MCG: No.

UKY: No.

ULVL: No.

MMC: Yes, literature -Yes

UNC: Yes, literature -No

NOVA: Yes, literature -Yes

UPR: Yes, literature -Yes

MUSC: No.

VCU: No.

IV. Gold

1. Has the use of Cast Gold as a restorative treatment increased, decreased, or remained the same over the past 5 years in your pre-doctoral clinics? Explain this trend; or lack of change.

UAB: DECREASED - the use of cast gold has decreased in our clinics. New cosmetic materials (both the luting agents and the crown materials) with improved properties (such as low fusing ceramics and all ceramic materials) enable these esthetic restorations to be more predictable than the previously available alternatives to metal.

UFL: REMAINED THE SAME - cast gold has not been used in our clinics over the past 5 years. Possible reasons are: the introduction of Cerec technology 4 years ago and the requirements for full coverage crowns in Prosthodontics.

MCG: DECREASED - due to patient desire for esthetic options, the convenience of in-house

all ceramic crown options, and a favorable fee schedule in which gold fees are more than or equal to the cost of porcelain crowns. Direct restorative materials, especially composites, have displaced the use of cast gold inlays. Improvements in resins. Cast gold on patients for regional boards is no longer a requirement.

- UKY:** REMAINED THE SAME - most patients are concerned about esthetics, so porcelain or all ceramic systems are preferred by patients.
- ULVL:** DECREASED - reasons: the primary concern is that most patients do not want gold colored restorations, a value shared by our students as well. Also there is a shift from cast post and cores on anterior teeth to carbon fiber posts with composite resin core build-ups - this is true especially in the past 2 years. Also - there is a de-emphasis on partial coverage restorations. There is increased usage of all ceramic restorations and a lack of appreciation for the qualities of a full cast restoration.
- MMC:** REMAINED THE SAME - since cast gold restorations have been removed from our major dental examination (SERTA), it has been de-emphasized in our student training. However, the students in the 2nd year do receive lectures and procedures on how to fabricate cast gold restorations (inlays, onlays, and gold crowns). They have an option to place these restorations on patients that desire that type of restoration. They also get lectures and demonstrations on the gold foil cavity preparation and restoration. Some of the same lectures are given in the 3rd year course.
- UNC:** REMAINED THE SAME - primarily because of favorable long term studies and faculty experience.
- NOVA:** DECREASED - the use of cast gold has decreased over the past 5 years. We still require a cast post and core or 4 fiber posts to be done. We also require an onlay than can be porcelain or gold. So there are still restorations in cast gold that are being completed. I explain this decreasing trend by the increase esthetic consciousness of our society and living in South Florida..
- UPR:** DECREASED - due to the addition of all ceramic restorations.
- MUSC:** DECREASED - cast gold is only used for complete crowns in the Fixed Pros clinic. Operative no longer used cast gold.
- VCU:** DECREASED - suspect patients want more esthetic restorations, and thus are more likely to choose a PFM.
2. What are the most common applications of this technique listed in frequency of use or in decreasing order? (Examples: Crown, FPD, Onlay, ¾ crown, Class II Inlay, Other: specify)
- UAB:** Crown, FPD, Onlay (rare: most inlays and onlays in our school are tooth-colored CAD/CAM).
- UFL:** Crown, FPD, and Onlay (3/4 crowns and inlays are very rare).
- MCG:** Crown (most), FPD, onlay, inlay, 3/4 crowns (least).
- UKY:** Crown, onlay, 3/4 crown, FPD, inlay.
- ULVL:** Most - FGC, full gold FPD, cast post and cores for anterior teeth. Least - partial coverage (e.g. 3/4 crowns, inlays, onlays). Last year out of about 1100, only 5 were of this type.

- MMC:** Crown, FPD, Class II inlay/onlay, 7/8 crown (never have seen one done or placed), 3/4 crown (ditto).
- UNC:** FGC then onlays.
- NOVA:** Crown, cast post and core, onlay. We very rarely see 3/4 crowns, FPDs and Class II inlays.
- UPR:** Fixed bridges (metal-ceramic) and onlays.
- MUSC:** Crown, FPD, rarely 7/8 or 3/4 crowns. Onlays and inlays are not done at all (except by me in Faculty Practice).
- VCU:** Crown, then FPD. I have not heard of anyone in the student clinics doing 7/8 or 3/4 crowns, cast gold onlays or inlays, or direct gold (gold foils).
3. If you do Gold Crowns in your clinics, please estimate the percentage of total gold crowns done last year.
- UAB:** 10%
- UFL:** We do not cover crowns in the Operative Department.
- MCG:** Roughly 20%
- UKY:** 5% - 8%
- ULVL:** 5 years ago - about 30%. Last year - 10% of total restorations. This year - estimate less than 10%. Last year out of the 1100 restorations, one FGC was by a student.
- MMC:** 10% most of our patients receive P/M or base metal crowns, with maybe 10% getting porcelain crowns on the anterior.
- UNC:** 8 gold onlays (0.9%), 250 gold crowns (28%), 633 PFM crowns (71%)
- NOVA:** 8%
- UPR:** 20%
- MUSC:** These are done in Fixed Pros, not Operative. I would estimate it at 20% - 30% of all crowns placed. The use of CAD/CAM will greatly increase here next year and I expect the number of cast gold crowns to drop even further.
- VCU:** 30% - 40%
4. Are students able to receive Direct Gold (foil) training in your school?
If so, please describe the method of teaching (regular curriculum, elective curriculum, gold study group visits, individual experience by a faculty mentor, other-specify).
- UAB:** No.
- UFL:** No.

MCG: No.

UKY: Yes, elective curriculum.

ULVL: No.

MMC: Yes, regular and elective curriculum and experience with a faculty mentor.

UNC: No.

NOVA: No.

UPR: No.

MUSC: No.

VCU: No

5. Did any students do at least one DIRECT GOLD restoration in your clinical last year? If so, how many had this experience and describe or categorize the experiences.(Example: Class V, Class I, Class VI, Crown repair, other-specify).

UAB: No.

UFL: No.

MCG: No.

UKY: No.

ULVL: No.

MMC: Yes, 1 Class I.

UNC: No.

NOVA: No.

UPR: Yes, 2 for crown repair.

MUSC: No.

VCU: No.

V. Cavity Liners

1. What is the standard cavity-lining material for placement under amalgam restorations, taught and practiced at your school? (Are all amalgams, regardless of size and location, being bonded, or are glass ionomer liners/cements used?)

UAB: Minimal depth preparations - no liner is placed. Moderate and deep penetrations - the most commonly used dentin/pulp protection liner used is a RMGI liner. We used Vitrebond for years, now use Fuji liner. Adhesive amalgams are used when there is need for added retention in a large preparation/restoration.

- UFL:** Options are : no liner, Vitrebond TM Plus (3M ESPE), or Amalgabond Plus (Parcel). (Most amalgams are not being bonded but larger amalgams can be preceded by Vitrebond TM as in the case of presence of sclerotic dentin in the cavity preparation. Amalgabond Plus can also be used when retention is questionable.)
- MCG:** How are they defining liners? Our answer should start with our definition of the term “liner”. Options - nothing, Copalite, Amalgabond, Vitrebond (Other)
- UKY:** Optibond FL is normally used on all amalgams. The use of Fuji liners are predicated on the distance from the pulp. The use of Dycal in conjunction with Fuji II is taught using the sandwich technique. (Fuji liners or bonding agents utilized.)
- ULVL:** All cavity liners are lined with TP bond. If depth is a concern, a glass ionomer is placed. (Fuji liners or bonding agents utilized).
- MMC:** Vitrebond, Lifelike and Calcium Hydroxide. (We don’t bond our amalgams.)
- UNC:** Our standard procedure is the use of Gluma desensitizer (or G-5, clinician’s choice), followed by RMGI (Vitrebond) if concerns about thermal sensitivity exist. (We don’t bond our amalgams.)
- NOVA:** We are using Fuji Lining Cement LC. The liner and/or bonding agent used is left to the discretion of the instructor. We are only using amalgam 20% of the time and most are not being bonded. (Fuji liners or bonding agents utilized.)
- UPR:** Copalite. (We don’t bond our amalgams.)
- MUSC:** Gluma. (We don’t bond our amalgams.)
- VCU:** We use Vitrebond or Dycal with Vitrebond over the Dycal, where indicated. Not all amalgams are bonded and sealed. We use Optibond Solo Plus and 3-Step Scotchbond Multipurpose for sealing, and 5-Step Scotchbond Multipurpose Plus for bonding.
2. What are schools teaching as acceptable used for flowable composite? (Liners under composites? For Class V Lesions? etc.?)
- UAB:** The use of flowable composites is indicated for: 1) very irregular preparations (i.e., post endodontic to facilitate adaptation of the hybrid composite build up in the chamber); 2) in some posterior composites (irregular shaped floors/walls) as a liner (without extending to the cavosurface margin of prep); and 3) repair of resin provisional crowns/bridges.
- UFL:** We are teaching the use of flowable composite primarily for preventive resin restorations (PRR), and at times for sealants. Flowable composite is also introduced as a liner for use at the gingival floor of Class II composite restorations, but there is no policy as to its use in this manner. We do not recommend its use for Class V’s.
- MCG:** The bonding agent we use - Optibond FL - is filled and serves as a flowable so we do not routinely use an additional designated flowable resin. The Senior General Dentistry Program does use flowable more often than other clinics but it is faculty-dependent.
- UKY:** Esthetic-X Flowable.

- ULVL:** Flowable composite is not allowed in the undergraduate clinics for restorations. It is being used in the pediatric dentistry clinic. Flowables may be used for repair of some interim restorations. *Microleakage after thermocycling of 4 etch and rinse and self-etch adhesives with and without a flowable composite lining. Operative Dentistry. 31(4):450-455, 2006.* This in vitro study concluded that the self-etch adhesives remain less effective than etch and rinse. Nevertheless, X-III, a self-etch adhesive, showed acceptable performance in accordance with this study's 6-point severity scale of microleakage, but this needs to be confirmed in further clinical studies. On the other hand, this study failed to reveal that the addition of a thin layer of fluid composite improved the water tightness of the restoration, except for PLP (Prompt-L-Pop). *Influence of adhesive systems and flowable composite lining on bond strength of Class II restorations submitted to thermal and mechanical stresses. Journal of Biomedical Materials Research. Part B, Applied Biomaterials. 80(1):52-58, 2007.* Fracture modes varied considerably between experimental groups, and a greater frequency of cohesive failures was noted when FF (Filtek Flow) layers were used. *The effect of an intermediate layer of flowable composite resin on microleakage in packable composite restorations. International Journal of Paediatric Dentistry. 15(5):349-354, 2005.* The dye penetration ranged between 6.6 and 7.2 mm. No significant difference was found between the control and the experimental groups. **CONCLUSION:** The use of flowable composite resin as intermediate material does not reduce microleakage. *The effect of adhesive and flowable composite in postoperative sensitivity: 2-week results. Quintessence International. 35(10):777-784, 2004.* **CONCLUSION:** No differences in postoperative sensitivity were observed between a self-etch adhesive and a total-etch adhesive at 2 weeks. The use of flowable composite did not decrease postoperative sensitivity. *Influence of flowable composite lining thickness on Class II composite restorations. Operative Dentistry. 29(3):301-308, 2004.* Despite the reduction in interface voids, a thick lining may impair the marginal sealing, especially after thermocycling. It was concluded that a minimally thin flowable composite lining improved cavity adaptation and marginal sealing. (Note that this study does not mention bonding.) *Two-year clinical performance of a packable posterior composite with and without a flowable composite liner. Clinical Oral Investigations. 7(3):129-134, 2003.* After 2 years, no statistically significant difference (Chi-square test) in the overall survival rate between the group with the additional use of Revolution ((2.8%) and that without Revolution (94.6%) was found. The combined survival rate for both groups together was 93.7% of clinically acceptable restorations.
- MMC:** 1. Flowing into the proximal box of small Class II composites as initial filling. 2. On Class V lesions at the cervical, with no enamel bonding. 3. On some "flexure" lesions as a sandwich before placing a microfilm or nanofil composite.
- UNC:** Flowable may be useful as thin liners in the boxes of Class II preparations, or Class V areas where additional flexibility over conventional composite resin is desired.
- NOVA:** We teach flowable as sealant material after using a fissurotomy bur or a small amount in the bottom of the proximal box of a Class II preparation. We recommend the Snow Plow technique covering the flowable with a nanofil resin before polymerization.
- UPR:** All of them. In addition, flowable is used to repair resin temporary fixed bridges of crowns (to increase thickness or improve margin adaptation).
- MUSC:** Liners under composites.
- VCU:** We use flowable in proximal boxes and for small composite repairs.

VI. Effect of Beverage on Enamel/Dentin Erosion

1. Is information regarding the sugar/acid content and erosive properties of soft/energy drinks being given in an Operative Dentistry course to your dental students?

UAB: Yes

UFL: Yes

MCG: Yes

UKY: Yes

ULVL: No

MMC: No

UNC: Yes

NOVA: Yes

UPR: Yes

MUSC: Yes

VCU: Yes

VII. Licensing Examinations

Licensing examinations continue to constantly change. Florida has accepted and adopted NERB. California has accepted WERB and will allow a PGY1 alternative. New York has a mandated PGY1 and Minnesota has just announced the elimination of patients in testing. (See ADA on-line news of July 14, 2009, Dr. Bicuspid on-line article of July 8, 2009)

1. Should CODE take an official position and what is that position? What is the rationale for such a position? Pros/Cons.
2. Should dental schools be responsible for the content of the examinations? Pros/Cons.

UAB: YES, dental schools should be included (but not responsible for the content) in the planning and calibration of the board (so that both entities know what the other expects of DMD/DDS graduates/board exam candidates). The school should not be totally responsible for the board content since the state board of examiners is responsible for setting their criteria and to have two entities evaluating the candidates (a checks and balances so to speak).

UFL: YES.

MCG: YES, dental schools should advise and collaborate with licensing boards for content and evaluation.

UKY: YES, our organization sets the standard for operative dentistry in the profession.

ULVL: YES, CODE should take a position with their opinion about what operative procedures should be done on boards and whether treating live patients can be

justified. If we are to have licensing clinical boards, live patients should not be utilized. States should have reciprocity and credentialing across the country.

- MMC:** YES, the dental faculty spends more time with the dental candidates than the dental board. We know their weak areas and their strong areas. We know if they are “consistent” in their performance. Cons are mostly political. Each state wants to maintain control. It is a “feather” in the dentist cap if he/she is appointed to a State Dental Board.
- UNC:** YES, schools should be responsible for content because exams need to reflect changes resulting from an ever increasing evidence base.
- NOVA:** YES. The pros for taking a position would be establishing a fair exam that is standardized across 50 states. The cons would be that mixing education with business and politics can be disastrous.
- UPR:** YES, more or less, dental schools are teaching what is required for those examinations. Having these entities giving those tests may assure that students from different schools will take the same exam. Of course, student pass or fail results can become an indicator for dental school teaching performance.
- MUSC:** No response noted.
- VCU:** YES, CODE should take an official position - the more voices the better. From VCU we would hope that CODE would advocate and support a non-patient based exam; one or two national exams that would be acceptable by all states. Allows for maximum portability.

Regional CODE Agenda

To be established by the respective Region and Regional Director. Please also report on responses , individual and a summary, to the Regional Agenda from all participants.

2009 REGIONAL CODE AGENDA REGION VI SUMMARY RESPONSES TO REGIONAL AGENDA

Our Regional Agenda questions included the following categories:- use of web-based tools for teaching Operative Dentistry, student self-assessment development strategies, student hand-skill enhancement, competency testing, clinical requirements, and bonding/luting material protocols.

1. Are you using web-based tools for teaching Operative Dentistry and if yes, provide examples and comments including advantages/disadvantages.

Ten of eleven schools answered YES. Most use it as an adjunct tool to support classroom instruction while some schools claim to use it as the primary source of teaching materials. Blackboard, Tegrity, Vista 8, and WebCT are some examples of platforms used. Advantages include providing enhanced student learning opportunities outside of the classroom 24 hours a day such as for distance learning, for making up missed classes or reviews. Posting lectures on websites enables students to access/view Powerpoint lectures on their laptops during class where they can add notes during lectures. Continuous updating of course content is possible with convenient links to additional content and course assignment calendars, examinations and grades are posted on web-based tools. These tools save on printing costs for syllabi and handouts that are posted. Disadvantages include inadequate IT support and the time needed to create and maintain the content.

2. What instruments, rubrics or other techniques do you use to develop student SELF-assessment skills throughout dental school? (How do you teach them to effectively critique themselves?)

Students evaluate themselves in pre-clinic and on clinical competency exams using the same criteria that their instructors use. Students may evaluate their peers along with the faculty for extra credit. They self-evaluate by comparing their preparation/restorations to the descriptions, pictures and grading criteria provided in the course. Georgia used a unique teaching tool for discriminative learning that offers the students the ability to begin a rudimentary form of self-assessment. Accurate self-evaluation could earn the student some bonus points on some practical exams. The level of concordance between faculty and student is part of the final grade. Students' self-assessment is encouraged during all pre-clinical and clinical procedures.

3. What are the best instruments or techniques for developing and enhancing student hand skills?

Most schools emphasized demonstrations followed by practice and repetition to help develop hand skills and the ability to recognize correct work and to recognize errors. Ergonomics are taught simultaneously with hand skills using simulation lab manikins. The Dent-Sim provides additional time and guidance for hand skill practice outside of regular lab times. Repetition in preclinical courses is followed by competency exercises in the clinic. The Whip-Mix Learn-A-Prep (LAP) block (prepare and restore) is used before preparing and restoring dentoforn teeth. Placing the LAP in the manikin head also provides for practicing indirect vision skills prior to working on their standard typodonts in a simulator. Some believe that Virtual Reality systems can give the students a jump start on their skill development curve. The use of waxing instruments in the Dental Anatomy course for several weeks prior to starting the Freshman

Operative course was cited as an entry level method of hand-skill development. Dentoform teeth with strategically placed artificial caries to enhance organized thought relative to conservative caries removal and preparation design modifications based on restorative material properties are used..

4. How are you testing for competency during the CLINICAL phase of school in operative dentistry?

Patient in clinic, manikins in lab, and/or Virtual Patient Simulators, i.e., DentSim.

5. Do you have clinical restorative “requirements”? If yes, how does it mesh with CODA Standards?

Seven schools responded YES. Four schools responded NO. Clinical “requirements” as described by our member schools did not conflict with CODA standards. So-called requirements ensured minimal clinical attendance levels and enabled students to develop proficiency before competency testing.

6. What is the primary bonding agent type used in your undergraduate operative clinic? Specify by “generation”.

4th generations and 5th generation materials were most commonly used including the following products - Optibond FI, Scotchbond Multipurpose, and All Bond 2 (4th); along with Prime&Bond NT, Optibond Solo Plus, and Singlebond Plus (5th).

7. Do you teach & use chlorhexidine or other material as a re-wetting agent, or to preserve the hybrid layer prior to applying bonding agent?

Seven schools responded Yes; four schools responded No.

8. Are you using desensitizing agents such as Gluma under restorations or crowns?

Five schools responded Yes; six schools responded No.

9. What type of luting media is being used for conventional inlays, onlays, and crowns?

All schools use resin-modified glass ionomer cements along with resin cement and zinc phosphate.

2009 REGIONAL CODE AGENDA

REGION VI RESPONSES

(Evidence cited where applicable)

Region VI School Abbreviations

UAB	University of Alabama	MMC	Meharry Medical College
UFL	University of Florida	UNC	University of North Carolina
MCG	Medical College of Georgia	NOVA	Nova Southeastern University
UKY	University of Kentucky	UPR	University of Puerto Rico
ULVL	University of Louisville	MUSC	Medical University of South Carolina
	VCU		Virginia Commonwealth University

1. Are you using web-based tools for teaching Operative Dentistry and if yes, provide examples and comments including advantages/disadvantages.

UAB: Yes. Adjunct teaching tool, primary source of teaching materials. Most courses and clinics have materials available on Blackboard (PowerPoint presentations as PDF's, course calendar, course syllabus, supplemental reading materials and exam and assignment grades. Some courses receive course assignments through Blackboard and some courses give examinations through Blackboard. The main advantages: 1) the course materials are available to the student 24 hours a day, seven days a week; 2) we do not print as many handouts and manuals as in the past. A major cost savings and a savings for the environment. We have limitations related to the use of this and IT is working on the problem. Testing: we do not have a large computer lab. (Our student study area has four desktop computers and we do not have personnel available in a computer lab to assist the students with connections, etc. Students do have laptops, but the connections to the wireless become an issue for quizzes and examinations.) The UAB campus calendar and the School of Dentistry academic calendars are not the same (thus access to Blackboard is based on campus schedule and not our semester/course schedules). We are very dependent on campus IT (delayed help with IT needs). Creating and maintaining web-based materials is labor intensive. We have inadequate staff support for our needs.

UFL: Yes. Adjunct teaching tool, distance (outside of classroom). The "*Dental Anatomy and 3-D Interactive Tooth Atlas*" (Version 6.0.1, Brown & Herbranson Imaging: www.quintpub.com) is required software/web-based tool for the Dental Anatomy course and the "*Assessing Blood Pressure*" (<http://132.241.10.14/bp/bp.swf>) is being used on the Treatment Planning course. Both are adjunct teaching tools for distance learning.

MCG: Yes. Adjunct teaching tool. Our school places all lectures on a website called Vista8. All PowerPoint are converted to PDF's and uploaded. Also any MPEGS or movie files can be placed there. Also we just started using Tegrity to audio record all lectures.

UKY: Yes. Adjunct teaching tool. Demonstrations of procedures such as preparing or restoring teeth gives the student a different perspective.

ULVL: Yes. Adjunct teaching tool. If Blackboard counts, that is the only web-based tool that is being used fairly extensively. Tegrity is just coming online here and this presents a

tool that can be used to enhance student learning outside of the traditional class room. Both Blackboard and Tegrity would be adjunct. Materials (lectures, PowerPoint) on Blackboard course could be used for distance learning for students on community rotations and for remedial learning (and board review). Freshman are “demanding” that lectures in dental anatomy and operative be placed on Blackboard, preferably before the actual lecture. Some are bringing up the PowerPoint on laptops during the lectures and taking notes on the laptop.

- MMC:** No.
- UNC:** Yes. Primary source of teaching materials. We are using an electronic syllabus as well as Blackboard. Students have access to any and all materials that course directors wish for them to use. Instructional materials provided through Blackboard become the primary source. Instructors also provide links to outside sources of information that can be accessed online. We use Blackboard to increase access to all learning materials at all times. Students are less likely to use a textbook (or other sources) to gain further insight if they have immediate access to all subject related factoids.
- NOVA:** Yes. Adjunct teaching tool. The advantage is the ability to add and update course material continuously. Students can always go to the Web and see what is due and when. I have a calendar posted with important dates for exams and when all projects are due.
- UPR:** Yes. Adjunct teaching tool, primary source of teaching materials. Blackboard Advantage: students receive faster inputs. Disadvantages: Very time demanding for the faculty. Comments and feedback are extended to evenings.
- MUSC:** Yes. Adjunct teaching tool. WebCT and Tegrity give students access to lectures after they are given.
- VCU:** Yes. Adjunct teaching tool, distance (outside of classroom). Advantages: 24 hour access, can review material both before and after lecture/lab.
- 2. What instruments, rubrics or other techniques do you use to develop student SELF-assessment skills throughout dental school? (How do you teach them to effectively critique themselves?)**
- UAB:** No rubrics are used in operative at this time. Preclinical operative students receive copies of the examination protocol and specifications and grade sheets. They are to self-evaluate by comparing their preparation/restoration to the descriptions, pictures and grading criteria on these documents.
- UFL:** Self-assessment is performed by students based on specific grading criteria; after completing every operative dentistry clinical competency and before the same is graded by faculty, student’s self-assessment is also encouraged during all pre-clinical and clinical procedures.
- MCG:** We developed a discriminative learning device that offers the students the ability to begin the most rudimentary form of self assessment. Previously under Dan Chan - occasional self-evaluation of routine work occurs in lab courses and on practicals. Accurate self-evaluation could earn the student some bonus points.
- UKY:** Self-assessment exercises are taught in preclinical projects. In the clinic, self-assessment exercises are addressed in competency examinations in which the students

grade themselves.

- ULVL:** We have rubrics in pre-clinic and the same ones for clinic. Students evaluate themselves in pre-clinic and on clinical competency exams. There is no formal instruction in use of the rubrics.
- MMC:** Students have evaluated their peers along with the faculty for extra credit toward graduation. The same is true for the Fixed Denture course. We found that the students graded their peers more harshly than the faculty in a lot of the cases.
- UNC:** We are using a pre-clinical assessment rubric which defines clinically acceptable/unacceptable work. The rubric also reinforces a logical progression of thought and defines the steps in accomplishing a task. It requires the student to evaluate themselves first based on a standard and then the faculty evaluates the student's work as well as their assessment of their work. Our pre-clinical operative dentistry course uses a rubric for rubber dam placement, tooth preparation and tooth restoration.
- NOVA:** After each pre-clinical or clinical practical exam, students are required to self-assess their work using the same grading criteria as the faculty will use. Each grading sheet has a separate column for the student's assessment. Their assessment should be based on criteria sheets that are posted on WebCT for the students. Both the preparation and the restoration have listed specific criteria that should be met. A grading scale of 1-4 is used and the criteria sheet explains what each number means.
- UPR:** Self-assessment is included in the rubrics of the Operative 2nd year course. The concordance between faculty and student is part of the final grade. Clinically, a rubric was developed which include self-assessment.
- MUSC:** We teach them how to recognize "good" restorations during the late freshman and sophomore years and re-emphasize it using four "competency" exams in the simulation lab in the junior and senior years.
- VCU:** Practice practicals in the Operative Dentistry course that requires students to objectively look at their work and self-assess their progress.

3. What are the best instruments or techniques for developing and enhancing student hand skills?

- UAB:** We use the Whip-Mix Learn-A-Prep (LAP) block (prepare and restore) before preparing and restoring dentoform teeth. Repetition helps develop hand skills and helps develop the ability to recognize correct work and to recognize errors.
- UFL:** Examples of instruments or techniques for developing student hand skills are : waxing and "Learn-A-Prep II (Whip-Mix) exercises as well as the definition of specific criteria for cavity preparations, especially for amalgam preparations.
- MCG:** The use of waxing instruments in the Dental Anatomy course for several weeks prior to starting the Freshman Operative course. They also use the "Learn-A-Prep" (LAP) prior to actually making preparations on plastic teeth. Placing the LAP on the manikin also provides for practicing indirect vision skills.
- UKY:** Repetition in preclinical courses followed by competency exercises in the clinic.

- ULVL:** I don't know the best instruments for hand skills. We do provide demonstrations by faculty and repetition/practice by students with feedback.
- MMC:** 1. Repetition of procedures. 2. Practice on natural teeth. 3. Proper Operator/Patient positions.
- UNC:** We use dentoform teeth with strategically placed artificial caries to enhance organized thought relative to conservative caries removal and preparation design modifications based on restorative material properties. Manikins are used to require development of correct posture, indirect vision skills, finger rests and patient positioning skills. Rubber dam placement is used and assessed for most operative procedures accomplished in the preclinical lab. We use live patients (for) DDS3 Class II amalgam and Class III composite. We also use DDS4 (fall semester) Mock Board exam.
- NOVA:** We believe that practice is the best technique for developing and enhancing student hand skills. We are also working with the Virtual Reality system in order to give the students a jump start using a hand piece with specific goals.
- UPR:** Students learn at different pace, but for those who get behind, one-on-one teaching and repetition prevail for enhancing hand skills.
- MUSC:** Hands-on use of standard instruments on typodonts mounted in a simulator.
- VCU:** DentSim; significant laboratory time; demonstrations.
- 4. How are you testing for competency during the CLINICAL phase of school in operative dentistry?**
- UAB:** Patients in clinic.
- UFL:** Patients in clinic, manikins in lab.
- MCG:** Patients in clinic, other.
- UKY:** Patients in clinic, manikins in lab.
- ULVL:** Patients in clinic.
- MMC:** Patients in clinic, manikins in lab, other.
- UNC:** Patients in clinic, manikins in lab.
- NOVA:** Patients in clinic, manikins in lab.
- UPR:** Patients in clinic, Simulators i.e., DentSim.
- MUSC:** Patients in clinic, manikins in lab.
- VCU:** Patients in clinic, manikins in lab.
- 5. Do you have clinical restorative "requirements"? If yes, how does it mesh with CODA Standards?**

- UAB:** Yes. We have competencies and requirements (called expectations) and we did not have any problems during the last accreditation cycle. We have a system of patient assignment that matches a patient and his/her restorative needs with the student's expectations and set of competencies.
- UFL:** Yes.
- MCG:** Yes. Junior year - procedures = 45 direct restorations, 4 indirect restorations (as of this year). Senior year - point system multiple competency exams are administered throughout both years. "Requirements" ensure attendance and enable development of proficiency prior to challenging competency.
- UKY:** No. Although there are no procedure "requirements", students must complete a certain predetermined number of clinical competencies during the 2nd, 3rd, and 4th years. CODA endorsed our approach to this standard during their last accreditation visit.
- ULVL:** Yes. This would be our "recommended experiences". CODA lists a must statement on restoration of individual teeth. Since the experiences are only recommended, they mesh well with CODA. Of course, competencies are still a "requirement".
- MMC:** No.
- UNC:** Yes. We are actively working to bring our requirement system into compliance with CODA.
- NOVA:** Yes. Follows and enhances CODA standards.
- UPR:** Yes. We have minimal requirements. However, due to a drop in student performance in competency exams, we are considering to increase requirements.
- MUSC:** No. We have no operative requirements.
- VCU:** No. There are not specific operative "requirements". Students accumulate points (for procedures completed) which is transferred into a grade. We also have operative competencies.

6. What is the primary bonding agent type used in your undergraduate operative clinic? Specify by "generation", including number of steps , etch & rinse vs. Self-etch, etc.

- UAB:** 1st most used: Scotchbond Multipurpose (3m ESPE) - 4th generation , etch, primer and adhesive separate *multi-bottle system: 3 steps). 2nd most used : Prime&Bond NT (Caulk) - 5th generation, etch, primer and adhesive combined (2 steps). 3rd most used: All Bond 2 (Bisco)- 4th generation, etch, 2 bottle primer and 2 bottle adhesive separate (multi bottle system: 3 steps).
- UFL:** The primary bonding agent used is the Optibond FL (Kerr). Optibond FL is a 4th generation bonding agent that uses a three-step system: etch, primer and bonding agent.
- MCG:** Optibond FL (3-step). 4th generation.
- UKY:** Optibond FL, a 4th dentin bonding generation system. Total etch using three steps.

- ULVL:** TP Bond (Dentsply). Probably 4th generation (use of the total-etch technique is one of the main characteristics of 4th generation bonding systems): 1) etch as separate step, 2) rinse, 3) lightly dry; 4) apply TP and let stand for 15 seconds; 5) remove solvent by air syringe; 6) light cure .
- MMC:** Prime&Bond NT, TP Bond (Dentsply) 5th and 6th generation. We also have students use a 37% acid gel on all enamel, rinse and dry before using the P&B NT or TP Bond.
- UNC:** Singlebond Plus or Optibond Solo Plus which are both 5th generation. Etch, Rinse and Bond (1 bottle) systems that use ethanol as the solvent.
- NOVA:** 4th generation 3-step etch-and-rinse adhesive system. Optibond FL - 48% filled adhesive (0.6 barium glass), reduced polymerization shrinkage, higher bond strengths, radiopacity, long clinical track record: 10+ year clinical history, fluoride release. Steps: etch enamel 20-30 seconds/dentin 15 seconds - rinse and leave surface moist. Apply Gluma, apply primer 15 seconds, evaporate solvent, surface shiny, scrub adhesive on all etched surfaces for 20 seconds, (multiple coats), air thin, light cure 2 mm increments resin-light cure 40 seconds/increment (Filtek Supreme, Premise). We recommend the use of Gluma Desensitizer after etching as a bacterialcidal and desensitizing.
- UPR:** Prime&Bond NT, TP Bond, Single Bond (Total etch). Etching, rinsing, bonding.
- MUSC:** #1: Optibond Solo Plus. #2: Clearfil SE.
- VCU:** We use Optibond Solo Plus for composites and Scotchbond Multipurpose Plus 5-step for amalgam bonding. The students can also use Optibond Solo Plus as sealers for amalgam, and/or the 3-step Scotchbond Multipurpose to seal amalgam.
- 7. Do you teach & Use chlorhexidine or other material as a re-wetting agent, or to preserve the hybrid layer prior to applying bonding agent? If “Yes”, how do you teach its use? Please choose all that apply.**
- UAB:** No.
- UFL:** Studies on its use as re-wetting agent are mentioned in lectures but not applied clinically. However, a 2% Chlorhexidine solution (Consepsis; Ultradent) is indicated prior to indirect and direct pulp cap procedures.
- MCG:** Yes. Other.
- UKY:** Yes. Other.
- ULVL:** Yes. Other.
- MMC:** No.
- UNC:** No.
- NOVA:** Yes. As a re-wetting agent to promote hybrid layer formation.
- UPR:** No.
- MUSC:** Yes. As a re-wetting agent.

VCU: Yes. Other.

8. Are you using desensitizing agents such as Gluma under restorations or crowns?

UAB: No.

UFL: No.

MCG: No.

UKY: No.

ULVL: No.

MMC: Yes.

UNC: Yes.

NOVA: Yes.

UPR: No.

MUSC: Yes.

VCU: Yes.

9. What type of luting media is being used for conventional inlays, onlays, and crowns?

UAB: Metal inlays/onlays and crowns: RMGI, Rely X cement (3M ESPE). All ceramic inlays/onlays and crowns: resin cement, Variolink (Vivadent).

UFL: GC Fuji Plus (GC America) and Zinc Phosphate (Prosthesis Department)

MCG: Rely-X Luting plus cement in the clicker dispenser.

UKY: Ketac-Cem is normally used, but Panavia 21 if retention is questionable.

ULVL: This would be glass ionomer.

MMC: Glass ionomer, zinc phosphate, resin cements; depends on what is being luted.

UNC: Rely-X luting plus (RMGI) luting cement.

NOVA: PFM crowns, gold crowns, gold inlays and onlays - resin reinforced glass ionomer luting cement, Fuji Plus. 1. The preparation is cleaned first with Ultradent Consepsis Scrub then rinsed thoroughly and the preparation left moist. 2. Fuji Plus Conditioner is then applied to the tooth for 10 seconds (mild acid) which increases the bond strength of the cement. It is rinsed thoroughly and the tooth is left moist. 3. Gluma Desensitizer (unidose package). Apply Gluma desensitizer with a pellet and leave for 30-60 seconds. Make sure that only the smallest possible amount required is applied, and that it only comes into contact with preparation and not tissue. (Irritation on tissue could occur). 4. Gently blot dry but do not rinse. 5. Mix unidose cement capsules on the triturator. Ceramic crowns, onlays and inlays - Ivoclar Multilink Automix Resin

Cement. 1. This cement uses a self-etching no rinse bonding system. The etch is in the primer and the primer and adhesive are mixed together before applying to the tooth. We use Ultradent Consepsis before applying the bonding system. We do not use Gluma desensitizer with this system.

UPR: Fuji Plus, Vitremer, Unicem.

MUSC: Rely-X Luting Plus cement.

VCU: Fuji Cem, Fleck's Zinc Phosphate: Panavia (when indicated).

Suggestions for CODE.

1. What can the organization do to improve its effectiveness?

MCG: Continue to use on-line tools, like this survey.

UKY: Periodic newsletters/emails that serve to remind us to go to the website, etc.

MMC: Include more dental board examiners at our CODE meeting. Make them more aware of the dental school curriculum as taught in Operative and Restorative Dentistry.

UPR: Participation in issues that will help dental schools such as evaluation rubrics and cariology issues.

VCU: It is a great organization!

2. Any comments or suggestions to improve the Web site?

<http://www.unmc.edu/code/>

NOTE: to locate the web site via a search engine, enter Academy of Operative Dentistry and then use the link CODE and ADEA.

MCG: Have ability to place case reports or other clinically relevant reports that could possibly count as electronic publications.

VCU: Information posted on the CODE website regarding how to host the regional meetings could be helpful. Hopefully this survey will also help with collating the results of the questionnaires.

3. Other comments/suggestions?

No response noted.

