Consortium of Operative Dentistry Educators

(CODE)

REGIONAL REPORTS
FALL 2010

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

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THE CODE 2010 REGIONAL REPORTS IN PDF FORMAT MAY BE FOUND ON THE WEBSITE:
HTTP://WWW.UNMC.EDU/CODE

PLEASE UPDATE YOUR SCHOOL'S DIRECTORY PAGE IN THE CODE NATIONAL DIRECTORY LOCATED ON THE CODE WEBSITE. TO ACCESS THE DIRECTORY, USE THE "PLEASE HELP UPDATE" LINK ON THE MAIN MENU OF THE WEBSITE.

THANK YOU FOR YOUR ASSISTANCE.

Consortium of Operative Dentistry Educators (CODE)

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

On February 25, 2010, CODE held a National/International meeting during the annual meeting of the Academy of Operative Dentistry in Chicago. Dr. Christopher D. Lynch of Cardiff University School of Dentistry, Cardiff, Wales, UK, presented the program, "Current trends in the teaching of direct composites to dental students." CODE acknowledges Drs. Kevin Frazier and Nairn Wilson for their assistance in making the presentation possible. Dr. Lynch's presentation is posted on the CODE website.

I had the privilege to attend the Region I meeting at the Arthur Dugoni School of Dentistry, University of the Pacific, San Francisco, California. I also attended the Region II meeting hosted by my school, University of Nebraska Medical Center College of Dentistry in Lincoln, Nebraska.

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

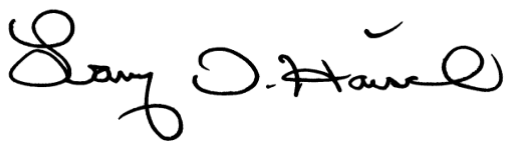
All are to spread the word about CODE and work to provide input to Licensure Boards on Restorative Dentistry. Also encourage/invite members of the Licensure examining boards to attend the Fall Regional meetings. Invite our colleagues in the Armed and Public Health Services to our meetings - both Regional and National. Again in 2010, 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. Phil Buchanan, William Johnson, Alan Ripps, Camila Sabatini, Richard Lichtenthal, and Mullen Coover), the Operative Section of ADEA and the general membership for helping to make CODE what it is and what it accomplishes.

Best wishes,



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 complied 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 complied 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 1-11-11)

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	317-278-1858 pereifei@iupui.edu	2010-2012
V	Northeast	Dr. Richard Lichtenthal Columbia University New York, NY	212-305-9898 rml1@columbia.edu	2011-2013
VI	South	Dr. R. Gary Holmes Georgia Health Sciences University August, GA	706-721-2881 rholmes@georgiahealth.edu	2011-2013
III	At-Large	Dr. Alan Ripps LSU New Orleans, LA	504-941-8261 aripps@lsuhsc.edu	2010-2012
IV	At-Large	Dr. Edward DeSchepper Indiana University Indianapolis, IN	317-274-5331 edeschep@iupui.edu	2010-2012
VI	South	Dr. Kevin Frazier Georgia Health Sciences University August, GA	706-721-2881 kfrazier@georgiahealth.edu	2011-2013
II	National Director	Dr. Larry Haisch UNMC Lincoln, NE	402-472-1290 lhaisch@unmc.edu	211-2013
II	Web Master	Dr. William Johnson UNMC Lincoln, NE	402-472-9406 wwjohnson@unmc.edu	No Term

Consortium of Operative Dental Educators (CODE)
2010-2011
Paid - Regions and Schools

X = Paid Members as of January 4, 2011 69 schools (10 Canada, 59 United States)

Region I (Pacific) -13		Region II (Midwest) - 10	
X	Alberta - Canada	X	Colorado
X	ATSU – (Mesa), Arizona	X	Creighton
X	MWU – (Glendale), Arizona	X	Iowa
X	British Columbia - Canada	X	Manitoba - Canada
X	Loma Linda	X	Marquette
X	Nevada	X	Minnesota
X	Oregon	X	UMKC - Kansas
X	Pacific	X	Nebraska
X	UCLA	X	Saskatchewan - Canada
X	UCSF	X	Southern Illinois
X	USC		
	Western University-CA (new)		
X	Washington		
Region III (South Midwest) - 7		**Region IV (Great Lakes) - 10**	
X	Baylor	X	Case Western
X	Louisiana State	X	Detroit Mercy
X	Mississippi	X	Illinois
X	Oklahoma	X	Indiana
X	Tennessee	X	Michigan
X	UTHSC - San Antonio	X	Ohio State
X	UTHSC - Houston	X	Pittsburgh
		X	SUNY - Buffalo
		X	West Virginia
		X	Western Ontario - Canada
Region V (Northeast) - 18		**Region VI (South) - 11**	
X	Boston	X	Alabama
X	Columbia	X	Florida
X	Connecticut	X	Georgia
X	Dalhousie - Canada	X	Kentucky
X	Harvard	X	Louisviille
X	Howard	X	Meharry
	Laval - Canada	X	North Carolina
X	Maryland	X	Nova Southeastern
X	McGill - Canada	X	Puerto Rico
	Montreal - Canada	X	South Carolina
X	New Jersey	X	Virginia
X	NYU		
X	Pennsylvania		
X	SUNY - Stony Brook		
X	Temple		
X	Toronto - Canada		
X	Tufts		
X	US Naval Dental School		

S:Staff\Code\Pd-Rgn&Sch

The National Agenda for 2010 was established after review of the suggestions contained in the reports of the 2009 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 24, 2011 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".

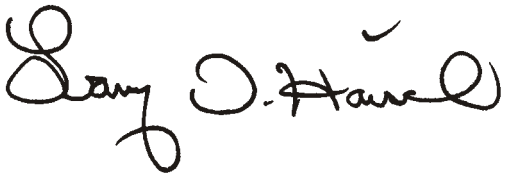
Please have each school in your Region update the following information for the National Directory of Operative Educators:

- 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

2010 NATIONAL CODE AGENDA

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

I. CURRICULUM

1. 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?

2. 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?

4. When (semester/year) are they taught?

5. Has there been any change in the number of hours in the curriculum dedicated for each restorative material?

6. Are you using web-based tools for teaching Operative dentistry? If yes, provide examples and comments including advantages/disadvantages.

7. 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?)

8. How are you testing for competency during the CLINICAL phase of school in Operative Dentistry? Do you have clinical restorative requirements? If yes, how does it mesh with CODA Standards?

II. INSTRUMENTATION

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

2. Are students taught the use of hand instruments for cutting, shaping, and refining tooth preparation in Operative Dentistry? What is the level of clinical utilization?

3. Does your school teach or not teach bevels on the gingival and proximal cavosurface margins for posterior Class II composite resin restorations? What are the observations? What is the evidence in support of the teaching?

III. MAGNIFICATION

1. The use of magnification in the practice of dentistry has become widespread enough that it is now the morn rather than the exception. While there is no argument that magnification allows for a more detailed view of one's work, does the use of magnification y educators improve the evaluation of that work? In other words, is there a statistically significant difference between performance evaluation with and without the use of magnification? What is the basis for the response? Opinion, observation, evidence (Please cite the evidence).

IV. MATERIALS

1. How are you teaching the use and handling of true RMGIC's (resin modified glass ionomer cements) at your school? (liner, base, build-up material, Class V restorations, open and closed sandwich restorations, with resin composite and amalgam). Which products are you using and do you adhere to manufacturer's mixing instructions and proportions?

2. What is the primary bonding agent type used in your undergraduate operative clinic? Specify by "generation."

3. Do you teach and use chlorhexidine or other material as a re-wetting agent, or to preserve the hybrid layer prior to applying bonding agent?

4. Are you using desensitizing agents such as Gluma under restorations or crowns?

5. What type of luting media is being used for conventional inlays, onlays, and crowns?

V. TECHNOLOGY

1. What new technologies relating to the computer assisted dental simulators and grading or imaging technology are being utilized or considered at your school?

2. What is your school's (and/or department's) view on the use of lasers in surface treatment of bonding?

3. What is your school's (and/or department's) view on the use of lasers in cavity preparation?

VI. SURVEY – COMPOSITE REPAIR

Nature and extent of teaching of direct-placement composite restoration repair

Please answer as many questions as you can

1 What is the name of your dental school?

Please note this will no t be used to identify your institution, let alone you, in any of the results; it simply allows us to track non-respondents.

2. Do you teach undergraduate students techniques for the repair as an alternative to the replacement of failing composite restorations?

○ Yes ○ No

a. If you selected "No", do you intend to introduce the reaching of repair techniques in the next five years?
   ☐ No clinical experience of repairs
   ☐ Poor experiences with composite resins
   ☐ Lack of evidence
   ☐ Other (please specify): _____

3. If you selected :Yes" to Q2 above (i.e., you do teach undergraduates techniques for repair of direct composite restorations), please indicate your reasons for doing so:

☐ Clinical experience
☐ existing evidence
☐ Case reports
☐ Other (please specify): _____

4. If your teaching of undergraduate students includes techniques for the repair as an alternative to the replacement of failing composites, please indicate the nature of this teaching. *(Select all that apply)*

☐ Didactic only with no clinical experience
☐ Didactic teaching with clinical experience
☐ "Ad hoc" clinical experience based on case scenarios encountered in student clinics

5. Please indicate (select) the indications taught for repair rather than replacement of direct composite restorations.

General considerations: (*select all that apply*):
☐ Tooth substance preservation
☐ Reduced risk of harmful effects on the pulp
☐ Reduction in treatment time
☐ Reduced costs to the patient
☐ Other (please specify): _____

a. Restorations related failures (*select all that apply*):
   ☐ Secondary caries
   ☐ Marginal defects
   ☐ Marginal discoloration
   ☐ Superficial/surface color correction
   ☐ Restoration discoloration labial/buccal

☐ Restoration discoloration occlusal
☐ Restoration discoloration cervical
☐ Restoration discoloration proximal
☐ Discoloration involving more than one surface
☐ Partial loss of restoration
☐ Abrasion/attrition/erosion
☐ Bulk fracture of an anterior restoration (incisal)
☐ Bulk fracture of an anterior restoration (proximal)
☐ Bulk fracture of an anterior restoration (proximal-incisal)
☐ Bulk fracture of an posterior restoration (occlusal)
☐ Bulk fracture of an posterior restoration (isthmus fracture)
☐ Bulk fracture of an posterior restoration (box fracture)
☐ Bulk fracture of an posterior restoration (marginal ridge fracture)
☐ Other (please specify): _____

b. Tooth related issues: Fracture of tooth tissue adjacent to an existing composite restoration (select all that apply):

☐ Anterior tooth (tooth fracture from incisal region)
☐ Anterior tooth (tooth fracture from proximal region)
☐ Anterior tooth (tooth fracture from proximal-incisal region)
☐ Posterior tooth (cusp fracture)
☐ Posterior tooth (cracked tooth)

6. In general, do you find patients willing to accept composite repairs as an alternative to restoration replacement? (select all that apply):

☐ Yes
☐ No
☐ Other (please specify): _____

7. What do you consider to be the acceptable longevity of a repair to an existing composite restoration?
_____ (years)

8. Please indicate the instruments, surface treatment and materials included in your teaching of the repair of composite restorations?

Instruments (*select all that apply*):
☐ Diamond finishing instruments
☐ Tungsten carbide finishing instruments
☐ Finishing discs
☐ Composite polishing points
☐ Composite polishing paste

Surface treatments (*select all that apply*):
☐ Mechanical roughening with removal of exposed surface
☐ Cleaning with slurry of pumice
☐ Acid etching with phosphoric acid
☐ Acid etching with hydrofluoric acid
☐ No mechanical surface treatment

Materials (*select all that apply*):

- ☐ Silane coupling agent
- ☐ Dentine/enamel bonding agent
- ☐ Flowable composites
- ☐ Hybrid composites
- ☐ Nano-composite
- ☐ Glazing resin

Do you use any other techniques you would like to tell us about?

9. Do you monitor repaired composite restorations as part of a recall system? (*select all that apply*):

   - ☐ Yes
   - ☐ No
   - ☐ Other (please specify): _____

10. In general, do repair procedures increase the longevity of your direct composite restorations by: (*select all that apply*):

    - ☐ 10%
    - ☐ 30%
    - ☐ 50%
    - ☐ 100%
    - ☐ Unknown
    - ☐ Other (please specify): _____

11. What evidence/existing literature do you rely on for teaching of the repair of direct composite restorations?

12. Are there any thoughts/opinions/comments you would like to share with us on the teaching of the repair of direct composite restorations or this clinical technique in general?

Thank you very much for your responses to this detailed survey of teaching composite repair philosophies and techniques.

The on-line version of this survey can be accessed from the CODE web-site.

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

NOTE: To locate the web site via a search engine, enter Consortium of Operative Dentistry Educators or Academy of Operative Dentistry and then use the link, CODE.

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

NAME	UNIVERSITY	PHONE #	FAX #	E-MAIL ADDRESS

CODE REGIONAL MEETING REPORT FORM

REGION I (Pacific)

LOCATION AND DATE OF MEETING:

University: University of the Pacific Arthur A. Dugoni School of Dentistry

Address: San Francisco, CA

Date: November 18 - 19, 2010

CHAIRPERSON:

Name:	Dr. Phil Buchanan	Phone #:	408-427-2552(cell)
University:	University of the Pacific	Fax #:	
Address:	San Francisco, CA 94115	E-mail:	jbuchan@garlic.com

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

Suggested Agenda Items for Next Year:

- Optical Impressioning
- MID vs CAD/CAM - a philosophical dichotomy
- Restorative Considerations in Geriatric oral Health Maintenance

LOCATION AND DATE OF NEXT REGIONAL MEETING:

Name:	Dr. P. Brad Smith	Phone #:	623-572-3812
University:	Midwestern University	Fax #:	623-572-3803
Address:	Glendale, AZ 85308	E-mail:	bsmith@midwestern.edu
Date:	**TBA**		

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
Brad Smith	MUCDM	623-572-3812	623-572-3803	bsmith@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
Greg Mitchell	LLU	909-558-4640	909-558-0235	gdmitchell@llu.edu
John Lee	OHSU	503-494-8948	503-494-8339	leejoh@ohsu.edu
Ingrid Emanuels	UBC	604-822-6626	604-584-1261	emanuels@interchange.ubc.ca
Karen Gardner	UBC	604-822-6626	604-584-1261	drkg@interchange.ubc.ca
Lance Rucker	UBC	604-822-6626	604-584-1261	lrucker@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
Robert Giannini	UCSF	650-558-9253	650-558-9256	
Michael Higashi	UCSF	650-558-9253	650-558-9256	
Sam Huang	UCSF	415-476-0914	650-558-9256	samuelhuang@earthlink.net
Jonathan Rothbart	UNLV	702-774-2516	702-774-2651	jonathan.rothbart@unlv.edu
Phil Buchanan	UOP	408-427-2552 (cell)	415-929-6654	jbuchan@garlic.com
Marc Geissberger	UOP	415-929-6531	415-929-6654	mgeissbe@pacific.edu
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2010 NATIONAL CODE AGENDA
REGION I
SUMMARY RESPONSES TO NATIONAL AGENDA

(Editor note: Questions condensed for printing purposes)

I. CURRICULUM

There were no concerns expressed regarding the use of amalgam, and the FDA reclassification is a non-issue with respect to curriculum. All institutions report increasing composite use vs. amalgam in their clinics, and this is primarily patient-driven. Composite usage for direct restorations ranges from 50% to 80%. Preclinical teaching is commonly organized according to complexity (simple-to-complex). Most schools are using self-evaluation for all preclinical projects, and many tie the self-evaluation to the final grade for the project. RMGI use as a liner/base under posterior composites is common. Requirement for successful completion of clinical competency assessments is common.

II. INSTRUMENTATION

Generally, all schools report that they teach hand instrumentation in preclinical courses, but that use in clinic is inconsistent/occasional/variable. The sharpening was discussed – some schools have contracted with Hu-Friedy for biannual sharpening/replacement of their instruments. Most address sharpening by making a stone available in the instrument cassettes for use by students/faculty. The feeling that "repetition is key" to hand instrument skills acquisition was unanimous. The point was made, however, that in addition to repetitive practice, students should be guided through a cognitive learning phase (getting a mental image before practice, assessed, e.g., by students drawing a diagram of the preparation), and an associative phase (explain how they will complete the task) on the way to attaining autonomy. UBC is doing a good job of focusing on the cognitive phase – students view a podcast first, then "lecture" (actually an interactive classroom discussion), then to sim clinic where they draw a line diagram of what they intend to do, put the approved drawing into their reflection blog, and THEN proceed with the project. For the prep drawing, students are given a sheet with three views (occlusal and two cross-sections) of a line-drawn tooth.

III. MAGNIFICATION

All participants felt that use of magnification is desirable. Most felt that improved ergonomics is the primary reason for using magnification, with opinions more varied as to whether its use enhances technical proficiency.

IV. MATERIALS

Use of Gluma as a desensitizer is common. All schools are using either a 4th and/or 5th generation adhesive system in their bonding protocol. Two schools also have a 6th-generation product available, and one "exposes" students to a 7th-generation product at the preclinical level. Glass ionomers are used widely and for multiple purposes. Most use capsule and paste pack delivery according to manufacturers' instructions, and two use powder-liquid dispensing of Fuji IX with occasional modification of the recommended p:l ratio. While there is some

diversity among the types of luting agents being used, most are using RMGI or GI for routine cementation, with some using self-adhesive resin cement on occasion. Most agreed that the number of luting agent choices in their clinics is a source of confusion, and that some standardization of the choices is needed.

V. TECHNOLOGY

The majority of schools are either currently employing (5) or have plans to employ in the near future (4) some type of CAD/CAM or optical impressioning system in their preclinical curricula. CEREC is most commonly used or planned, with some use of iTERO as well. Only one school (ASDOH) provides extensive clinical experience with hard and soft-tissue lasers in the pre-doctoral curriculum. LLU provides some clinical experience opportunities as well. Other schools generally have not incorporated lasers into their curricula. Most agree that laser surface conditioning of tooth substrates prior to bonding is not a substitute for conventional (acid) conditioning. Use of lasers for soft tissue procedures in restorative dentistry was viewed favorably.

VI. SURVEY - COMPOSITE REPAIR

The survey on composite repair was a special request from a member school. The information was tabulated and forwarded to the requesting school, and therefore, will not be published in the regional reports manual. Thank you to all the schools who participated in this survey.

2010 NATIONAL CODE AGENDA
REGION I RESPONSES
(Evidence cited where applicable)

Region I School Abbreviations

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

WU Western University of California

I. CURRICULUM

1. 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?

UA No change.

ASD No, we still teach amalgam

MUC No, we teach amalgam placement as an alternative to composite resin or other restorative materials, but is not the first choice.

UBC No.

LLU No.

UNLV Most faculty feel that amalgam will be used with decreasing frequency over the nest 5-10 years.

OHSU This did not create any additional concern.

UOP Yes. More emphasis is placed on composite-resin direct preparations and restorations within the preclinical curriculum.

UCLA No. Furthermore, we believe that the reclassification clears up a confusing situation. Prior to reclassification, amalgam's component parts (metal powder and liquid mercury) were each classified in different categories. The reclassification now places both components as well as encapsulated amalgam all in Category II – the same category that includes composite resin and gold. The reclassification action did not call for restrictions on amalgam use for any population segment.

UCSF None.

USC No, Amalgam is and will still be taught at USC. We are leaning toward conservative bonded restoration due to a curriculum change. We tend to treat initial lesions with bonded restoration and not amalgam due to the aggressiveness of the preparation. We do replace old amalgam

restorations with amalgam, however, our patients tend to choose tooth colored restoration, partially because our students recommended them.

UW No.

WU No change.

2. Clinically, has there been a change observed in the ratio of amalgam to composite resin procedures?

UA Yes - the ratio is now about 50-50. Composite cases must fit into specific guidelines, e.g., enamel must be present on all margins.

ASD No, 80% of our restorations in the clinic are composite restorations. Patient preference.

MWU No, we teach to lead with composite resin restorations and minimally invasive preparations and utilize amalgam where budgetary concerns arise and/or isolation issues arise.

UBC Yes - 1.8 amalgam:1.0 composite; more amalgam as number of surfaces increases, more composite in anterior.

LLU

Amal;Comp Ratio	07-08	08-09	09-10
1 surface	1:3	1:3.7	1:3
2 surface	1:1	1:1	1:1
3 surface	1.7:1	1.3:1	1.6:1
4 surface	3:1	2:1	2.3:1
Total Surfaces	1:1.5	1:1.7	1:1.5

UNLV Composite has been the preferred restorative material. However, amalgam is still used with some regularity because it has a lower fee.

OHSU There has been an increase in the use of composites. The only hesitancy to a further increase has been on the part of some of the faculty. We are making a concerted effort to further increase the use of composite in our student clinics, because we feel that the clinical data supports this and that it is important for the students to gain this experience in the controlled environment of the dental school.

UOP Yes. The ratio of amalgam to composite resin procedures has been gradually changing over the past decade. Slightly less than fifty percent of our direct restorations utilize amalgam at this time.

UCLA Not as a result of the FDA reclassification. We have, however, seen a continuing decline in the use of amalgam relative to composite.

UCSF Yes, lot more demand for composite, approximately 90% of total procedures.

USC Yes. We are doing much more composite restorations than amalgams. In fact, we had to remove the amalgam competency examination as a graduation requirement last year due to the scarcity of Class II amalgam cases.

UW Yes. In the past it was 1:2 composite:amalgam; it is now 2:1.

WU Composite resin use has increased (50% amalgam, 50% composite resin).

3. How are amalgam, adhesive resin, and indirect restorative techniques organized into the preclinical curriculum?

UA The techniques are presented in the following courses: DDS I Introduction to Direct Restorations; DDS II Advanced Direct Restorations; DDS II Introduction to Indirect

Restorations. Students learn amalgam and composite techniques simultaneously – amalgam projects on one side of the dentoform, composite on the other side.

ASD We teach our main operative module during the second semester of the first year. We start with amalgam, we introduce composite the week after. Then we blend them together.

MWU Integrated and taught concurrently. We begin with preparations in the anterior teeth than move to the molars and then to the premolars. Each possible procedure from minimally invasive to maximally invasive are taught in a linear sequence. We teach the foundational material ahead of the linear progression. Therefore, amalgam is not taught until we begin in the posterior area.

UBC Amalgam and adhesive resin are taught side-by-side starting in the introductory psychomotor skills course and throughout the Operative Dentistry course. Also integrated with dental anatomy; indirect not part of operative.

LLU Composite resins - amalgam - indirect restoratives.

UNLV These procedures are taught mostly in the Spring and Summer semesters of the first year and again in the Fall and Spring of the second year.

OHSU Dental amalgam and resin composite procedures are introduced and taught in order of increasing difficulty. Dental Materials topics are embedded and presented per topic. We have five OPS pre-clinical courses. We teach small resin composite and amalgam preparations and restorations in the first OPS pre-clinical course, such as small pit and fissure amalgam, Class 1, Class 3, and Class 5. In the following courses the preparations taught are more complex. For instance, in the second OPS course we teach small two surfaces class II amalgam and composites, including slots, small Class IV composite; in the third course they learn how to prepare and restore large Class IVs, composite veneers, three surfaces composites, amalgam, and complex amalgams. Porcelain veneers are also taught in the third course. In the forth course we introduce different materials such as calcium hydroxide, glass ionomer, and IRM, and the students learn when to place these materials under composite or amalgam. The last course is a review of all that was taught in the previous courses and the students use extracted teeth. This enables them to also learn about the spread, feel of, and removal of decay.

UOP Amalgam and adhesive resin preparations and restorations are taught in the 3 quarter first year pre-clinical operative course. Indirect restorative techniques are taught within the 3 quarter first year Fixed Prosthodontics course.

UCLA These techniques are taught in a series of preclinical restorative courses in our Restoration of Form, Function, and Esthetics (RFFE) curriculum track. The courses are divided into “Direct” and “Indirect” sub-tracks or threads. Indirect includes everything from inlays to fixed partial dentures.

UCSF Amalgam starts Winter Dental 1, preparation & restorations, repeated exercise Spring Dental 1, Fall Dental 2, Amalgam competency exam Spring Dental 2 Adhesive Dentistry: Fall Dental 1, Biomaterials Spring Dental 1, Spring Dental 2, Dental 3 lecture series. Indirect: Gold Spring Dental 1 and casting, Ceramic/ and CAD Spring Dental 2, Porcelain veneers Fall Dental 2, Luting exercise Fall Dental 2.

USC Under our new curriculum, amalgam and composite are taught in the same trimester (II) in the same course; single indirect restorations are taught in trimester III; posterior fixed in trimester IV and anterior fixed in trimester V.

UW By preparation type vs. material, i.e., starting with simple (Class I), then more complex then crowns.

WU We have no preclinical "operative" or "fixed" course, but an integrated clinical dentistry course that includes Introduction to Direct in the first year (DDS I), and Advanced Direct and Introduction to Indirect in DDS II.

4. When (semester/year) are they taught?

UA Preclinical instruction in First (DDS I) and Second (DDS II) Years, along with all other didactic courses in the Department of Medicine. Students are then released to Dentistry for clinical blocks.

ASD The second semester of the first year.

MWU We begin the first year of study, but the heavy emphasis is in the second year of study.

UBC 2nd semester of 2nd year through 2nd semester of 3rd year (lots of basic science in 1st year).

LLU Composite resins: Spring of first year (RESD 708), Spring of third year (RESD 823)
Amalgam: Summer of first year (RESD 709), Winter of third year (RESD 822)
Indirect Restoratives: Fall of second year (RESD 771), Winter of third year (RESD 822)

UNLV These procedures are taught mostly in the Spring and Summer semesters of the first year and again in the Fall and Spring of the second year.

OHSU DS-1 Spring; DS-2 Summer, Fall, Winter, Spring

UOP Amalgam preparations and restorations are taught in quarter one of first year and Class II amalgam practical exams are spread throughout the first three quarters. Adhesive resin techniques are taught in 2nd and 3rd quarter of first year. Indirect restorative techniques are taught in the third quarter of first year.

UCLA "Conservative Direct Restorations" runs for six consecutive quarters beginning in Winter, first year, beginning with amalgam (simple-to-complex), and then composite resin (simple-to-complex). "Conservative Indirect Restorations" runs for five consecutive quarters beginning in Spring of first year.

UCSF Amalgam starts Winter Dental 1, preparation & restorations, repeated exercise Spring Dental 1, Fall dental 2, Amalgam competency exam Spring Dental 2 Adhesive Dentistry: Fall Dental 1, Biomaterials Spring Dental 1, Spring Dental 2, Dental 3 lecture series.
Indirect: Gold Spring Dental 1 and casting, Ceramic/ and CAD Spring Dental 2, Porcelain veneers Fall Dental 2, Luting exercise Fall Dental 2.

USC We implemented a new curriculum for the class of 2014. The Direct Restoration Course (amalgam & composite) starts on second trimester of their first year. The Single Unit Indirect Course starts on the third trimester of their first year.

UW 2nd year for three semesters.

WU DDS I (first year): Introduction to Direct. DDS II: Advanced Direct and Introduction to Indirect

5. Has there been any change in the number of hours in the curriculum dedicated for each restorative material?

UA Not at this time.

ASD No.

MWU No.

UBC Not specifically but with an increase in posterior contacts, there is more curriculum time devoted to working with it (more technique sensitivity, attention to informed consent, case selection, etc.)

LLU No change in hours in the past 4 years. Class V glass ionomer restoration was added about 5 years ago, replacing the amalgam Class III restoration.

UNLV Less to amalgam, more to composite, more to indirect restorations.

OHSU Last year indirect casting restorations were moved to Pros. That freed 8 preclinical lab sessions (32 hours) to teach more amalgam, composites and veneers.

UOP There has been an increase in the number of hours in the curriculum for composite-resin direct preparations and restorations. (24 hours per year)

UCLA No, these numbers have remained relatively constant for the last few years.

UCSF Yes, more on ceramics, and we will be starting CAD/CAM training.

USC We have increased the hours dedicated for restorative starting next year with our new restorative curriculum. But still not to the extent it was taught 8 or more years ago. There was a significant decrease in preclinical lab teaching when PBL started then.
On the new curriculum, we have decreased the hours dedicated for amalgam. Composite stays the same. There has been a slight increase in the hours dedicated for Indirect Bonded restorations. We have increased the number of hours for all restorative courses; mostly because we are not emphasizing PBL as our main curriculum for clinical dentistry.

UW Time spent on cast gold has diminished, while reps and exercises for composite resin have increased. Amalgam time has remained the same.

WU Not at this time.

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

UA All lectures are posted to the web.

ASD All the lectures are posted on BlackBoard and recorded on ECHO 360 for the students to view. We give all our exams electronically secured by secure browser, the students can get their results within 10 minutes. Today's generation is very skilled in using the computers which makes things easier for us and them. The disadvantage is that they can get easily distracted during lectures with searching the Net or chatting.

MWU No, however we do have students perform a literature review of the amalgam controversy.

UBC Yes, we have a blogging project using **Educause** (formerly ELGG) software for e-Portfolios. **Adv:** the software was purchased several years ago therefore no cost outlay for new projects using it: instructors are familiar with it and so fast learning curve; easy to set up learning communities. **Dis:** appearance is quite dated; no email notification. Dr. Karen Gardner has developed our own private web platform space (www.diastemas.net) through U21 funding. This is a web-platform where students post their work, learning communities are formed and assignments can be privately uploaded being locked down to just the instructor and the student. Also IPR on this site – students present, discuss, and defend their preclinical work in international online communities. Also – learning communities in the operative module, 8 bays, post photos of each. Project, blog with instructor, blog on other students' cases – comment threads DOCUMENT the peer teaching and learning, it's all graded. Quality of work is up, earlier entry into clinic. 4-tiered: lurkers, novices, regulars, and elders. Challenge has been getting PT faculty up to speed for blogging. **Adv:** very specialized for our ePortfolio and

International Peer Review projects; Allows private posting of assignments. Dis: expensive; requires upgrading by us. Also using BB course management system and iClickers classroom response system (immediately engages students with the evaluation process; best use: Formative – show students the results and let them discuss the vote.)

LLU Using selected videos from YouTube:
Class III preparation: http://www.youtube.com/watch?v=Zn1-Nj7GlRE
Class IV restoration: http://www.youtube.com/watch?v=2g_QQgpYD6E
Composite veneer: http://www.youtube.com/watch?v=_cciNFZ78OU
Mylar "pull technique": http://www.youtube.com/watch?v=zKMNEXr5Vus&feature=related

UNLV No.

OHSU We refer students to the ADA and AGD websites for articles.

UOP Moodle, CLE Portfolio, videos, blogs (similar to UBC)

UCLA We use only a curriculum management system (ANGEL), for posting of course materials such as PowerPoint presentations, syllabi, and handouts.

UCSF Moodle/CLE Portfolios, videos, blogs. Positive: great reference. Negative: lots of faculty time and organization.

USC Yes. We put courseware, manuals, clinical examination criteria, lab quality assurance, etc, in mostly a PowerPoint presentation format on the school's website so the student can refer to the material anywhere, including on the clinic floor. We are starting to use video for some of the demonstrations for our courses.

UW We use the CATALYST course management tool - ppt slides, surveys, quizzes, discussion groups. Time and access controls are used for assessments.

WU All lectures posted on the Web using Blackboard, along with some in-house produced videos. We are looking into podcasting.

7. 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?)

UA Self evaluation is done for every simulation project, along with review of all work by at least two instructors. There are also mandatory student interviews to review all projects following each module.

ASD We have criteria for evaluation of the daily projects. The students should evaluate themselves before they get checked by an instructor. We use the same criteria for all the progress exams and competencies.

MWU We have grading rubrics that are used after each procedure in the pre-clinical area to self assess. They are then graded by faculty using a similar rubric. Then, the faculty and student review the similarities and differences of each assessment.

UBC **BLOGGing** – students are required to reflect on every Operative clinical assignment and place these reflections in a folder in their learning communities. The reflections for every clinical assignment are based on guiding questions provided along with the critical requirements. In addition, students are required to complete a peer review on one of the reflections in the learning community. All work is summative.

LLU Limited self-assessment: students self-assess in a couple of courses but there is no formal evaluation of their assessment.

UNLV We use portfolio projects in the Intro to Operative Course in the DS 1 year. Students photograph their dentoform preps and restorations and prepare PowerPoints to assess how well their preps and restorations correlate to the assessment/grading criteria that are used in the course.

OHSU Self-Evaluation Forms have been created for every procedure. These forms present specific criteria and treatment objectives. The students are asked to fill out a self-evaluation form for each simulation clinic project. Each time we evaluate a prep or restoration we go over their self-evaluation and discuss each section with them. They are also asked to fill out a form for each practical exam and we bump their grade up if their self-evaluation agrees with the faculty evaluation. We work hard at having the students take ownership of their situation; and to discourage the "What do I do next " syndrome that has affected dental education for years. We stress that the student must be prepared for the procedure, whether pre-clinical or clinical, and we ask a lot of questions about why things are as they are. "Why did you stop your prep there, what is that, etc, etc?" Our goal is to "teach a man to fish" as opposed to "giving a man a fish."

UOP We have fabricated typodont tooth examples of different classes of cavity preparations for amalgam and composite material. These examples are used to calibrate faculty and students regarding grading criteria and grades.

UCLA We are currently developing formal self-assessment protocols for the restorative dentistry curriculum, as well a portfolio system for documentation and self assessment of preclinical and clinical cases.

UCSF All test cases are first self-graded by students, then graded <u>in pen</u> by faculty. Students learn standards by comparison.

USC Criteria sheet, self evaluation. Practice & practice. They start self evaluation process for their TPX exams early in the preclinical stage. They are asked to do so in some of their clinical examinations, such as cementation.

UW We use a three-level self-assessment (self, partner, consensus evaluation) that is tied to the instructor's assessment of the exercise or procedure. We also utilize some peer evaluation.

WU All simulation exercises are self-assessed.

8. How are you testing for competency during the CLINICAL phase of school in operative Dentistry? Do you have clinical restorative requirements? If yes, how does it mesh with CODA Standards?

UA Clinical competency is tested for amalgam and composite. Following attainment of a defined minimum level of clinical experience, students can challenge the competencies when they are ready to do so.

ASD We do not have requirements. Student should complete a certain number of essential experiences before they demonstrate that they are ready to take their competencies. The number of essential experiences depends on the student's progress and clinical skills.

MWU We test during their third or fourth year based upon when the faculty mentoring the students feel they are ready for a competency. We do not have specific requirements and feel that competency is more important than numbers and this seems to mesh with the CODA standards.

UBC There is no testing on patients, the mark is an average of the daily assessed work.

LLU <u>Competencies</u>:

D2: OSCE (Objective Structured Clinical Exam) including Class II and III preps

D3/4: Complex (cusp replacement) amalgam; gold partial/full coverage; FPD; full ceramic

Mock Boards:

D3: Fall (Class II composite on manikin); Spring (Class II amalgam on manikin)

D4: Summer (Class II amalgam and composite; at least one on a patient); Fall (Class II amalgam and Class III composite; both done on patients); Winter (WREB qualifying: any two of either a Class II composite, Class III composite, Class II amalgam, and/or partial coverage crown.

Clinical restorative requirements:

Qualifying requirements to take competency exams and restorative points for graduation requirements. CODA standards were met for accreditation.

UNLV We do have a point system for requirements. Student grades are, in part, based on the number of points accrued. Clinical competency is assessed using a series of clinical performance exams. i.e. – Class II amalgam, Class III composite, Single crown, and Fixed bridge.

OHSU In Operative Dentistry we test competency after the student has hit DVU (dental value units) thresholds. Specifically we test Caries Risk Assessment, Class II and III Composite, and Class II Amalgam. One of those competencies is on our School Board Exam, which is run much like the WREB. In all competencies, the student is required to write modification requests if they are necessary in the particular situation. The student is graded by two instructors in specific points in the assessment. Prosthodontics tests competency in gold and PFM castings.

UOP We do not have clinical restorative requirements for procedures. Competency is determined by the types of cases that students complete. In addition, we require students to successfully complete five operative test cases and two board rehearsal operative procedures.

UCLA Skills Assessments: Students must demonstrate the ability to independently provide restorative treatment via several clinical skills assessments. These assessments may be taken only after completing the minimum clinical experiences in each restorative area, e.g., a student may only take the composite resin skills assessment after completing all of the minimum clinical experiences in composite resin restorations. Skills assessment cases are selected by the student from among her/his assigned pool of patients and are limited to procedures that have previously been planned as part of the standard diagnosis and treatment planning protocols.
Comprehensive Competency Examination: Upon satisfactory completion of the requisite clinical experiences and skills assessments, students are eligible to challenge the Restorative Dentistry Comprehensive Competency Examination. The competency exam is conducted in the simulation laboratory using virtual patients, each with unique medical and dental histories, radiographs, diagnostic casts, and artificial carious lesions on typodonts. Individual components of the exam are basic science related to dental caries; interpretation of significant medical findings; radiographic interpretation; diagnosis, treatment planning, restoration technique, appropriate follow-up care, and professional behavior. Students are given four hours to complete the exam, each step of which is then graded by a team of calibrated Restorative faculty. We require students to complete minimum numbers of clinical experiences with different procedures before they are permitted to take a clinical skills assessment. We contend that inasmuch as the skills assessments and Comprehensive Competency Examination are used to assess competency, the requirement for minimal experiences prior to a formal assessment is consistent with CODA standards

UCSF Competency skill assessment exercises on both typodont, and during clinical patient care.

USC We have a series of Operative Competency Examinations, we called Operative Clinical Examinations (the students call it Comps): 1 Amalgam Class II; 6x Composite Exams, which must include 1 Class II & 1 Class III. (We allow the students to substitute the amalgam Class II with a composite Class II if they do not have an amalgam case.); 3 Crown Prep Exams; 3 Crown Cementation Exams.
We also have a Clinical Restorative Requirement. It varies year by year, but is documented in

each class's Clinical Syllabus: 20 SIU (Single Indirect Units); 1 Fixed Partial Denture; 125 Operative Procedures; Pass-All Operative Clinical Exams; 800 EUs (Experience Units); 7 Dentures, including 4 complete, and 3 RPD plus some miscellaneous procedures; Endo & Perio.

UW We have clinical competency assessments for amalgam, composite resin, and a crown restoration. These must successfully be completed in order to graduate.

WU We have a minimal clinical experience requirement and clinical competency assessments in amalgam and composite resin.

II. INSTRUMENTATION

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

UA The main goal is to recognize unsupported tooth structure and know how to remove it. Start with the basics of how to hold and utilize the instrument, using artificial teeth.

ASD The students do some waxing during the dental anatomy and occlusion course. Some students use Learn-A-Prep.

MWU Tell, show, and do. We try to use small group settings to show students techniques and then allow them to attempt the procedure using the new technique and then follow closely the student's progress and understanding. We introduce all instruments and techniques in this manner. We start in the first year curriculum with waxing teeth to help in morphology understanding and to help develop hand skills and develop their eye for detail.

UBC D3 students are required to sharpen instruments from clinical cassettes, learning the instruments and their maintenance – servicing and sharpening competency. Each student services three cassettes. One student, 3 sterile cassettes, once a day, graded before they go back to sterilization, then back into service. Also maintains sharpness of clinical instruments! RX Honing Machine proving very useful – students use this along with other stones, etc.

LLU Practice, practice, practice!

UNLV Practice and repetition.

OHSU We don't believe one instrument is better than another for enhancing hand skills, we believe repetition and one-on-one instruction is the best way for enhancing hand skills.

UOP Students need to understand our preparation and restoration criteria and be able to visualize the ideal prep and restoration. They work with one of our twelve group instructors for the entire morning or afternoon session on a particular prep and restoration. It is recommended to students that they work on operative for about five days a week for a minimum of one hour per day. Designated tutors are available to help after hours. When students have achieved a satisfactory preparation and restoration, group instructors check it off. There are ten operative practical examinations under timed conditions that are used to assess hand skills and operative competence. Remediation after hours is available for the students who are deemed to need extra help by their group instructor.

UCLA Repetition is the key.

UCSF Begin with ergonomics, positioning, long before touching a handpiece; Learn-a-Prep on tooth block all typodont; Repetition is KEY; using more natural teeth, this is making a difference in aspects such as beveling. Using notched roots with bite registration material to mount in dentoform. Exercises are started in the mannequin (No benchtop).

USC Practice and more practice for use of traditional techniques. We have students complete a combination of daily or course projects and TPXs to enhance the student's hand skill. We use electric and oscillating handpieces for areas or situations that are difficult using traditional handpieces or instruments.

UW Repetition. We also use a set of three "super-sized" ideal prep tooth models and instruments for initial training and we get positive feedback on this.

WU No response submitted.

2. Are students taught the use of hand instruments for cutting, shaping and refining tooth preparation in Operative dentistry? What is the level of clinical utilization?

UA The full range of hand instrumentation is taught and utilized in the clinic.

ASD Yes , they use hand instruments in the clinic when needed. Hand instruments are used extensively in preclinic for refinement AND for measuring, but they are probably not used extensively in clinics.

MWU Students are taught to use all of the traditional hand instruments to shape operative and fixed preparations designs, however, the clinical application is dependent upon the Clinical Care Coordinators specific requirements. We would like all of our students to refine the margins and internals with hand instruments, especially indirect restorations.

UBC Yes, at every level.

LLU Students are taught the use of hand instruments in their Operative courses and all utilize them during exams. The use of hand instruments in clinic, however, is not consistent, except possibly during competency and mock board exams. Students are taught how to sharpen hand instruments during their D1 Operative course. Sharpening stones are part of the restorative cassette, but are probably not used as often clinically.

UNLV Students are taught to use hand instruments (i.e. – hatchets, chisels, margin trimmers) in the preclinical courses. Clinical follow up is dependent on individual faculty. Instrument kits in the clinic are mirrors of the preclinical kits. Instruments are gone through twice a year to check for sharpness – shipped out to Hu-Friedy, the sharpen and/or replace.

OHSU The students use the same instruments and techniques learned in the pre-clinic for the clinic.

UOP Yes. Hand instruments are part of the clinical restorative cassette used by each student to complete a restorative procedure. Anecdotally, hand instruments are not used as much on the clinic floor as they are in Simulation Laboratory.

UCLA Students are indeed taught the use of hand instrumentation, and we find that the clinical utilization is high. The instruments are commonly used to refine walls and margins for Class II amalgam preparations and cast gold preparations, and for beveling gingival enamel margins in Class II composite restorations.

UCSF Yes, hoes, hatchets, spoons. All available and used in clinical as well. Students each have their own stone. Variety of hand instruments has been reduced.

USC Yes. We have emphasized on hand instrumentation so much that sometimes students tend to overuse hand instruments in clinical situations. It started with amalgam. We emphasize shoulder-bevel margin preparation for metal margins and 90 degree butt joint shoulders for our porcelain margins. Most of our bonded restorations are finished with finishing burs or oscillating handpieces.

UW Hand instrumentation is taught in preclinical. Clinical utilization is infrequent and instructor

dependent. It is a low priority issue.

WU We teach hand instrument use and use them in the clinic.

3. Does your school teach or not teach bevels on the gingival and proximal cavosurface margins for posterior class II composite resin restorations? What are the observations? What is the evidence in support of the teaching?

UA Bevels are required on all non-occlusal enamel surfaces.

ASD Yes, we do teach bevels to improve finishing and retention of the restoration.

MWU Yes, we teach beveling of those surfaces and we test on those in both preclinical and clinical levels. Clinically we have not been open long enough to observe any positive or negative results. We teach Operative from Sturdevant's Art and Science of Dentistry which supports beveling of gingival and proximal cavosurface margins, especially to remove friable enamel. There are areas and times when beveling is not recommended (i.e. wide proximal flares).

UBC Yes. Students are able to accomplish this. Most clinical instructors on the clinic floor are not aware of this. We rely on the Tom Hilton chapter in the Summit textbook to support our teaching in this regard.

LLU We teach beveling of the proximal cavosurface margins when the exit angle of the walls is 90degrees. No beveling is needed if the exit angles are already obtuse. Gingival margins are beveled if the margin is in enamel and greater than 1 mm from the cemento-enamel junction, but are not beveled if the margin is on cementum. Supporting evidence is from Summitt, et al, "*Fundamentals of Operative Dentistry, A Contemporary Approach*" (3rd edition).

UNLV Schmidlin PR, K Wolleb, T Imfeld. *Influence of Beveling and Ultrasound Application on Marginal Adaptation of Box-only Class II (slot) Resin Composite Restorations*. Operative Dentistry, 2007, 32-3, 291-297
Isenberg BP, Leinfelder KF. *Efficacy of beveling posterior composite resin preparations.* J Esthet Dent 1990; 2: 70-73
Opdam NJ, Roeters JJ, Kuijs R, Burgerdijk RC,. *Necessity of bevels for box only Class II restorations*. J Prosthet Dent 1998; 80: 274-279
Ben-Amar A, Metzger Z, Gontar G. *Cavity design for Class II composite restorations*. J Prosthet Dent 1987; 58: 5-8
Owens BM, Halter TK, & Brown DM. *Microleakage of tooth-colored restorations with a beveled gingival margin.* Quintessence International 1998; 29: 356-361
Porte A, Lutz F, Lund MR, Swartz ML, & Cochran MA . *Cavity designs for composite resins* Operative Dentistry 1984; 9: 50-56.

OHSU We teach that 45 degree bevels are to be placed on enamel unless the proximal exit angle is obtuse. Research has demonstrated that proximal bevels significantly reduce marginal leakage. No gingival bevel is placed if the cavosurface is on cementum. When sufficient dentin-supported enamel remains for adequate bevel placement, the evidence shows that composite adaptation is enhanced.

UOP Yes, we teach a .5mm bevel on facial and lingual proximal cavosurface margins and a gingival bevel as long as enamel is not eliminated if placed. There are fewer incidences of open or rough margins with bevel placement. Tooth preparation of a bevel is recommended for an optimal marginal seal. Marginal beveling has a greater effect in minimizing microleakage than the type of adhesive used. Beveled restorations show less marginal staining than non-beveled restorations at recall appointments. Beveling improved fracture resistance of anterior composite restorations. Anecdotally, there is a reduced incidence of white line or halo at the enamel margin of the facial and lingual proximal when a bevel is placed.

Double-blind randomized clinical trial of posterior composite restorations with or without bevel: 6-month follow-up. Coelho-de-Souza FH, Klein-Júnior CA, Camargo JC, Beskow T, Balestrin MD, Demarco FF. J Contemp Dent Pract. 2010 Mar 1;11(2):001-8.
Influence of beveling and ultrasound application on marginal adaptation of box-only Class II (slot) resin composite restorations. Schmidlin PR, Wolleb K, Imfeld T, Gygax M, Lussi A.Oper Dent. 2007 May-Jun;32(3):291-7.
Necessity of bevels for box only Class II composite restorations. Opdam NJ, Roeters JJ, Kuijs R, Burgersdijk RC. J. Prosthet Dent 1998 Sep;80(3):274-9.
Effect of adhesive systems and bevel on enamel margin integrity in primary and permanent teeth. Swanson TK, Feigal RJ, Tantbirojn D, Hodges JS. Pediatr Dent. 2008 Mar-Apr;30(2):134-40.
Influence of restorative technique, beveling, and aging on composite bonding to sectioned incisal edges. Coelho-de-Souza FH, Camacho GB, Demarco FF, Powers JM. J Adhes Dent. 2008 Feb;10(2):113-7.

UCLA We do teach beveling the proximal margins (always), and beveling the gingival margin when it is in enamel. Our observations are that this teaching is commonly put into practice. As evidence, we cite the chapter by T. Hilton (and its associated references) in the Operative Dentistry textbook by Summit, et al.

UCSF We teach bevels on sound enamel only - to improve surface area to bond, but if access is too difficult we do not recommend beveling. We stress the sandwich technique.

USC We teach gingival bevel if the enamel thickness is more than 0.5mm. For situations when the enamel thickness is less than 0.5mm, a butt joint is recommended.

UW We teach beveling these margins when enamel is present, depending on the amount of extension, based on bonding studies and empirical evidence.

WU Bevels are required on enamel margins except on occlusal.

III. MAGNIFICATION

The use of magnification in the practice of dentistry has become widespread enough that it is now the norm rather than the exception. While there is no argument that magnification allows for a more detailed view of one's work, does the use of magnification by educators improve the evaluation of that work? In other words, is there s statistically significant difference between performance evaluation with and without the use of magnification? What is the basis for the response? Opinion, observation, evidence (Please cite the evidence)

UA Use of magnification will be required in the future.

ASD We require our students to use magnification (2.5x) from Designs for Vision. Our students have used loupes since we started the school 8 years ago in both the clinic and sim-clinic. The students do not like to work without loupes – they feel a big difference in their performance if they do not have them. When they need to send their loupes back for adjustment we try to provide them with a loaner if possible because they prefer to use them.

MWU We think that the practitioner can see their own work much better with magnification. We can evaluate all phases of preparation designs better with magnification. The basis for magnification is experiential from many of the current faculty.

UBC Faculty and students must have telescopes, but there are no specific procedures for which their use is required. That said, when students use them, they use them for most procedures.

LLU Opinion and observation: Most of our faculty utilizes some form of magnification, as the visual acuity tends to diminish with advancing maturity. Does this improve their evaluation skills is unknown. Students probably wish faculty would grade without magnification!
Citation: *Magnification's effect on endodontic fine motor skills.* Bowers DJ, Glickman GN, Solomon ES, He J. J Endod.2010 Jul;36(7):1135-8. Epub 2010 Apr 18. (Dr. Bowers, Department of Endodontics, Baylor College of Dentistry, Texas A&M University System Health Science Center, Dallas, Texas, USA. david.bowers@eglin.af.mil)
ABSTRACT: INTRODUCTION: The purpose of this study was to quantitatively investigate the effect of magnification on fine motor skills used in endodontics. METHODS: This study used a novel manual dexterity test that was performed with and without magnification. An 8x operating microscope and 2.5x dental loupes were used for the magnification tests. Forty subjects, 20 with microscope experience and 20 without, participated in the study. Performance on the test was evaluated by using an accuracy scoring system, and the time needed to complete the test was recorded for each subject. RESULTS: A significant increase in accuracy score with each level of magnification was demonstrated (P <or= .05). In addition, the use of operating microscope significantly increased the time needed to complete the test among subjects with less than 3 years of microscope experience. CONCLUSIONS: The use of magnification to enhance fine motor skills was supported in all age groups and experience levels.

UNLV No response submitted.

OHSU No response submitted.

UOP There are a significant number of research articles indicating that the use of magnification loupes improves dental ergonomics. The article cited below (Branson 2004) showed that there was a quantifiable change in acceptability of posture for clinicians wearing magnification lenses and suggested that the use of such lenses in dental education may be warranted. It can be concluded that faculty and students have a high level of satisfaction with their purchases of magnification loupes (Hagge 2003) and a high percentage feel that loupes offer significant benefits (Meraner 2008). However research has not yet shown that there is a significant difference between performance evaluation with and without the use of magnification (Donaldson 2007).
Branson B.G. *Effect of magnification lenses on student operator posture*. J Dent Educ. 2004 Mar;68(3):384-9.
Hagge M.S. *Use of surgical telescopes by senior dental students: a survey*. J Prosthodont 2003 Dec;12(4):271-9.
Meraner M, Nase JB. *Magnification in dental practice and education: experience and attitudes of a dental school faculty*. J Dent Educ. 2008 Jun;72(6):698-706.

UCLA Students are required to purchase loupes/telescopes and to use them for restorative procedures at the preclinical and clinical levels. Our evidence is entirely empirical, but we feel unequivocally that magnification improves in evaluation of restorative work.

UCSF Not aware of improved performance - magnification is mainly taught for ergonomics and better visibility.

USC No response submitted.

UW No response submitted.

WU We plan to institute a requirement for the use of magnification in the near future.

IV. MATERIALS

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?

UA We use Vitrebond, Fuji IX, and Fuji II LC. We always follow the manufacturer's directions. Simplified versions of the instructions are provided with each kit.

ASD We use RMGI for Class V and open & closed sandwich restorations. Students are provided with copies of all the manufacturer's instructions in Simulation Clinic I. We use capsules primarily, but we also teach students how to use the powder/liquid delivery mode since they are likely to use this in the community clinics.

MWU We have several lectures and seminars teaching RMGIC's and have preclinical and clinical applications taught and used. We do not use the sandwich technique in an exposed (deep Cl II) restorations. We do teach the technique under composite restorations and amalgam restorations. We teach and adhere to the manufacturer's recommendations.

UBC Fuji II LC - do a dry mix - adding more powder than manufacturer's instructions to improve handling (less sticky), can shape prior to cure; Photac-Fil - manufacturer's instructions.

LLU RMGI's are taught as part of Operative I for use as a basing material and a definitive restorative for Class V lesions. Both open and closed sandwich techniques are demonstrated. We teach students to follow manufacturers' instructions.

UNLV RMGIC's are taught for the following: liner, base, Class V restorations, open & closed sandwich restoration, with resin composite and amalgam. Vitrebond, Fuji II and IX.

OHSU
- Liner under composite restorations
- Liner to seal/protect calcium hydroxide following direct/indirect pulp cap under all restoration types
- Base for open sandwich "bonded base" restoration in Class II, III, IV, V composite restorations with dentin gingival margins.
- Build-up where more than 50% of the preparation is sound tooth structure (mostly as a "block out" for indirect restorations
- Liner material: Vitrebond (3M/ESPE)
- Restorative/build-up material: Vitremer (3M/ESPE); Fuji II LC (GC)
- We do adhere to manufacturer instructions

UOP RMGIC's (Vitrebond usually, Fuji II RMGIC LC infrequently) are used as liners under direct restorations (composite or amalgam) only on the dentin of a preparation that is significantly deeper than ideal. We do not use RMGIC's as a build-up material due to their lack of strength. RMGIC's may also be used to relieve small undercuts on indirect preps. RMGIC's are used for some Class V preparations on high caries risk patients who have a low esthetic need, and can be adequately isolated. (Fuji II LC RMGIC). Students are taught the open sandwich technique as one of their options for a Class II composite prep with a gingival floor below the CEJ. Many of our clinical instructors discourage the use of the open sandwich technique with a RMGIC due to the difficulty of adequately placing it (large syringe tip) on the gingival floor/margin and the increased wear of the material when exposed to oral fluids and abrasive materials. It is more common for our students to use a flowable composite (Esthet-X Flow) of .5mm thickness as their first light cured increment along the gingival floor and margin, proximal margins, axial wall, and gingival floor. This is followed by our regular composite (Premise). When RMGIC's are used we adhere to all manufacturer mixing instructions and proportions.

UCLA We use three RMGI products: Fuji Lining LC, Fuji II LC, and Fuji Plus luting cement. (We also

use Fuji IX.)

UCSF Fuji II LC compule mixed open sandwich

USC We do not usually use liners unless we decided to leave "affected dentin" in the deepest part of the cavity to prevent a pulp exposure. In that case, we use Fuji Lining LC (GI) to cover the "affected dentin" before restoring the tooth. We use mainly composite for build-ups and carious or non-carious Class V lesions. We do have RMGI (Fuji II LC) as a restorative material if a faculty chooses to use the material. Open sandwich technique is not the standard, but an option, if a faculty decides that it is best for a specific situation. We always adhere to the manufacturer's recommendation.

UW We use Fuji Liner LC, Fuji II LC (for Class Vs), and Rely-X Luting. We have a step-by-step book of mixing/handling instructions written by our department.

WU We use Vitrebond, Fuji II LC, and Fuji IX, all according to manufacturers' instructions.

2. What is the primary bonding agent type used in your undergraduate operative clinic? Specify by "generation."

UA 5th generation is the only type used in clinic.

ASD We primarily use a 5th generation. A 4th generation is also available.

MWU We use both a 5th and 6th generation product. We also expose the students to 7th generation bonding agents, but do not feel comfortable with the current evidence for clinical bond strengths.

UBC 4th generation

LLU 4th generation. A 6th generation product is in the D1 kit, and etch of enamel is discussed, but use of the product is very limited.

UNLV 5th generation

OHSU 4th generation

UOP 5th generation

UCLA 4th generation

UCSF 4th and 5th generation

USC 4th generation

UW 4th generation

WU 5th generation

3. Do you teach and use chlorhexidine or other material as a re-wetting agent, or to preserve the hybrid layer prior to applying bonding agent?

UA No.

ASD We teach this during the operative module. Variable use in clinic.

MWU We do teach pre-clinically and clinically the use of a wetting agent before applying a bonding agent. We rely more on glutaraldehyde based products more than chlorhexidine based on the evidence and the decrease in post operative sensitivity. We utilize the chlorhexidine as an

antimicrobial rinse to decrease microbe population before bonding.

UBC No.

LLU No.

UNLV We teach the use of Gluma as a re-wetting agent, antibacterial, and desensitizing agent.

OHSU We discuss in lecture; have not incorporated into student clinics.

UOP No.

UCLA It is mentioned, but not stressed in lecture, although we are considering adopting this as our standard protocol.

UCSF We do mention/teach; but, evidence is mixed.

USC We started using chlorhexidine rinse before cementing fiber posts but not for composites yet. It was one of the topics for discussion in our faculty meeting recently.

UW We primarily teach re-wetting with water then blot drying. Chlorhexidine is used occasionally.

WU No. We teach/use re-wetting with water, avoidance of over-drying, and blot drying.

4. Are you using desensitizing agents such as Gluma under restorations or crowns?

UA Gluma application is required for all amalgams and for all exposed dentin on crown preps for vital teeth.

ASD No.

MWU Yes, we routinely use these agents.

UBC No.

LLU No.

UNLV Yes. Under Class I and Class II composites and amalgam. Yes, in those instances where RMGI cement or resin cement will be used. No. When using universal resin cements. Gluma interferes with the smear layer chemistry necessary for universal resin cements.

OHSU No.

UOP No.

UCLA We have Hurriseal available and it is used when recommended by the attending instructor under amalgams and metal or metal-ceramic crowns.

UCSF Gluma is used under amalgam.

USC No. If there's need to seal the dentin under the restoration or crown, we use a 4th generation bonding agent to seal the dentin prior to finalizing the margin.

UW Gluma is used under cast restorations.

WU Gluma placement is required on exposed dentin on prepared vital teeth.

5. What type of luting media is being used for conventional inlays, onlays, and crowns?

UA We use zinc phosphate most of the time for luting – the rationale is that it makes it easier to recover a crown if it is not seated properly and it is inexpensive. Mixing of zinc phosphate cement is performed for the students by DAs. We also have a RMGIC available.

ASD In the clinic we use RMGI to cement gold, porcelain and PFM crowns. We also use self adhesive resin cement for Procera crowns.

MWU We use RMGIC's and type I, II, and III Resin Reinforced Adhesive Luting agents depending upon the situation – wide range of choices reflective of diverse faculty preferences but narrowing it down.

UBC GI and RMGI.

LLU Mostly GI – both conventional and resin-modified. Zinc phosphate and polycarboxylate are used in some selected situations. Bistite IIDC and Accolade PV are used for all-ceramic restorations and porcelain veneers. Dual-Link is used when cementing fiber posts.

UNLV RMGI for "all" metal restorations and PFM; Universal resin cement for "all" metal restorations, PFM, inlays and onlays; and total-etch and SE bonded resin cement for "All" porcelain restorations.

OHSU RMGI

UOP FujiCem paste-paste cartridge (usually) or RelyX Unicem capsule (occasionally)

UCLA GI and RMGI

UCSF Ketac cement, Fuji Plus, for porcelain veneers. Use resin cement Nexus III. Indirect ceramic Nexus III with dual cure. Rely X for posts, some crowns and onlays.

USC Conventional inlay/onlay: Heated light cure hybrid composites if the material is not too thick. Crowns: Resin modified Glass Ionomer (Fuji Cem)

UW RelyX Luting and Comspan

WU For metal: zinc phosphate mostly, also Rely-X Luting and Comspan. For ceramic: Rely-X ARC, Rely-X Veneer, and Variolink II.

V. TECHNOLOGY

1. What new technologies relating to the computer assisted dental simulators and grading or imaging technology are being utilized or considered at your school?

UA None at this time, but will probably introduce CEREC II within the next year.

ASD We teach CEREC in the pre-clinic and it has been used in the clinic for selected cases. We have a new system from Whip-Mix called Verus – the students can scan their preparations (crown, onlay) to evaluate themselves (for crown preps only, not applicable for intracoronal). iTERO in AEGD. We also adopted new technology called IDEA which is a software you can build in the computer to practice dental procedures from home using a haptic device. The technology is still in the development stage and not many applications are available yet but we think it is going to have a great potential in the future (developer of DentSim).

MWU We do teach CAD/CAM dentistry preclinically and clinically and use them in discussing preparation designs and critiques for student preparations. We do not use them for grading. Have caught many lesions w/ICAT – has been a great investment!

UBC None (Dolphin optical impressioning in pre-doc Ortho).

LLU Not using any computer assisted simulators or computer assisted grading. Starting CEREC training for faculty now in anticipation of use with students.

UNLV We are considering the 3M-ESPE COS scanner for impressions, and are also considering CEREC for CAD/CAM restorations. We believe that there is tremendous potential for optical impressioning re: cost and efficiency. On the imaging front, CBCT's are required for all implant work-ups, prior to surgical placement.

OHSU None being used; three CEREC units in preclinical, soon to be introduced in clinic.

UOP None. (iTERO in limited use, best suited for multiple tooth cases; use increasing).

UCLA None at this time.

UCSF Looking at CEREC/E4D imaging preclinical preps; CAD/CAM also to be taught milling, stain/glaze, and luting.

USC We've looked at a couple of models but are not considering any at this time.

UW We have a six-operatory "Advanced Technology" clinic area where digital radiography, E4D, and iTERO are available.

WU None at this time.

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

UA Not used - our view is that there is no justification for its use at this time.

ASD Not used.

MWU We do not teach using this technique but we do expose the students to the technique for information only.

UBC Not used.

LLU Not teaching the use of lasers for surface treatment of bonding.

UNLV No policy in place presently. First laser course to being in Spring of 2011.

OHSU For enamel, results equivocal. Some evidence that it is comparable to acid etching, some worse. For dentin, preponderance of evidence shows that it is detrimental to adhesion (see review: Hilton TJ, (Swift EF, ed). *Critical Appraisal: Adhesion to Laser-Prepared Tooth Structure*. J Esthet Rest Dent 18:370-375 (2006)

UOP Not enough significant research to warrant trials.

UCLA Evidence does not support the use of lasers as a replacement for or in addition to conventional techniques.

UCSF Laser surface not comparable to acid etch, still need to acid etch enamel and/or dentin.

USC Not considering laser for this purpose.

UW Laser surface treatment for bonding is, at best, equivalent to traditional, and may be worse. Acid conditioning is still needed.

WU Not used.

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

UA Not used - our view is that there is no justification for its use at this time.

ASD 12 units – we're big on lasers. We use it for Class III, IV & V clinically – mostly AEGD residents, some students. Used extensively for soft tissue. Bob Levine presents the course each year.

MWU We do not teach this technique. Have purchased three soft tissue laser units.

UBC Not used.

LLU Cavity preps are taught using conventional high and slow speed handpieces. Some preps (essentially Class V's) are performed using lasers under supervision of a particular faculty member. Two laser units available.

UNLV No policy in place presently. First laser course to begin in Spring of 2011 for D3s with emphasis on soft tissue applications.

OHSU Lasers adversely affect adhesion (see question 2). It also is more time consuming compared to conventional hand piece preparation, and can be more restrictive in gaining access to carious areas on a preparation.

UOP Not enough significant research to warrant trials. Soft tissue laser used in esthetic dentistry.

UCLA Not used at this time - no rationale for laser cavity preparation compelling enough to teach it or use it in our clinics.

UCSF Simple Class I or preventive resin restoration's or Class V, not Class II using Erbium YAG lasers. Three laser experts on faculty. Picasso available in clinic for soft tissue.

USC We do not consider using laser for cavity preparations.

UW Slower and more technique sensitive than rotary, with limitations on what it can be used on. Preps are rough with choppy margins. Not faster, cheaper, nor better than rotary. May have some application for children, phobics, small lesions (PRR), and sealants. Laser IS useful for soft tissue procedures – more precise than electrosx. with no halo effect, and less bleeding/faster healing compared to scalpel.

WU Not used.

VI. SURVEY - COMPOSITE REPAIR

The survey on composite repair was a special request from a member school. The information was tabulated and forwarded to the requesting school, and therefore, will not be published in the regional reports manual. Please check the web site for this information. Thank you to all the schools who participated in this survey.

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.

NO RESPONSES SUBMITTED

Suggestions for CODE.

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

NO RESPONSES SUBMITTED

CODE REGIONAL MEETING REPORT FORM

REGION II (Midwest)

LOCATION AND DATE OF MEETING:

University: UNMC College of Dentistry

Address: Lincoln, Nebraska

Date: September 16 - 17, 2010

CHAIRPERSON:

Name:	Dr. William Johnson	Phone #:	402-472-9406
University:	UNMC College of Dentistry	Fax #:	402-472-5290
Address:	Lincoln, Nebraska	E-mail:	wwjohnson@unmc.edu

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

Suggested Agenda Items for Next Year:

No responses submitted

LOCATION AND DATE OF NEXT REGIONAL MEETING:

Name:	Dr. George Gatseos Dr. Michelle Brichacek	Phone #:	303-724-7075 303-724-7080
University:	University of Colorado-Denver	Fax #:	303-724-7079
Address:	Aurora, Colorado	E-mail:	george.gatseos@ucdenver.edu
Date:	**TBA**		michelle.brichacek@ucdenver.edu

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 __II___ Attendees Form

NAME	UNIVERSITY	PHONE #	FAX #	E-MAIL ADDRESS
Michelle Brichacek	Colorado	303-724-7080	303-724-7079	michelle.brichacek@ucden
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Hide Watanabe	UNMC	402-472-3049	402-472-5290	hwatanabe@unmc.edu
Steve Holcomb	CRDTS	478-951-4922		sfhdmd@comsouth.net

2010 NATIONAL CODE AGENDA
REGION II
SUMMARY RESPONSES TO NATIONAL AGENDA

(Editors Note: Questions condensed for printing purposes)

I. CURRICULUM

The reclassification of amalgam has not affected the schools in our region. The responding schools indicated a slight increase in the use of composite resin compared to amalgam. The responding schools indicated that they teach amalgam, adhesive resin and indirect restorative techniques in the first two years of dental school. There has been no significant changes in the number of curriculum hours for these procedures. Several of the responding schools indicated that they use BlackBoard or something similar. Two schools use Turning Point and D2L, respectively. Advantages are availability outside of school hours and availability to monitor student progress via on-line quizzes/tests/grades. Most all skills are via self-evaluation forms from the student with input from the faculty. All clinical phases of dental school are assessed via various competencies in the disciplines.

II. INSTRUMENTATION

Simulation clinics and repetition are the best tools for developing and enhancing hand skills. Hand instruments are taught and expected throughout the curriculum. 3 responding schools teach bevels, while the majority of the other responding schools do not teach bevels.

III. MAGNIFICATION

Due to the Compilations of the Magnification Survey results being posted to the CODE website, there was no response from our schools. The individual responses were submitted directly to the survey.

IV. MATERIALS

Vitrebond as liner/base. Fuji products are utilized in a variety of applications. Optibond Solo Plus, Prime&Bond NT, Adper Single Bond Plus, PermaQuick, 3M Single Bond Plus are the preferred materials for bonding agents. Only one school uses chlorhexidine, however several schools are considering the research. Four schools use some type of desensitizing agent occasionally. Fuji Plus is the material of choice by the majority of responding schools.

V. TECHNOLOGY

AxiUm, CEREC, EMAX, simulation labs and digital radiography are the technologies used most frequently. All responding schools indicated they do not use lasers.

VI. SURVEY - COMPOSITE REPAIR

The survey on composite repair was a special request from a member school. The information was tabulated and forwarded to the requesting school, and therefore, will not be published in the regional reports manual. Thank you to all the schools who participated in this survey.

2010 NATIONAL CODE AGENDA
REGION II RESPONSES
(Evidence cited where applicable)

Region II School Abbreviations

COLO	**University of Colorado**	**MINN**	**University of Minnesota**
CREG	**Creighton University**	**UMKC**	**University of Missouri -KC**
IOWA	**University of Iowa**	**UNMC**	**University of Nebraska**
UMAN	**University of Manitoba**	**SASK**	**University of Saskatchewan**
MARQ	**Marquette University**	**SIU**	**Southern Illinois University**

I. CURRICULUM

1. 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?

COLO No. We continue to teach amalgam as an acceptable (and in some cases superior) restorative material. Since we teach a problem-based approach to operative dentistry treatment instead of a materials-based approach, we still believe amalgam as a preparation design and as a material has a place in patient treatment.

CREG No.

IOWA No.

UMAN No. We still utilize amalgam as a restorative material of choice in certain treatment plans, depending on the caries risk assessment.

MARQ No.

MINN No responses submitted.

UMKC No responses submitted.

UNMC No. We will monitor the situation to see what develops in the future.

SASK This has had very little effect on us in Canada

SIU No responses submitted.

2. Clinically, has there been a change observed in the ratio of amalgam to composite resin procedures?

COLO Yes, more composite restorations are being placed than amalgam restorations. The shift has occurred gradually over the past 15 years. I am not sure if the change is due to patient request; students think it is "cool" to place composite; clinic faculty don't place amalgam in their practice; or some other factor or factors. Great topic for investigation in dental education.

CREG Yes, mostly younger patients.

IOWA No.

UMAN Yes – significantly more composite resin restorations being treatment planned in the clinic.

MARQ Steady over last several years, but the trend is more resin than amalgam.

MINN No responses submitted.

UMKC No responses submitted.

UNMC Yes. In 2003, 82% of Class II restorations were amalgam and 18% were composite resin. In the last year, 68% were amalgam and 32 % were resin.

SASK This has remained about the same for the last five years that I have been at our school.

SIU No responses submitted.

3. How are amalgam, adhesive resin, and indirect restorative techniques organized into the preclinical curriculum?

COLO Our Operative curriculum is taught as three courses: Direct Restorations 1; Direct Restorations 2; and Indirect Single Tooth Restorations 1. Amalgam, composite, and bonding are taught in the first two courses. Cast gold restorations (including inlays) are taught in the third course. There are several other courses in which small operative topics are also taught such as Cariology, Esthetic Restorative Dentistry; etc.

CREG Amalgam followed by resin, then indirect gold and porcelain, and finally anterior direct resins.

IOWA First year preclinical: adhesive resin 1st, amalgam 2nd, then indirects are taught second year.

UMAN Amalgam & adhesive resin & indirect restorations (CEREC & ED4) are introduced at the beginning of the D1 operative preclinical curriculum with all of the above preps/rests being incorporated into the D1 curriculum. D2 operative curriculum reintroduces these preps/rests at a higher operative level in the preclinical curriculum.

MARQ We currently teach Restorative Dentistry in the first year Preservation & Restoration Series of courses.

- Sequence is Amalgam, Resin, Glass Ionomer, Post & Core Buildups, Complex Restorations, Inlays/Onlays, Single Units
- With curriculum modification, will begin with minimally invasive dentistry. i.e. small to large, beginning with remineralization techniques.

MINN No responses submitted.

UMKC No responses submitted.

UNMC

- Dental materials and techniques (D-1, fall term) Amalgams, Adhesive Resins and Indirect Restorative Techniques.
- Operative I (D-1, spring term) Amalgams and Adhesive resins.
- Operative II (D-2, fall term) Amalgams, Adhesive resins and Indirect Restorative Techniques.
- Fixed Prosthodontics I (D-2, spring term) Indirect Restorative Techniques.
- Fixed Prosthodontics II (D-2, summer term) Indirect Restorative Techniques.

SASK Amalgam and adhesive resins are taught systematically from the least destructive to the most destructive. We start with fissure sealants as the very first restorations that the students do, followed by preventative restorative resins, through Class I composites then Class I amalgams then Class II composites, etc. on through to complex amalgams. Indirect restorations are all taught in the prosthetics course.

SIU No responses submitted.

4. When (semester/year) are they taught?

COLO Direct Restoration 1 - Spring of D1 year
Direct Restoration 2 - Summer of D1 year
Indirect Single Tooth Restorations - Fall D2 year

CREG Class I amalgam and some resins 2nd semester of 1st year; remaining restorations 1st and 2nd semesters of 2nd year.

IOWA Adhesive resin is taught at the end of 1st semester and amalgam 2nd semester first year.

UMAN D1 and D2 1st and 2nd semester

MARQ D1 year - Fall, Spring and Summer sessions
All day on Mondays

MINN No responses submitted.

UMKC No responses submitted.

UNMC See answer to previous question.

SASK We start teaching operative dentistry on the students first full day of dental school in first year.

SIU No responses submitted.

5. Has there been any change in the number of hours in the curriculum dedicated for each restorative material?

COLO No change in hours has occurred since a department curriculum review was done 3-4 years ago. However, the school is conducting a comprehensive curriculum review in anticipation of class size changes. Another review of the restorative/operative curriculum will occur then.

CREG Shift of Class I to 1st year and a corresponding increase in both manikin experiences and direct resins during the 2nd year.

IOWA Increase in resin composite and glass ionomer restorative materials/techniques

UMAN The number of hours have stayed fairly consistent over the past couple of years, however, there has been an increase in hours to teach CEREC and ED4 in the D2 curriculum in 1st semester.

MARQ Slight increase due to curricular changes.
1. Taking pediatric restorative component out of Spring semester Preservation and Restoration course.
2. Opened up 5 full days/10 half days.
3. Will use 5 half days for remediation session for all Department of General Dental Sciences courses.

MINN No responses submitted.

UMKC No responses submitted.

UNMC Not a significant change in the past few years. Operative I discontinued the teaching for Indirect Restorative Techniques and added more information on composite resin restorations and will include information on CEREC restorations in the next year.

SASK No.

SIU No responses submitted.

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

COLO Nothing commercial. All of our course content is provided to students via Blackboard web-based courseware. All of our textbooks are digital. Any other electronic media used has been internally developed. We are always on the look out for good electronic instructional materials – this is the way students today learn.

CREG Yes, PowerPoint lectures uploaded to blueline (Angel).
ADVANTAGE: Student availability and access
DISADVANTAGE: Poor quality of clinical photos especially soft tissue

IOWA No web-based tools. We have ICON (like Blackboard) to post lectures, schedules, testing and use Turning Point (ARS) in some lectures.

UMAN Yes, online tutorials with an exit test to analyze the comprehension of the material from the tutorial. These exit tests are not for marks, but serve as a method for the student to evaluate their learning from the tutorial.
ADVANTAGES: independent learning, adjunct to the traditional lecture method of learning as students are very technologically savy and wish to learn on their own time, students state that they find the online tutorials as helpful to assess what they really know & understand.
DISADVANTAGES: some students do not put "effort" into the exit test as it is not for marks, time consuming for me to create (the instructor).

MARQ Yes, D2L.

MINN No responses submitted.

UMKC No responses submitted.

UNMC None outside of putting lectures and some additional information on Blackboard.

SASK Yes, we use the BlackBoard learning management system for communications, assignments, and I use a "wiki" as an e-portfolio tool.
ADVANTAGES: quick, readily available to students and instructors, easy to monitor progress, permanent record with lots of photos, easy to grade, etc.
DISADVANTAGES: some start up work necessary, and the students may think this is more work, but this is not really a complaint.

SIU No responses submitted.

7. 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?)

COLO We require as a matter of procedure in preclinic and some clinic activities that students' self assess their work before the faculty assess. We ask students to explain their self-assessment to us so we can determine their level of technique comprehension. We use Evaluation Forms for daily exercises and Practical exams. These have a scale range from 0-4.3 (Scoring 4.3 = superior, 4.0 = very minor procedural errors, 3.0 = several minor procedural errors, 2.0 = moderate procedural errors, 1.0 = major procedural errors, less than 1.0 = one or more critical procedural errors. The form has student assessment column and a faculty assessment column. Students are expected to complete and self-assess prior to faculty assessment.

CREG Self assessment of both first and second year students on new experiences (preparations and restorations). AD HOC clinical self assessment on most clinical situations.

IOWA Students self-evaluate in all preclinical and clinical Operative courses.

UMAN I have created self assessment portfolios that contain marking rubrics that students must complete when they hand in their evaluated work (operative preps, restorations, wax added, carving of wax blocks). I use the same marking rubric to mark their work, and then I compare where there are differences in the marks. Their own individual self-assessment mark and my final mark is used to calculate the total/final mark with the following formula:
Final Mark = My Mark – (Difference between student & my mark) / 2.
Therefore, students who self-assess their work correctly, will not lose marks. Students who inflate or deflate their mark, will lose marks in the end.

MARQ We use student self-assessment throughout the Department's Preclinical and Clinical curriculum.
1. The students assess each preparation/restoration prior to a faculty check utilizing a SAT/ACC/SUB/DEF format for each criteria.
2. Should the faculty member come to a different conclusion, they discuss the difference.

MINN No responses submitted.

UMKC No responses submitted.

UNMC In most courses and in our clinics the students are given the opportunity to self-evaluate projects and clinical skills. In preclinical prosthodontic courses there are some opportunities for the students to evaluate each other's work.

SASK Everything in preclinical must be self-evaluated before instructor grading. We are working to have this also true for the clinic, but it is not quite there yet. If their grade and the instructors grade are more than 10% off, the student and the instructor have a talk to find the discrepancy.

SIU No responses submitted.

8. How are you testing for competency during the CLINICAL phase of school in operative Dentistry? Do you have clinical restorative requirements? If yes, how does it mesh with CODA Standards?

COLO In operative dentistry, competence is determined by a series of accomplishments. Each semester a course grade is given. This grade is determined based on three evaluations 1) results of one or two operative dentistry clinical examinations; 2) number of operative dentistry clinical experiences the students have had; 3) subjective evaluation of students progress towards competence made by their comprehensive dentistry group leader.
Competency review boards are held periodically by the Associate Dean for Academic Affairs at which time each student is assessed for progress towards competence. Final determination of competence is made by the Director of Operative Dentistry after consideration of data from all sources.
We do not have clinical requirements for operative dentistry. However, we do provide a suggested number of experiences for the student to achieve. Students are evaluated on the number of experiences they have based on the amount it was believed they could have had.

CREG Yes, multiple clinical competencies, Junior and Senior competencies, as well as multiple Mock Board scenarios. Requirements for amalgam restorations, direct resin restorations, as well as indirect restorations (both porcelain and gold inlays/onlays). EXCEEDS CODA's minimal standards.

IOWA Clinical competency exams. No requirements, but suggested experiences.

UMAN Yes, the students have clinical competencies in the D3 and D4 clinical curriculum. They are given a list of competencies (Example: An inlay prep, Cl II Comp, Cl II Ag, Cl IV, Cl V, Cl I, Cl III etc) and they must complete 8 competencies in the entire year. They must pass 8 competencies and if they are not successful in the competency, they have to complete another competency of the same type. Competencies are associated with marks, so students try to have a number of clinical experiences before attempting to do a competency.

MARQ 28 Manikin and Patient-Based Skills Exam

1. Comprehensive Care Based Educational Model so no specific requirements other than minimum procedures prior to challenging a patient-based skills exam.
2. 5 Conference Reports per year by Group Leaders.
3. 22 Core Competencies
4. 17 Patient, 11 Manikin

MINN No responses submitted.

UMKC No responses submitted.

UNMC We have a Class II amalgam and a Class III or IV composite resin competency for our D-3 students. These may be challenged any time during the D-3 year. One must be attempted before the end of the first semester and both must be successfully passed by the end of the spring term. D-4 students have Mock Boards which simulate the CRDTS board. They generally complete a Class II and a Class III on patients in one, 4 hour period.
Yes we do have minimal clinical experiences.

D-3 16 Class II (Amalgam or Composite Resin)
6 Class III/IV (Composite Resin)
20 Additional restorations – Any classification or materials.
4 Single, indirect restorations, any kind of restoration.

D-4 22 Class II (Amalgam or Composite Resin)
10 Class III/IV (Composite Resin)
25 Additional restorations – Any classification or materials.
4 Single, indirect restorations, any kind of restoration. Each student must complete a minimum of 10 single restorations during their D-3 and D-4 years. Single units done in the prosthodontic clinic are credited toward the operative requirement.

SASK Clinical competency is determined by a body of work that has been evaluated by clinical instructors over the course of their training years. We have restorative requirements that are not related to CODA.

SIU No responses submitted.

II. INSTRUMENTATION

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

COLO Working in a clinical simulated environment in preclinic. Expecting the students to treat the simulated patient as if it were a live patient. Placing restrictions on tooth preparation in preclinic which provides the same limitations as in clinic. We teach the use of hand instruments in the Simulation Clinic preclinically. Since they have the same instruments during patient care in the Comprehensive Clinic the students are to use the hand instruments as instructed previously in preclinic.

CREG 1st year: Wax carvings and bench top experiences
2nd year: Bench top experiences, especially indirect restorations
Bench top experiences allow the students (while LEARNING) to evaluate themselves as well as develop hand skills in a more precise fashion then on a manikin or in a "sim-lab"
Indirect Restorations (gold onlays) develop precise motor skills as well as help in developing the attention to detail that is required in this profession and lacking in this current generation.

IOWA Good simulation clinic and dental anatomy waxing.

UMAN Starting with Learn-A-Prep, using high and low speed hand pieces and hatchet. Followed by table top preparation on the Frasaco dentoform using the handpieces and hand instruments.

MARQ Repetition
1. Handpieces
2. Waxing
3. Magnification
approximately 90% of students have loupes in their 1st year

MINN No responses submitted.

UMKC No responses submitted.

UNMC Our response is very similar to Manitoba's, except we use Columbia dentoforms.

SASK I use a 10X scope with metric grid to have the students operate to a tolerance of ±0.3 mm in all three axes. Once they have achieved this ability, the rest of their work improves dramatically.

SIU No responses submitted.

2. Are students taught the use of hand instruments for cutting, shaping and refining tooth preparation in Operative dentistry? What is the level of clinical utilization?

COLO Students are taught the use of hand instruments (and are expected to use them) in all preclinical restorative courses. The same instruments are available at all times in the clinic. Students are expected to use these instruments when doing so will enhance the quality of the preparation and longevity of the restoration. One appropriate example is the removal of unsupported enamel that will fracture through manipulation or fatigue over time.

CREG Yes, although they are impractical on typodont teeth (fractures).
Clinical utilization is recommended although utilization is not as high as it ideally should be.

IOWA Yes. Mostly cavosurface margin refinement.

UMAN Students are still utilizing hand instruments for refining tooth prep in D3 and D4 levels. The same hand instruments are used and taught preclinically and into the clinic.

MARQ Very little.

MINN No responses submitted.

UMKC No responses submitted.

UNMC Yes, we do teach the use of hatchets and gingival margin trimmers in the preclinical labs. They are utilized in the clinics as well, although the level is probably quite low.

SASK Yes. The level of use slips a bit in the clinic, but it is still required. Set up of hand instruments is mandatory for each operative appointment.

SIU No responses submitted.

3. Does your school teach or not teach bevels on the gingival and proximal cavosurface margins for posterior class II composite resin restorations? What are the observations? What is the evidence in support of the teaching?

COLO We teach bevels on all accessible enamel surfaces of composite preparations. We believe that the value of bevels is diminishing and will be eliminated as evidence mounts. Bevels will still be valuable for esthetic blending reasons and to increase surface area but not as a routine feature of composite preparations.
During the teaching in preclinical simulation on typodont teeth we discuss the controversy of bevels versus non-bevels. Some instructors prefer bevels more than others. As a consensus the cavosurface margin needs to be smooth.

CREG Bevels are not taught, although research is leaning in that direction.
It should also be noted that beveling should be based carefully on clinical judgment as one could decrease the amount of enamel as one approaches the CEJ. Once at cementum does one bevel? Again clinical judgment should be addressed.
Beveling of proximal walls makes it harder to find margins.

IOWA No bevels; use finishing diamond to remove rough enamel edges.

UMAN No, we do not teach bevels on gingival and proximal cavosurface margins.

MARQ We do not teach bevels

MINN No responses submitted.

UMKC No responses submitted.

UNMC We teach gingival bevels only if there is enough enamel present that we can reasonably expect the process of beveling will not completely remove the enamel. We do not recommend beveling proximal cavosurfaces.

SASK Yes we teach proximal bevels, especially in conservative slot preparations. Gingival bevels are also taught, but care must be exercised to not damage the remaining enamel.

SIU No responses submitted.

III. MAGNIFICATION

Due to the Compilation of the Magnification Survey results being posted to the CODE website, there were no responses from our schools.

IV. MATERIALS

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?

COLO We use Vitrebond but only as a liner/base under composite and amalgam restorations (are we all using the same definitions of sealer, liner and base?). There is an increasing use of sandwich restorations for NCCL treatments using glass ionomer liners.
We use Premise (Kerr) microhybrid composite.
We have both Tytin and Dispersalloy amalgam available.
Manufacturers mixing instructions!!??? Those are thrown away before the material hits the clinic floor.

CREG Luting Cement: Fuji Plus; capsules
Class Vs (cemental) Fuji IX; capsules
Class Vs sandwich Fuji IX; capsules
Base Vitrabond click dispenser is used majority of the time
Base Fuji II LC (limited); capsules
Provisional restorations: Fuji Triage; capsules.
Fuji Triage is utilized for provisional restorations due to it opaque color (actually more esthetic) but more importantly for ease in recognizing for removal (pulp chambers!). It is also utilized for its very high fluoride content.

IOWA RMGI are used as a liner, build-up material, CI. V restorations, open and closed sandwich restoration, with resin composite and amalgam. Fuji II LC, Vitrebond, Fuji Cem, Ketac-Cem.
Yes, we adhere to manufacturers instructions.

UMAN We use Vitrebond (RMGI) as a liner/base and we use Fuji IX (GI) as a build up material for caries control procedures, non-carious cervical lesions, carious Cl V subgingival lesions.
I have created an Operative Dentistry Clinic Reference Manual which has all the materials that are available in the operative clinic dispensary, indications for use, and the mixing and application techniques. Students can carry this manual in their clinic jacket pocket and refer to it when necessary.

MARQ Liners under amalgam and composite resin, Class V, open and closed sandwich technique.
1. Vitrebond as a liner
2. Fuji II LC as a restorative material
3. Yes, we use either a “clicker” dispenser for Vitrebond or a triturratable.

MINN No responses submitted.

UMKC No responses submitted.

UNMC We use RMGIC for liners, Class V restorations, and both types of sandwich restorations. It would be our liner of choice whenever indicated for both amalgam and composite resin restorations.
We use Fuji Lining LC and Vitrebond as liners.
Fuji II LC is our choice as a RMGIC restorative material.
Yes, we do adhere to the manufacturer’s handling recommendations.

SASK We use RMGIC materials as base (as needed), Class V restorations, open and closed sandwich preparations with composite. We use Fuji II LC, and we scrupulously follow manufacturers instructions.

SIU No responses submitted.

2. What is the primary bonding agent type used in your undergraduate operative clinic? Specify by "generation."

COLO We use Optibond Solo Plus (Kerr) as our primary bonding agent.

CREG Prime&Bond NT 5th generation bonding agent.

IOWA Three step total etch system Optibond FL

UMAN Adper Single Bond Plus by 3M

MARQ Optibond FL (4th Generation), All Bond 2 (4th Generation), Prime & Bond NT (5th Generation)

MINN No responses submitted.

UMKC No responses submitted.

UNMC 4th generation PermaQuick

SASK We use 3M Single Bond Plus in the single dose dispenser.

SIU No responses submitted.

3. Do you teach and use chlorhexidine or other material as a re-wetting agent, or to preserve the hybrid layer prior to applying bonding agent?

COLO We teach that the hybrid layer must be damp (moist) at the time of bonding. We only teach the students to re-wet the dentin with clean water if needed. No other chemicals or agents are used. We have considered such techniques in the past but have not incorporated them into our base curriculum.

CREG Yes.

IOWA No response submitted for this question.

UMAN No, we do not teach or use chlorhexidine.

MARQ We teach it as an option but not mandatory protocol.

MINN No responses submitted.

UMKC No responses submitted.

UNMC Currently no, but we are considering the evolving research on the topic and may begin using chlorhexidine in the future.

SASK No.

SIU No responses submitted.

4 Are you using desensitizing agents such as Gluma under restorations or crowns?

COLO No.

CREG No.

IOWA SuperSeal for tubule sealing.

UMAN We use Gluma under some alloy restorations and crowns.

MARQ Micro Prime G (Gluma) for desensitizing.

MINN No responses submitted.

UMKC No responses submitted.

UNMC Yes, but not routinely. We will consider it if the patient has a history of sensitivity.

SASK No.

SIU No responses submitted.

5. What type of luting media is being used for conventional inlays, onlays, and crowns?

COLO We use Fuji Plus for the cementation of the restorations mentioned.

CREG RGIC: Fuji Plus (inlays, onlays, conventional crowns, posts)
Zinc Phosphate cement (inlays and onlays)
For all ceramic restorations Calibra is utilized

IOWA RMGI - Fuji Cem

UMAN Fuji Plus as a luting cement, Calibra for ACC.
Zinc phosphate and RelyX for MCC and FGC

MARQ RelyX (conventional means gold or PFM?)

MINN No responses submitted.

UMKC No responses submitted.

UNMC Fuji Plus is used most. We have zinc phosphate in the dispensary if the faculty member prefers to use it.

SASK We use RMGIC luting agents for crowns; Panavia as a resin cement for prosthetics, and Zinc phosphate for onlays.

SIU No responses submitted.

V. TECHNOLOGY

1. What new technologies relating to the computer assisted dental simulators and grading or imaging technology are being utilized or considered at your school?

COLO We are using none and are not considering any. However, it is clear that these technologies are coming and will be valuable for student learning. We think the digital impression technology may have an application to indirect assessment of preparations.

CREG All components of AxiUm are utilized (EHR, billing, and grading modules)
Emalgo is utilized for radiographic interpretation.
The possibility of a simulation lab is being looked into.

IOWA We have CEREC 3D, EMAX.

UMAN We purchased 4 Dent Sim units (by DenX) in 2003 which we do not use. The handpieces are heavy, the units need to be calibrated often and they break down often. Support from the company was poor. The units tended to very sensitive to the light, humidity etc and tended to become de-calibrated. I would spend 1 hour re-calibrating a unit which would become de-calibrated very easily. The handpieces were very heavy and what was drilled intraorally appeared VERY different to what was seen on the computer screen (the image). We store supplies in this room now.

MARQ Digital Impressions (either Itero or Lava), Nobel Biocare Scanner, Isolites

MINN No responses submitted.

UMKC No responses submitted.

UNMC We are beginning to use CEREC units. We are not using computer assisted dental simulation or grading.

SASK We will be incorporating digital radiographs soon, and student portfolios using the imaging software. We will be using digital impressions as soon as our unit arrives. Grading is done via AxiUm, our clinic computer system.

SIU No responses submitted.

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

COLO We have not developed any opinion on this topic. However, we do have a laser treatment research center at the school that could be leveraged to make such assessments.

CREG While diode lasers would be cost effective and have been shown to increase bonding, at this point in time, upkeep and set up have limited its availability as a clinical staple.

IOWA No.

UMAN No we do use or teach.

MARQ Do not use.

MINN No responses submitted.

UMKC No responses submitted.

UNMC We do not recommend it.

SASK We do not use lasers for anything but soft tissues.

SIU No responses submitted.

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

COLO See response to previous question.

CREG That would indicate the use of WaterLase which due to financial considerations is highly impractical. Setup and maintenance again are big factors contraindicating its use in our clinical institution and learning environment.

IOWA Do not use them.

UMAN No we do not use or teach.

MARQ Do not use, not worth the associated cost for limited application.

MINN No responses submitted.

UMKC No responses submitted.

UNMC We have not had the opportunity to use lasers in our courses or clinics for cavity preparations. We do not have a formal view on their use.

SASK No response submitted.

SIU No responses submitted.

VI. SURVEY - COMPOSITE REPAIR

The survey on composite repair was a special request from a member school. The information was tabulated and forwarded to the requesting school, and therefore, will not be published in the regional reports manual. Please check the web site for this information. Thank you to all the schools who participated in this survey.

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.

NO REGIONAL AGENDA SUBMITTED

Suggestions for CODE.

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

NO RESPONSES SUBMITTED

CODE REGIONAL MEETING REPORT FORM

REGION III (South Midwest)

LOCATION AND DATE OF MEETING:

University: LSUHSC School of Dentistry

Address: New Orleans, LA

Date: November 3 - 5, 2010

CHAIRPERSON:

Name:	Dr. Alan Ripps	Phone #:	504-941-8261
University:	LSUHSC School of Dentistry	Fax #:	504-941-8218
Address:	New Orleans, LA 70119	E-mail:	aripps@lsuhsc.edu

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

Suggested Agenda Items for Next Year:

No responses submitted

LOCATION AND DATE OF NEXT REGIONAL MEETING:

Name:	Dr. Christine Beninger	Phone #:	214-828-8468
University:	Baylor School of Dentistry	Fax #:	214-874-4544
Address:	Dallas, TX	E-mail:	cbeninger@bcd.tamhsc.edu
Date:	**TBA**		

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 ____III_____ Attendees Form

NAME	**UNIVERSITY**	**PHONE #**	**FAX #**	**E-MAIL ADDRESS**
Terry Fruits	Oklahoma	405-271-5735	405-271-3006	terry-fruits@ouhsc.edu
Stan Cobb	Baylor	214-828-8281	214-874-4544	scobb@bcd.tamhsc.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
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Tom Spranley	LSU	504-941-8256	504-941-8218	tspran@lsuhsc.edu
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2010 NATIONAL CODE AGENDA
REGION III
SUMMARY RESPONSES TO NATIONAL AGENDA

(Editor note: Questions condensed for printing purposes)

I. CURRICULUM

All schools agreed this did not cause any concern about the future use of amalgam restorations in our schools. There were no changes from what we expected. All schools have shown an increase in composite restorations placed at their school but not due to changes in status of classification of amalgam. There was a variation between schools as to when these procedures were taught. Some were introduced as separate courses and some introduced all techniques in one course. One mentioned teaching a lesion and then covered all materials for treating that lesion rather than treating a course by material. There were variations as to when these topics were introduced. It depended on when the course was given. Most of the schools have not changed their allocation for the different materials in the last several years. There were some increases in time for composite procedures and one school saw a decrease in inlay/onlay that was incorporated into their single unit crown course. None of the schools are using "web-browsing" but some provide some materials on their schools intranet, such as Moddle or BlackBoard for distribution of lectures and videos. Majority of responding schools use student self-evaluation with faculty feedback. Competency exams or specific number of clinical experiences are required prior to graduation. These requirements are based on CODA standards.

II. INSTRUMENTATION

All schools agreed that practice is the best method to learn hand skills. Some schools use simulators and devices to enable the student to learn. Feedback was also critical to aid the practice. All schools are teaching the use of hand instruments to refine their preparations. All schools are seeing a lesser degree of utilization in clinic. There was a mixed response to the beveling question. One requires bevels on all margins as long as there is enamel to bevel. Half of the schools require gingival bevels on enamel. Two schools do not require or use bevels on any of the margins. All schools using bevels do so believing they are reducing microleakage.

III. MAGNIFICATION

None of the schools presented any conclusive evidence showing improved performance with magnification. All schools recommended their use and two schools require them.

IV. MATERIALS

All schools are using RMGI for all procedures. One school uses a composite for build-up instead of RMGI and all schools follow manufacturer's mixing directions. GC products are used in all schools. One school is using Miracle Mix for temporary restoration when they know they will need to remove all of it. Scotchbond Multipurpose Plus, Bisco OneStep Plus,

Clearfil SE Bond, Prime and Bond NT, All-Bond II are used at our schools in this region. None of the schools are using materials as chlorhexidine as a re-wetting agent to preserve the hybrid layer. One school uses Gluma under all restorations. Some schools teach it in didactics but not used in clinic. Only one school uses it routinely under all restorations. One, only if indicated but not under crowns. It's mentioned in their didactics but not used in clinic. One school doesn't allow its use except on abfraction or root surface sensitivity. All schools are using a RMGI luting cement. Some also use Relyx Unicem , Multilink. Under ceramic restorations a resin cement is used.

V. TECHNOLOGY

Only items mentioned were chairside scanners such as Itero. One school is looking into intra-oral video cameras. None of the schools are using laser in Operative Dentistry. None of the schools use this technology.

VI. SURVEY - COMPOSITE REPAIR

The survey on composite repair was a special request from a member school. The information was tabulated and forwarded to the requesting school, and therefore, will not be published in the regional reports manual. Thank you to all the schools who participated in this survey.

2010 REGIONAL CODE AGENDA
REGION III RESPONSES
(Evidence cited where applicable)

Region III School Abbreviations

BAY	Baylor University	**UOK**	University of Oklahoma
LSU	Louisiana State University	**TENN**	University of Tennessee
MISS	University of Mississippi	**UTHSA**	University of Texas-San Antonio
		UTH	University of Texas-Houston

2010 NATIONAL CODE AGENDA

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

I. CURRICULUM

1. 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?

BAY No.

LSU No. The use of composites is limited to being able to isolate the tooth. If it cannot be isolated then amalgam is required for posterior restorations.

MISS There has been no concerns over the FDA decision last year on amalgam classification. Current opinion is that composite is becoming more widely used and requested at our school.

UOK No.

TENN At this time, we would propose that the reclassification of dental amalgam has caused little or no concern for our patients, our dental college, or for the state of Tennessee. There are a few patients who request 'white fillings,' as opposed to silver (dark) fillings, for one reason or another. We have just learned that the EPA is going to open investigations on dental amalgams, and that our school will have to purchase an amalgam separator in order to continue with the placement of dental amalgams. This might possibly represent the end of dental amalgam usage in our dental school. In the past, we have preferred to use dental amalgam, as the restoration of choice, when placing subgingival restorations.

UTSA We have not heard of any concerns.

UTH Although the general trend in private practice has been toward using amalgam less, there has not seemed to be any added change in perspective brought by the FDA reclassification.

2. Clinically, has there been a change observed in the ratio of amalgam to composite resin procedures?

BAY Yes, many more posterior composite resin restorations are being placed as compared to amalgam restorations. Ten years ago, D3 students placed no posterior composite restorations and now 51% of Cl II direct restorations are composite. Similar results were noted for Cl I restorations. When the Cl II data is reviewed for D3/D4 combined, 63% of the restorations the students place are composite. Again, similar results were noted for Cl I restorations.

D3 Cl II Direct Restorations By Year	Cl II Amalgam	Cl II Composite	% D3 Cl II Direct Restorations (Composite)
2002-2003	519	0	0
2003-2004	556	370	40
2004-2005	420	364	46
2005-2006	482	372	44
2006-2007	445	351	44
2007-2008	436	505	54
2008-2009	500	594	54
2009-2010	700	740	51

D3 + D4 Cl II Direct Restorations By Year	Cl II Amalgam	Cl II Composite	% Cl II Direct Restorations (Composite)
2002-2003	1359	55	4
2003-2004	1345	1199	47
2004-2005	1251	1360	52
2005-2006	1257	1296	51
2006-2007	1032	1527	60
2007-2008	1165	1829	61
2008-2009	1044	2044	66
2009-2010	1259	2149	63

LSU No. We've required composite restorations for posterior teeth for many years. We place about the same number of each type of restoration.

MISS No. Data from our electronic records show over the last four years there was a 57.8% posterior amalgam and 42.2% posterior composite placement average. There was less than 1% variance in each year compared. Overall looking at all direct restorations, 65.9% were resin and 34.1 were amalgam.

UOK Yes, over the past few years we have seen an increase in the number of resin composite restorations compared to amalgam due mainly to an increase in its use in small occlusal pit and fissure restorations.

TENN

July, 2006 to January, 2007:	Amalgams - 452	Resins - 1,190
January , 2007, to July, 2007	Amalgams - 769	Resins - 2,088
July, 2007, to January, 2008	Amalgams - 722	Resins - 1,640
January, 2008, to July, 2008	Amalgams - 1,040	Resins - 2,046
July, 2008, to January, 2009	Amalgams - 878 (35%)	Resins - 1,654 (65%)
January, 2009, to July, 2009	Amalgams - 1,243 (37%)	Resins - 2,124 (63%)
July, 2009, to January, 2010	Amalgams - 868 (31%)	Resins - 1,958 (69%)
January, 2010, to July, 2010	Amalgams - 1,334 (45%)	Resins - ,606 (55%)
Total Restorations from July, 2008, to July, 2010:		
	Amalgams - 4,323 (37%)	Resins - 7,342 (63%)

UTSA Yes, we are now doing more composite at a ratio of two to one.

UTH Electronic Patient Record reports:
Aug 06-Jul 07: 23.4% amalgam/76.6% resin [79 amalgam (exclusively posterior) vs. 259 resin (134 anterior, 125 posterior)]
Aug 07-Jul 08: 34.7% amalgam/65.3% resin [1291 amalgam (exclusively posterior) vs. 2433 resin (1116 anterior, 1317 posterior)]
Aug 08-Jul 09: 31.3% amalgam/68.7% resin [2240 amalgam (exclusively posterior) vs. 4918 resin (1865 anterior, 3053 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 here. We have not noticed any significant change in the attitude towards amalgam here.

3. How are amalgam, adhesive resin, and indirect restorative techniques organized into the preclinical curriculum?

BAY Cl I amalgam is taught first, then Cl II amalgam, Cl III composite, Cl V amalgam and Cl I and V composite. Cl II and IV composite restorations and indirect gold restorations (inlays and onlays) are taught in the second semester of the course.

LSU The preclinical course starts with amalgam restoration then proceeds to posterior resins then anterior resins. Indirect restorations are taught last. In the freshman course we teach only preparations and some wax patterns. In the second year they have a course in mounting models, trimming dies, and finishing castings. In the second year they see patients and only restore with resin or amalgam. They have the same number of requirements for each material. All Class 5's are resin or RMGI.

MISS Caries 1 – (simple and complex amalgam) – Spring D1 year
Caries 2 – Esthetics Problems – (composite and esthetic bonding procedures) – Fall D2 year
Caries 3 – Indirect Restorations – (onlays, full gold crowns, CAD/CAM) – fall/spring D2 year

UOK The <u>first year second semester</u> operative course curriculum is divided and ordered as follows:
I. Fundamentals
    1. Nomenclature (Instruments and Cavity)
    2. Instrument Use and Care
    3. Rubber Dam Isolation
    4. Principles of Adhesive Bonding
    5. Esthetic Resin Composite Layering Techniques
II. Pit and Fissure Caries
    1. Diagnosis, Treatment Options, Treatment Planning
    2. Resin Sealants and Preventive Resin Restorations
    3. Class I Resin Composite Preparation & Restoration
    4. Amalgam Class I Preparation & Restoration
III. Smooth Surface Caries

1. Diagnosis, Treatment Options, Treatment Planning
2. Posterior Proximal Caries
   -Amalgam Class II "Conventional" Preparation & Restoration
   -Amalgam Class II "Slot" Preparation & Restoration
   -Resin Composite Class II "Conventional" and "Slot" Preparation & Restoration
3. Anterior Proximal Caries
   -Resin Composite Class III Preparation & Restoration
   -Resin Composite Class IV Preparation & Restoration
4.Cervical Caries and Non-carious Lesions
   -Resin Composite Cervical Caries Preparation & Restoration
   -Resin Modified Glass Ionomer Cervical Caries Preparation & Restoration
   -Resin Composite Cervical Non-Carious Lesion Preparation & Restoration
   -Amalgam Cervical Caries Preparation & Restoration

The second year first semester course is divided and ordered as follows

1. Operative case treatment planning
2. Caries identification and Excavation
3. Diagnosis of Pulpal Distress & Pulp Protection
4. Bonded Amalgam Restorations
5. Retentive Pin Restorations
6. Principles of Tooth Whitening
7. Series of Case Simulation Projects

Indirect restorations are introduced in Fixed Prosthodontics courses beginning in the first semester of the second year.

TENN During the D-1 year, the dental students are introduced to the DentSim dental simulators, in order to acquire an understanding of Operative Dentistry, its techniques and nomenclature. The freshmen dental students begin using the DentSim simulators on the very first day of dental school. Also, during the first year of dental school, an Operative Dentistry course is presented. This course teaches fundamentals of Operative Dentistry and tooth preparation, for amalgams and adhesive resins.

UTSA All indirect restorative procedures are taught during the second year preclinical operative dentistry course. The course introduces preparation and restorations by classification and the students are taught about each restorative option available for each classification.

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.
2912 Indirect Single Unit Restoration (Fall/2nd year) – cast inlay/onlay preparations, gold/PFM crowns
2908 Fixed Prosthodontics – FPD (Spring/2nd year) -- bridges
3651 Esthetics in Dentistry (Spring/3rd year) – indirect ceramic restorations

4. When (semester/year) are they taught?

BAY Amalgam and composite restorations are taught in the first semester of the course (Spring of D1 year) as well as in the second semester (Fall of D2 year) while indirect gold restorations are taught in the second semester (Fall of D2 year).

LSU They start the first semester with amalgam and in the second semester they learn composite resins.

MISS See response to previous question.

UOK See response to previous question.

TENN See response to previous question.
D1 year: August 2 to October 18 – DentSim dental simulator
August 30 to November 17 - Teaching of preparations (amalgam/adhesive resins) in traditional operative dentistry course. An additional D1 operative course is offered during the spring semester of the D1 year.
D2 year: More advanced courses are offered in amalgam and resin restorations, under the Department of Operative Dentistry. These courses are offered in the spring semester of the D2 year: Composite Resin Restorations, and Complex Restorations
D3 year: During the first ten weeks of the junior year, a course is presented in Esthetic Dentistry, concurrent with the beginning of the D3's clinical experience.

UTSA The preclinical operative course is a year-long course that runs during the first and second semester of the sophomore year. There are plans to create a freshman course that would be an introduction to fixed and operative. That course would run during the spring.

UTH See response to previous question.

5. Has there been any change in the number of hours in the curriculum dedicated for each restorative material?

BAY A number of years ago, there was a curriculum change with more lectures being devoted to posterior composite restorations. In the D2 preclinical operative course, additional posterior composite exercises were added to the curriculum.

LSU Not really. Most of the first semester they spend time learning to use a handpiece so more time is actually used in the amalgam portion of the course.

MISS No, not in the last 4 years.

UOK Yes, there has been an increase in time dedicated to adhesive bonding and resin composite restorations.

TENN Slight increase in numbers of composite restorations placed and in types of composite complex restorations taught, including fiber post and composite core placement.

UTSA During the past 3 years we have increased the number of hours dedicated to composite resin and porcelain.

UTH Yes, but more for a technique. Until this school year, 2615 Inlay/Onlay existed in the spring semester of the 2nd year. This course met for one afternoon a week for the entire spring semester (approximately 4 hours x 17 weeks). Beginning this year, the inlay/onlay curriculum has merged with single unit crown curriculum as one course – 2912 Indirect Single Unit Restoration (directed by Prosthodontic faculty).

6. Are you using web-based tools for teaching Operative dentistry? If yes, provide examples and comments including advantages/disadvantages.

BAY No, we are using no web-based tools for teaching Operative Dentistry at this time.

LSU No.

MISS No.

UOK No, other than placing PowerPoint presentations on Blackboard with procedure videos.

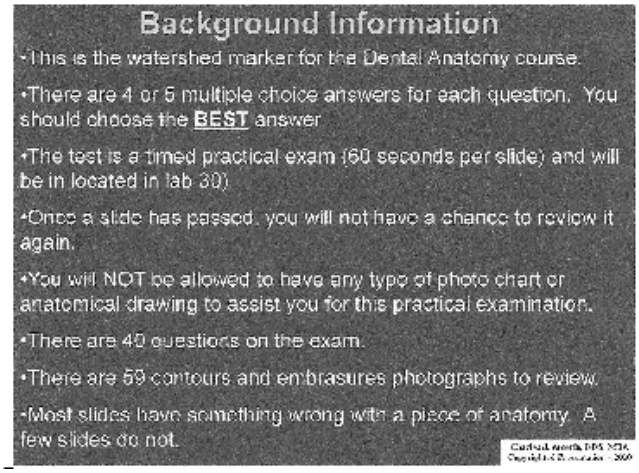
TENN Students are given video clips of several operative procedures that they must perform in lab to place on their own class website..

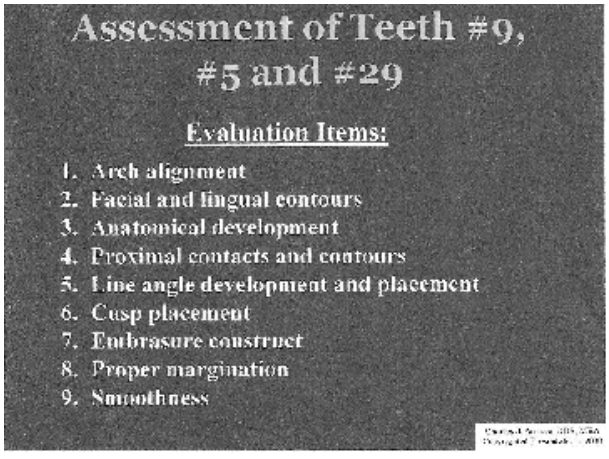
UTSA No.

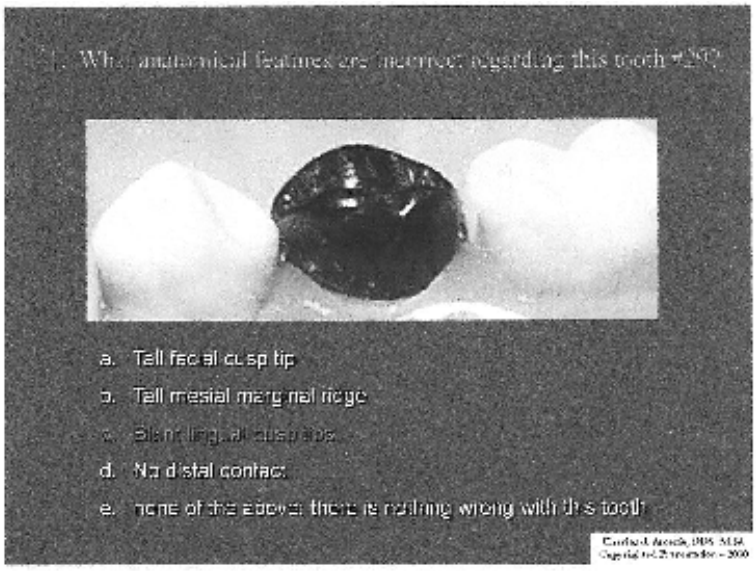
UTH The primary web application utilized in preclinical operative dentistry courses is Blackboard – lectures and other instructional media for the course are posted in advance on this academic site. **Advantage**: students that desire to have lecture on laptop can do so. **Disadvantage**: some students may be tempted to not attend lecture. The other web-based information that is used is videos of some techniques, preps, restorations.

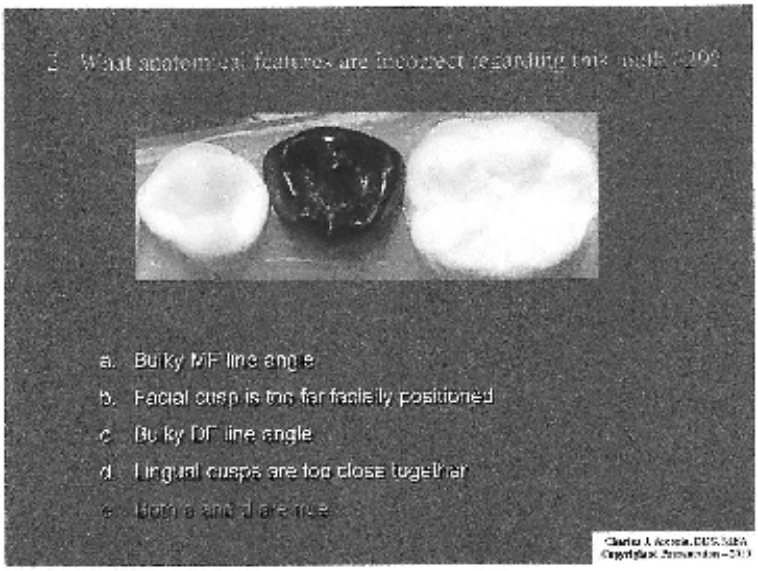
7. What instruments, rubrics, or other techniques do you use to develop student Self-assessment skills throughout dental school? (How do you teach them to effectively critique themselves?)

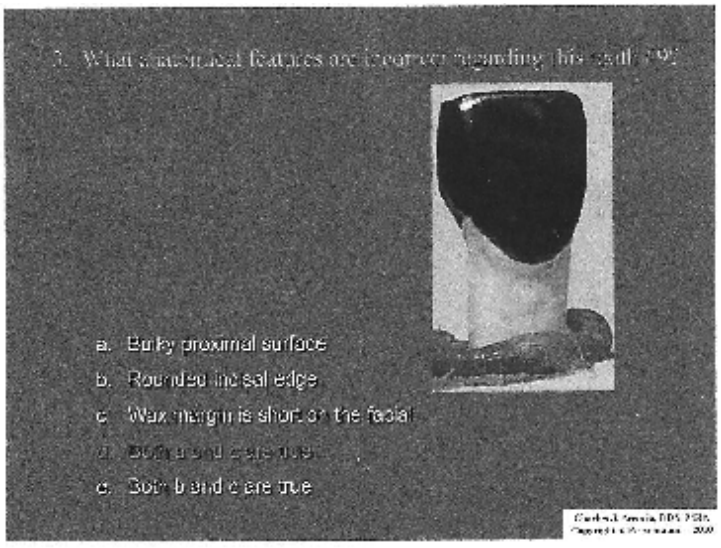
BAY Beginning in D1 Dental Anatomy, the students are asked to self assess their waxing projects with faculty. If there is disagreement, the faculty will point out the discrepancies in the self critique and help the student understand what they are not seeing or missing.
Additionally, there are photographs of wax patterns on Blackboard that the students are asked to evaluate and answer questions as to the problems with the anatomy of the particular wax patterns. Answers are provided so that the students may check their answers. (See Below) This process continues in D1 preclinical Operative Dentistry and D2 Operative Dentistry. On each practical examination in preclinical Operative, the students are asked to evaluate their work in writing and give themselves a grade based on a 4 point scale with 4 = excellent, 3 = good with minor modifications necessary, 2 = acceptable with modifications necessary, 1 = poor, requiring major modifications necessary.

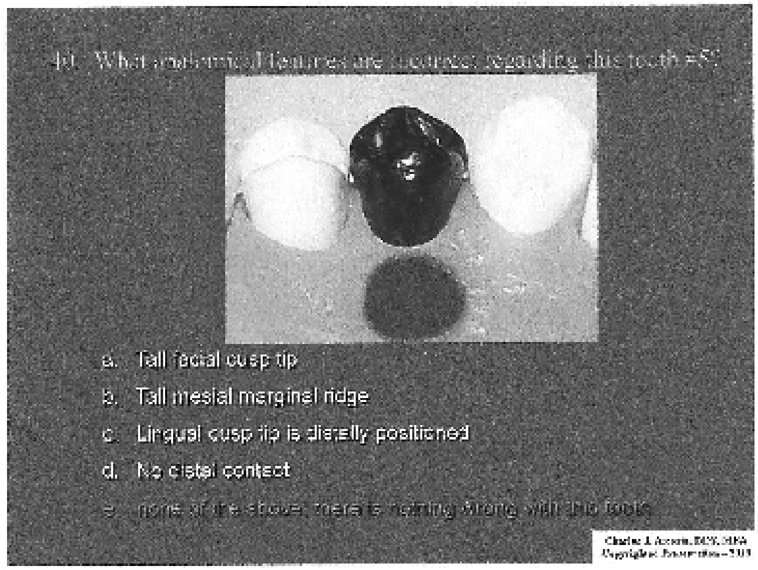




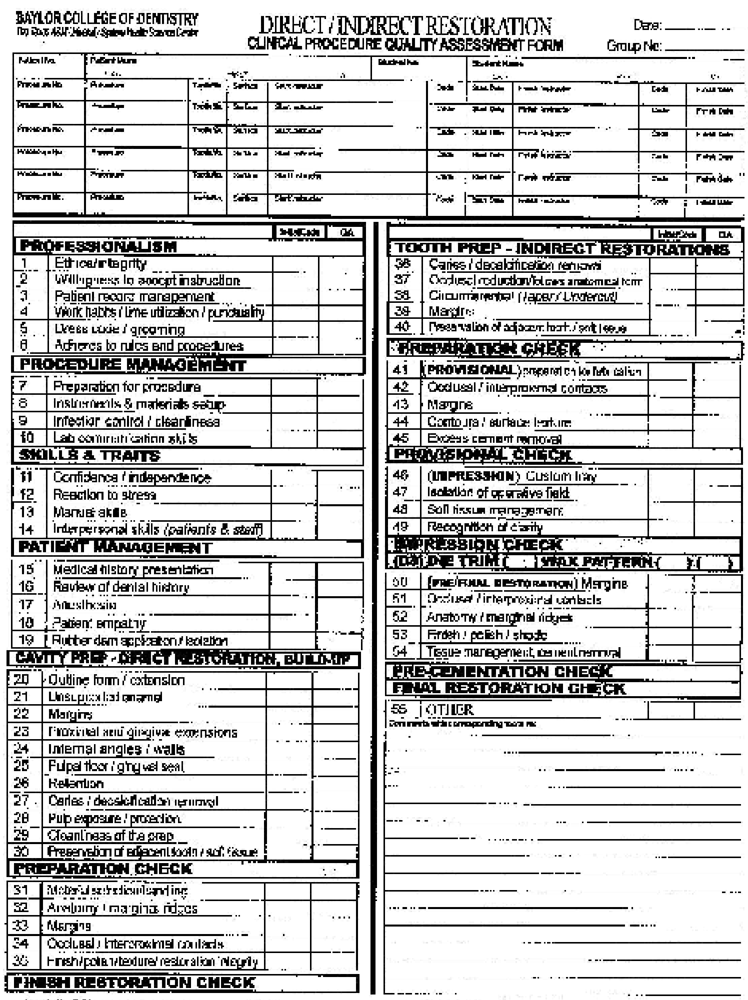

a. Tall facial cusp tip
b. Tall mesial marginal ridge
c. Blending of cusp tips
d. No distal contact
e. none of the above; there is nothing wrong with this tooth


a. Bulky MF line angle
b. Facial cusp is too far facially positioned
c. Bulky DF line angle
d. Lingual cusps are too close together
e. Both b and d are true


a. Bulky proximal surface
b. Rounded incisal edge
c. Wax margin is short of the facial
d. Both b and c are true
e. Both b and c are true



In D3 and D4 clinics, students are asked to self-evaluate their performance. We ask them what the most important thing was that they learned that day and what they could do differently next time. We review specific problem areas with the student with discussion of what the student needs to focus on in the future. QA (Qualitative Assessment) forms in AxiUm are used. See below.



BAYLOR COLLEGE OF DENTISTRY

DIRECT / INDIRECT RESTORATION
CLINICAL PROCEDURE QUALITY ASSESSMENT FORM

Date:
Group No:

		InitialCode	QA
PROFESSIONALISM			
1	Ethics/integrity		
2	Willingness to accept instruction		
3	Patient record management		
4	Work habits / time utilization / punctuality		
5	Dress code / grooming		
6	Adheres to rules and procedures		
PROCEDURE MANAGEMENT			
7	Preparation for procedure		
8	Instruments & materials setup		
9	Infection control / cleanliness		
10	Lab communication skills		
SKILLS & TRAITS			
11	Confidence / independence		
12	Reaction to stress		
13	Manual skills		
14	Interpersonal skills *(patients & staff)*		
PATIENT MANAGEMENT			
15	Medical history presentation		
16	Review of dental history		
17	Anesthesia		
18	Patient empathy		
19	Rubber dam application / isolation		
CAVITY PREP - DIRECT RESTORATION, BUILD-UP			
20	Outline form / extension		
21	Unsupported enamel		
22	Margins		
23	Proximal and gingival extensions		
24	Internal angles / walls		
25	Pulpal floor / gingival seat		
26	Retention		
27	Caries / decalcification removal		
28	Pulp exposure / protection		
29	Cleanliness of the prep		
30	Preservation of adjacent tooth / soft tissue		
PREPARATION CHECK			
31	Material selection/handling		
32	Anatomy / marginal ridges		
33	Margins		
34	Occlusal / Interproximal contacts		
35	Finish/polish/texture/restoration integrity		
FINISH RESTORATION CHECK			

		InitialCode	QA
TOOTH PREP - INDIRECT RESTORATIONS			
36	Caries / decalcification removal		
37	Occlusal reduction/follows anatomical form		
38	Circumferential (Taper / Undercut)		
39	Margins		
40	Preservation of adjacent tooth / soft tissue		
PREPARATION CHECK			
41	(**PROVISIONAL**) preparation for fabrication		
42	Occlusal / interproximal contacts		
43	Margins		
44	Contours / surface texture		
45	Excess cement removal		
PROVISIONAL CHECK			
46	(**IMPRESSION**) Custom tray		
47	Isolation of operative field		
48	Soft tissue management		
49	Recognition of clarity		
IMPRESSION CHECK			
(D3) DIE TRIM ( ) WAX PATTERN ( ) ( )			
50	(**PRE/FINAL RESTORATION**) Margins		
51	Occlusal / interproximal contacts		
52	Anatomy / marginal ridges		
53	Finish / polish / shade		
54	Tissue management, cement removal		
PRE-CEMENTATION CHECK			
FINAL RESTORATION CHECK			
55	OTHER		

Comments with corresponding item no.

LSU By the feedback they get when they complete an exam.

MISS None currently, but course directors have been asked to develop rubrics for course evaluation, to be included in their syllabi, for students to use during the course. This is expected to be included in syllabi over the next year.

UOK We have the students evaluate their own work, and sometimes their classmates' work. They then can compare their critique with that of their classmates' and their instructor.

TENN Self-assessment forms are completed by the students for both preclinical and clinical competencies, in restorative dentistry. The students are encouraged to be honest and accurate in these self-assessments of their skills, throughout their laboratory and clinical experiences.

UTSA Students are given a grade sheet to aid in self-assessment. They are asked to fill out the form before getting faculty input. Students are given feedback on how well they assessed themselves as well as how well they did on the project.

UTH Currently in operative the students are given a specific, detailed criteria sheet for every lab project and practical; this criteria sheet is a modified version of the WREB criteria form. Students are to self-evaluate every daily project and practical exam before faculty evaluation.

8. How are you testing for competency during the CLINICAL phase of school in Operative Dentistry? Do you have clinical restorative requirements? If yes, how does it mesh with CODA Standards?

BAY We test for competency in the D3 and D4 curriculum in Operative Dentistry with progress exams taken on patients. In the D3 year, the students take a typodont progress exam on the gold inlay and gold onlay. Both the preparation and cast restorations are graded on this progress exam. Also in the D3 year, each student takes a graded progress exam on the Cl II amalgam restoration, the Cl II composite restoration and the Cl III composite restoration; these progress exams are performed on patients. Both the preparation and restoration are graded on each procedure. Students must pass all progress examinations in order to matriculate to the D4 program. Failed exams are remediated. A student failing a progress exam may need to perform remedial procedures on extracted teeth or on the typodont (depending on the issues) before repeating the progress exam on another patient. In the D4 year, the students take a progress exam on two procedures performed on patients. They complete a Cl II restoration (either amalgam or composite) and a Cl III restoration on patients within a five hour time period. Both preparations and restorations are graded. Any failed progress exam must be remediated at a subsequent time on another patient or patients. Testing for competency falls under CODA standard 2-25 where the intent is "Graduates possess the basic knowledge, skills and values to practice dentistry, independently, at the time of graduation. The school identifies the competencies that will be included in the curriculum based on the school's goals, resources, accepted general practitioner responsibilities and other influencing factors. The comprehensive care experiences provided for patients by students should be adequate to ensure competency in all components of general dentistry practice."

LSU We have clinical competency exams. In the second year they must past competency exams for Class 1 amalgam restorations, Class 1 composite restoration and Class 5 composite restorations. In their third year they have competencies testing Class 2 restorations both amalgam and composite and exams for Class 3 restorations. There are no competencies for indirect restorations.

MISS Students are required to meet minimum guidelines, or numbers, of specific restorative procedures during their third and fourth years. Once these minimum guidelines have been met they can apply and take a clinically based competency on the specified procedure.
Requirements? Yes, we set a minimum number of experiences we expect the student to be exposed to in third and fourth years. The guidelines are minimums and most students exceed these minimums in the course of comprehensive care provided to their patient population.
We base our competencies on the standards CODA set for graduating competent general dentists. This also applies to the mission of our dental school. We require our students treat their patients

comprehensively, but gain enough specific clinical experiences be a competent dentist for the State of Mississippi.

UOK

1. We have a series of six competency examinations that must be passed prior to graduation. They include:
   -Treatment Planning Competency
   -Class II Amalgam Procedure
   -Class II Resin Composite Procedure
   -Class III Resin Composite Procedure
   -Class V (Resin Composite, RMGI, or Amalgam) Procedure
   -Complex (Replacing at least one major cusp) Amalgam Restoration
2. No we do not have clinical restorative "requirements"… however we do require our students to complete a specific number of "clinical experiences" prior to graduation.
   This "meshes" quite nicely with CODA Standards. The standards require that we educate our students to be competent in specific operative procedures. To accomplish this task, we feel that the students need a certain amount of repetition to become sufficiently experienced and therefore "competent" in these procedures; therefore we have set numbers of minimum clinical experiences to be completed for these various procedures.

TENN During the senior year of dental school, dental students are required to perform a caries-removal exercise under the supervision of a full-time faculty member. This exercise is conducted on a carious natural tooth. If the student fails to remove all caries present, he/she must repeat this exercise until it is satisfactorily completed. In addition, three separate competency exams are required to be completed by each senior dental student. These competency exams include Class I, II, and III, amalgams or composites. Competency exams for Class II amalgams are required by the UT College of Dentistry, because current SRTA licensing requires completion of a Class II amalgam as a part of its examination program. There are NO clinical restorative requirements because the UT College of Dentistry has comprehensive care-based clinical curriculum, though there are prerequisites that must be met before a clinical exam may be challenged. A number of essential experiences in terms of operative procedures are required however as it is noted that in order to develop clinical judgment, the students must become "experienced" in order to perform competently.

UTSA We have a point system that rewards points for operative procedures charged out in AxiUm. There are no requirements but there are grades associated with production points. During the third year, there are three clinical competency exams. These exams are graded and must be passed to pass the year. The fourth year has graded competency exams and has a mock board.

UTH Competency is tested by regular competency exams; these were instituted with CODA standards in mind. Additionally, 3rd and 4th year students have manikin/bench exams at the beginning of each school year that must be passed before patient care begins. There is a minimum clinical experience that is expected of each student.

II. INSTRUMENTATION

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

BAY We have no instruments or techniques that are used specifically for the development of hand skills. However opportunities exist in the curriculum which allow for development. Example: D1 Dental Anatomy – waxing instruments and techniques (dripping and carving). Preclinical Operative involves using hand instruments for refining preparations on typodont teeth – particularly the enamel hatchet and mon-angle chisel for shaping and removing unsupported enamel. High speed and slow speed handpieces are used for gross tooth structure removal. Repetition of these procedures allows for hand skill development. Hands-on demonstration by faculty either by audio visual and/or by individual interaction are also used to develop hand

skills.

LSU Simulation units that mimic patient positions and require indirect vision. Use of hand instruments allow a more definitive preparation but are difficult on plastic typodont teeth.

MISS No response submitted.

UOK Repetitive practice on lab simulation projects with accurate feedback. We feel that videos provide the student with the best demonstrations because of the ability to show the procedures close-up for all students.

TENN Dental simulators are employed for students at the beginning of their dental school experience. In our estimation, hand skills are enhanced during the dental morphology course that is offered in the first semester of the D1 year. Specifically, wax-carving skills are developed through the use of numerous hand instruments, including Hollenback, cleoid-discoid carvers, Walls #3, interproximal carvers, and PKT burnishers.

UTSA We are finding that models and live demos enhance student learning better than power-point lectures and pictures. We have recently noticed that students all seem to learn faster if they are asked to assess their own work and the work of peers. The best technique for enhancing student hand skills in struggling students seems to be diagnosing the root cause of poor performance and customizing their experiences to address the problem. Often poor performance is more than poor hand-eye coordination.

UTH Student experience may vary from person to person, but in general, repetition and practice (with appropriate faculty evaluation and feedback) seems to be beneficial for hand skill development. Over the years, use of waxing instruments in dental anatomy lab and operative hand pieces/hand instruments in operative lab, seem to aid in this development like no other.

2. Are students taught the use of hand instruments for cutting, shaping, and refining tooth preparation in Operative Dentistry? What is the level of clinical utilization?

BAY Students are taught to use hand instruments mostly for shaping and refining cavity preparations - specifically the enamel hatchet and mon-angle chisel. These are also used in the clinic for removal of loose enamel rods from the cavosurface margins. In reality, they are seldom used.

LSU In the preclinical course they rely on hand instruments to refine their preparations. In clinic they rarely use them. Reasons vary from not requiring more detail in preparations and because ours are so dull it probably doesn't matter.

MISS No. Instrument sharpening is taught by the periodontics department faculty. Use, care and the proper techniques for excavators, chisels, hoes, and carving instruments are covered in the preclinical operative course. Recognition and instrument sharpening is done in the periodontal clinic by students. They are evaluated by faculty their ability to recognize and properly maintain a sharp cutting edge during patient care on the different types of scalers used in the clinic. In the operative clinic, staff or faculty maintain and replace instruments as needed. The school purchases, maintains, and replaces all clinical instrumentation and handpieces. Overall, hand instruments are under-utilized by students in operative clinics.

UOK Yes, beginning students are taught to use hand instruments for smoothing walls and cavosurface margins, and also to refine internal form. Hand instruments have a limited use in our clinic. Mainly utilize spoon excavators for caries removal, and gingival margin trimmers and enamel hatchets for smoothing of cavosurface margins.

TENN Yes, the students are taught the importance of using enamel hatchets, gingival margin trimmers, and spoon excavators in the performance of operative dentistry. Clinical use of hand instruments does occur, depending on the mindset of faculty involved in the clinic. Most often spoon excavators are used followed by gingival margin trimmers, then enamel hatchets.

UTSA Students are taught hand instruments and are used heavily during the preclinical phase of their education. During the clinical phase the hand instruments are still encouraged and used.

UTH Students are taught identification and recommended usage of a wide range of hand instruments preclinically. Both preclinically and clinical, some instruments tend to be utilized more than others. Most commonly used in tooth preparation are spoons for excavation and hatchets/margin trimmers for refining.

3. Does your school teach or not teach bevels on the gingival and proximal cavosurface margins for posterior Class II composite resin restorations? What are the observations? What is the evidence in support of the teaching?

BAY As a rule, beveling the gingival and proximal cavosurface margins of Class II preparations is not taught. However it is mentioned as an option in the D3 operative lecture series.

- *Double-blind randomized clinical trial of posterior composite restorations with or without bevel: 6-month follow-up*. Coelha-de-Souza F., Klein-Junior CA, Chemurgy J, Bestow T, Balestrin MD, Demarco FF. J Contemp Dent Pract. 2010 Mar 1;11(2):001-8.
- *Efficacy of beveling posterior composite resin preparations*. Isenberg BP, Leinfelder KF. University of Alabama School of Dentistry, Birmingham. Compend Contin Educ Dent. 2004 Jan;25(1):33-4, 36-8, 40 passim; quiz 46-7.
- *Influence of acid etching and enamel beveling on the 6-month clinical performance of a self-etch dentin adhesive*. Perdigão J, Anauate-Netto C, Carmo AR, Lewgoy HR, Cordeiro HJ, Dutra-Corrêa M,Castilhos N, Amore R. Division of Operative Dentistry, Department of Restorative Sciences, University of Minnesota, Minneapolis, MN, USA. Compend Contin Educ Dent. 2004 Jan;25(1):33-4, 36-8, 40 passim; quiz 46-7.
- *Necessity of bevels for box only Class II composite restorations*. Niek J. M. Opdam, DMD, PhD,a Joost J. M. Roeters, DMD, PhD,b Ruud Kuijs, DMD,c and Rob C. W. Burgersdijk, DMD, PhDd, University of Nijmegen, Nijmegen, The Netherlands
- *Influence of Beveling and Ultrasound Application on Marginal Adaptation of Box-only Class II (slot) Resin Composite Restorations*. P. R. Schmidlin, K. Wolleb, T. Imfeld, M. Gygax, A. Lussi (2007) Operative Dentistry: June 2007, Vol. 32, No. 3, pp. 291-297.

LSU No we don't teach bevels. It was once believed this improved the seal around margins. However our tests show it still leaks and there was no difference if they were beveled or not. We use bevels only as a means to improve blending shades to blend into tooth color. SEM shows enamel rods are not straight but are twisted exposing ends of rods within the prep at the margins.(Burgess).

MISS Bevels are not taught as part of the preparation design for occlusal cavosurface margins. We teach to leave sound enamel margins gingivally whenever possible. If adequate enamel remains at the gingival margin we teach to bevel for better resin adaptation and seal. If a bevel would result in a dentin margin then no bevel is taught. Slight bevel of proximal cavosurface margins is also taught to expose enamel rods for improved bonding and seal. Observations are that bevels are seen clinically for composite resin preparations in proximal and gingival margins on minimal preparations. On larger preparations bevels are less defined and remaining tooth structure dictates final preparation design. Our rational is the references from the Summit and Sturdevant texts regarding cavity design.

UOK We teach the placement of bevels as a retentive feature for resin composite restorations. The bevels are placed on all enamel cavosurface margins that will not be exposed to direct occlusal

forces. This assumes that there is an adequate thickness of enamel to allow a bevel to be placed. We have not observed any problems while using these retentive bevels in preparations in our student clinics. We have not conducted any formal clinical studies.

- Coelha-de-Souza F. Klein-Junior CA. Chemurgy J. Bestow T. Balestrin MD. Demarco FF. *Double-blind randomized clinical trial of posterior composite restorations with or without bevel: 6-month follow-up*. Journal of Contemporary Dental Practice [Electronic Resource]. 11(2):001-8, 2010.[Comparative Study. Journal Article. Randomized Controlled Trial]
- Schmidlin PR. Wolleb K. Imfeld T. Gygax M. Lussi A. *Influence of beveling and ultrasound application on marginal adaptation of box-only Class II (slot) resin composite restorations*. Operative Dentistry. 32(3):291-7, 2007 May-Jun
- Hilton TJ. Ferracane JL. *Cavity preparation factors and microleakage of Class II composite restorations filled at intraoral temperatures*. American Journal of Dentistry. 12(3):123-30, 1999 Jun.
- Opdam NJ. Roeters JJ. Kuijs R. Burgersdijk RC. *Necessity of bevels for box only Class II composite restorations*. Journal of Prosthetic Dentistry. 80(3):274-9, 1998 Sep.
- Oilo G. Jorgensen KD. *Effect of beveling on the occurrence of fractures in the enamel surrounding composite resin fillings*. Journal of Oral Rehabilitation. 4(4):305-9, 1977 Oct.

TENN Yes, we do teach the placement of gingival margin bevels on Class II composite restorations. In principle, this bevel is placed to achieve optimal enamel exposure, for the best possible bonding result, as long as the gingival margin is maintained on sound dental enamel. We do not bevel the proximal cavosurface margins or the occlusal margins.

UTSA We teach NO bevels on box floors or occlusal surfaces. We teach short, 0.5-1.0 mm bevels on vertical box walls of Class II boxes when there is good access to the margin. If the margin is too near the adjacent tooth then we recommend NO bevel on Class II vertical box walls. We encourage leaving enamel on the box floor even if it is not supported by dentin as long as the enamel is not friable. The clinical evidence for bevels on the occlusal surface is slightly in favor of NO bevel so that is what we teach. I have found no clinical evidence that identifies an advantage to gingival and proximal cavosurface bevels. One bench study using microleakage as a measure found leaving dentin deprived enamel on the gingival box floor was superior to removing that enamel to a butt joint that still had enamel on the box floor. Two bench studies using microleakage as a measure found bevels of the vertical box walls were superior to no bevels. The question then becomes do microleakage studies on extracted teeth correctly predict clinical performance. There is serious doubt that a direct correlation exists. Our textbook, incorrectly I believe, recommends bevels on Class III preparations, however the literature probably does support bevels on enamel surfaces for Class IV preparations.

UTH In general, bevels are not taught for use on gingival cavosurface margins of posterior Class II composite preparations. Students are made aware that appropriately angled bevels on the proximal cavosurface margin can be acceptable, but such bevels are not necessarily required or advocated.

III. MAGNIFICATION

1. The use of magnification in the practice of dentistry has become widespread enough that it is now the morn rather than the exception. While there is no argument that magnification allows for a more detailed view of one's work, does the use of magnification y educators improve the evaluation of that work? In other words, is there a statistically significant difference between performance evaluation with and without the use of magnification? What is the basis for the response? Opinion, observation, evidence (Please cite the evidence).

BAY Based on anecdotal evidence only, while there are only a few faculty members who do not use magnification, if there is a discrepancy between student performance evaluations given by two D3 or D4 faculty members, a third faculty member with magnification is called to evaluate. Usually the faculty members with magnification are in agreement. We were unable to find evidence in the literature.

LSU Magnification shows more detail. The basis for this answer is opinion and observation from both faculty and students. We have no evidence to show those using loupes do better, but too many other factors would determine success.

MISS Magnification is not required for faculty at Mississippi and there is a wide range from no use to clip-on magnifiers to loupes with 2.5x and greater magnification. Some faculty have and don't use magnification exclusively and others state they cannot work without magnification. Logically it would appear that magnification would help in evaluation, but is there a significant difference? It appears to be if a faculty uses magnification to work they also believe, strongly in most cases, that it has to be used for evaluation. These observations are based on opinion based on discussions within department faculty. Magnification remains a choice and there is no way you can make a faculty or student use magnification. Purchase loupes, yes, but using them is a choice.

UOK We believe that magnification does allow a more detailed evaluation of the results of a dental procedure. This is based entirely on our own observations and opinions.

TENN According to Dr. Gordon Christensen, since our eyesight deteriorates the older we get, there is a need to see more clearly. Consulting with Dr. Noble, an ophthalmologist, in Sept. 2003, he found that the use of loupes does not weaken your eyesight, nor does it cause the user to become compromised in any way. The most popular magnification is x2.5. Their use aids in better posture, clearer vision, resulting in a higher quality of dentistry being performed. They can be sterilized after every use with high ethyl alcohol or Lysol Disinfectant spray if the lenses are water resistant. There is a learning curve associated with the use of loupes, however in a very short time, they can become a definite asset. Extended use requires a short rest period for the eyes to rest. However in a short time the muscles of the eye will readapt .

UTSA Yes. The amount available for student loans was increased by $800 when we started the magnification requirement. We have not yet had a compliance problem from the students. In February of the Freshman year loupes training, product demonstrations and fitting is arranged in three separate sessions. 2.5X magnification. Faculty encouraged to use but not required. The cost of magnification is not underwritten. Evidence cited *"Clinicians Guide to Surgical Loupes', TDA 2007.*

UTH
- *Oper Dent. 2005 Sep-Oct;30(5):598-601. Influence of vision on the evaluation of marginal discrepancies in restorations. Hayashi M, Watts DC, Ebisu S, Wilson NH.*
  In this Japanese dental school study (10 faculty examiners), "it was concluded that visual inspection aided and unaided with loupes had no significant effect on the evaluation of simulated marginal discrepancies."
- *J Am Dent Assoc. 2003 Dec;134(12):1647-50. Magnification in dentistry: useful tool or another gimmick? Christensen GJ.*
  Opinion leader anecdotally reports higher level of detail viewed through loupes.

IV. MATERIALS

1. How are you teaching the use and handling of true RMGIC's (resin modified glass ionomer cements) at your school? (liner, base, build-up material, Class V restorations, open and closed sandwich restorations, with resin composite and amalgam). Which products are you using and do you adhere to manufacturer's mixing instructions and proportions?

BAY RMGI materials are used for liners and bases. Restorations are completed with composite or amalgam or in selected cases with glass ionomer (mostly Class V but also used for caries control and in non-compliant patients). The open and closed sandwich theory is taught in D3 and D4 didactics but seldom, if ever, performed in clinic.

LSU We use them for exercises in preclinical course and for restorations in clinic. Their use includes all the above techniques. Whenever we anticipate post op sensitivity we use them as a liner. Used for a final restoration for carious Class V and when we can't isolate with a rubber dam. RMGI used as a provisional restoration when all caries removed then an ideal prep can be cut and restored without having to remove all the material. Glass ionomers such as Fuji IX, are used for provisionals when caries still present since it can be removed easier than RMGI. In indirect restorations it can be used as a base to reduce amount of gold needed. We use the material following manufacturer directions.

MISS Liners- GC L.C. liner RMGI under composite and amalgam when indicated.
Bases- Fuji IX auto-cure GI for large basing when indicated.
Build-ups- Fuji IX for small to moderate restorations when have some cavity walls remaining to retain build- up material, otherwise use Paracore or amalgam w/or w/o pins.
Class Vs- Dyract (compomer) or Fuji IX when composite resin isn't indicated. No open sandwich taught.
We do try to follow manufacturers' instructions with one exception : cavity conditioning w/polyacrylic acid for Fuji IX restorations not used with very deep preps.

UOK We teach the manufacturer's recommended use, mixing, and handling of RMGI. We use a RMGI for some Class V carious lesions, Class III carious lesions in a few special situations, and we do sometimes utilize this material for the open sandwich technique under resin composites where a cavosurface margin will be located in dentin. We utilize Fuji II LC resin modified glass ionomer mainly for these types of restorations. We sometimes use Fuji IX for restoring root caries mainly for its handling characteristics. We sometimes use a RMGI with silver particles (Miracle Mix) for temporary restorations (This is mainly used when we know our students will need to remove all or part of the temporary restorative material at a later appointment. The silver color makes it easier for the student to identify when they have removed the restorative material). Due to its comparative lack of strength, we do not use glass ionomer for a core build-up material when there is a substantial amount of tooth structure missing. We use Vitrebond RMGI as a liner/base material.

TENN As liners we are using Fuji II GC. We do not use RMGI for base due to its thickness. Esthet-x is used as our buildup material, with success. For Class V's we use either amalgam, composite, or RMGI. The open sandwich is taught and is used for an addition to an existing amalgam at the cervical line. The closed sandwich is taught and is used with the resin composite. We do not use it with amalgam, only as a repair, as stated. Also in use is Valiant (Ivoclar) amalgam, and sometimes Dispersalloy. We do adhere to the manufacturer's directions. Also rubber dam is used on all restorations unless unable to deploy.

UTSA We are teaching the use of RMGIC's in Class V situations alone, or in an open or closed sandwich technique. We also teach an open sandwich technique with deep gingival Class II composites . The product that we are currently using is Fuji II and we do adhere to the manufacturers' instructions.

UTH Vitrebond – liner under amalgam or composite. Fuji II LC – Class V restorations, open-sandwich technique (mainly Class V), and as temporary filling when IRM contraindicated (i.e. anticipated future bonding). Yes, we try to follow manufacturer's instructions. Fact is following the directions for each material is stressed in operative and biomaterials courses.

2. What is the primary bonding agent type used in your undergraduate operative clinic? Specify by "generation."

BAY All-Bond II (4th generation, 3-step etch and rinse); OptiBond Solo Plus (5th generation, 2-step etch and rinse)

LSU ScotchBond Multi-Purpose Plus and Single bond. 4th and 5th generations.

MISS Prime&Bond NT = "5th generation"

UOK We utilize Bisco One-Step Plus - 5th generation / "two-step etch-and-rinse."

TENN We use the 5th generation bonding agent, OptiBond Solo Plus.

UTSA We are teaching the use of RMGIC's in Class V situations alone, or in an open or closed sandwich technique. We also teach an open sandwich technique with deep gingival Class II composites . The product that we are currently using is Fuji II and we do adhere to the manufacturers instructions.

UTH Optibond Solo Plus (5th generation)
Scotchbond Multipurpose (4th generation)
Clearfil SE Bond (6th generation)

3. Do you teach and use chlorhexidine or other material as a re-wetting agent, or to preserve the hybrid layer prior to applying bonding agent?

BAY The use of chlorhexidine is taught but seldom used in clinic. Some instructors use it as an antibacterial agent.

LSU No. We re-wet the dentin with water only.

MISS We do to use any re-wetting agents prior to applying adhesive except that we try not to dessicate dentin if possible, but that is often difficult to accomplish with students in a large clinic to monitor properly.

UOK We use Gluma desensitizer as a re-wetting agent for resin composites if the dentin has been dried prior to primer/adhesive application.

TENN We only teach the use of chlorhexidine as a desensitizing agent, not as a re-wetting agent, or to preserve the hybrid layer prior to bonding.

UTSA No.

UTH Not specifically taught. Some clinical instructors utilize Consepsis scrub (chlorhexidine), but mainly to decrease bacterial count in preparation.

4. Are you using desensitizing agents such as Gluma under restorations or crowns?

BAY No. Reasons unknown.

- *Effects of the desensitizing agents Gluma and Hyposen on the tensile bond strength of dentin adhesives*. Kobler, A, Scahller HG, Gernhardt CR. Am J Dent 2008, Dec, 01:21(6):388-92; (PMID: 19146133)
- *The effect of several dentin desensitizers on shear bond strength of adhesive resin luting cement using self-etching primer*. Huh JB, Kim JH, Chung MK, Lee, HY, Choi YG, Shim JS. J Dent 2008,Dec01:36(12):1025-32; (PMID:18986747)
- *A comparison of the efficacy of potassium nitrate and Gluma desensitizer in the reduction of hypersensitivity in teeth with full-crown preparations*. Jalalian E, Meraji N, Mirzaei M. J Contemp Dent Pract 2009, Jan 01:10(1):66-73; (PMID:19142258)

LSU No, we do not allow use of this for placing under a restoration. In deeper preparations the formalin materials are shown to be too toxic to pulpal tissues. The use of glass ionomers accomplish this. When used as a dentin desensitizer on root surface it comes with a warning about contacting soft tissues.

- Wiegand, A. Buchholz, K. Werner, C. Attin, T. *In vitro cytotoxicity of different densitizers under simulated pulpal flow conditions*. J Adhesive dent. 10(3):227-32, 2008 Jun.
- Fu, B. Shen, Y. Wang, H. Hannig, M. *Sealing ability of dentin adhesives/desensitizer*. Operative Dent. 32(5):496-503, 2007 Sep-Oct.

MISS Gluma comfort bond and desensitizer - under amalgam when needed, not using desensitizers under crowns.

UOK Yes, we routinely use Gluma desensitizer beneath every amalgam that is placed and, as mentioned in our response to previous question, as a re-wetting agent during adhesive bonding.

TENN Not Gluma but chlorhexidine.

UTSA We have Gluma, and some faculty are using it under crowns but it is not being taught officially.

UTH Not universally used, but some desensitizing agents available. Have seen Systemp desensitizer used with indirect composite and gold inlay/onlay preps.

5. What type of luting media is being used for conventional inlays, onlays, and crowns?

BAY A resin modified glass ionomer (RMGI), Rely-X.

LSU The school's policy from Fixed and Operative recommend only Rely-X luting or Unicem material.

MISS Gold onlays/gold crowns - Ketac-cem or Fuji Plus
Porcelain onlays/porcelain crowns - Multilink (Ivoclar) or Rely-X unicem (3M/ESPE)

UOK We mainly use a resin modified glass ionomer (RMGI) luting cement - Rely-X.

TENN GC Fiji Plus glass ionomer for inlays, onlays and crowns. Durelon for implants. Duolink for CEREC.

UTSA Glass ionomer cements.

UTH Rely-X luting or Unicem, unless done in Prosthodontics bay, then Ketac-Cem.

V. TECHNOLOGY

1. What new technologies relating to the computer assisted dental simulators and grading or imaging technology are being utilized or considered at your school?

BAY We are looking at the Pro Dent 3.8 mexapixel intraoral camera as a possibility for quickly capturing pictures of students' preparations and restorations in the clinical setting and using these images when evaluating their work. This camera is relatively inexpensive, light weight and easy to use.

LSU We are looking into chairside scanning systems like Itero.

MISS We do not have computer assisted dental simulators such as DentSim or other devices. There are no plans at this time to use any of these technologies. We are looking at the E4D Dentist Chairside CAD/CAM and Cadent iTero units for our clinics and clinical lab.

UOK None.

TENN No response submitted.

UTSA No new imaging technology is being considered at this time.

UTH Not applicable.

2. What is your school's (and/or department's) view on the use of lasers in surface treatment of bonding?

BAY Lasers have not demonstrated superiority for use as surface treatments for bonding. Lasers are not used at present at Baylor. Clinical use of lasers at Baylor at present are for soft tissue treatment (Advanced Technology Clinic) and for curing composites (AEGD – had tried argon lasers but they are not widely used at the present time).

- *The Effect of Er,Cr:YSGG Laser and Air Abrasion on Shear Bond Strength of a Fissure Sealant to Enamel*. M. Moslemi, L. Erfanparast, R. Fekrazad, N. Tadayon, H. Dadjo, M. M. Shadkar, and Z. Khalili. J Am Dent Assoc, February 1, 2010; 141(2):157 - 161.

LSU We have no experience with lasers.

MISS We do not use this at our school and have no opinion.

UOK No view currently. Have read articles suggesting that CO2 laser treatment of tooth surfaces might improve bond strength. The question would be whether the benefit justifies the investment in the equipment. Not sure on the answer to that question

TENN We do not use lasers for this purpose.

UTSA We do not currently teach lasers nor do we have them.

UTH No official view. Not routinely utilizing lasers in operative dentistry.

3. What is your school's (and/or department's) view on the use of lasers in cavity preparation?

BAY Lasers are not used at present at Baylor, however, they have been shown to be effective in Class 1, 2, and 5 cavity preparations. Enhanced patient comfort seems to be a significant factor in its popularity.

- *A laser-powered hydrokinetic system: For caries removal and cavity preparation.* Hadley J, Young DA, Eversole LR, Goenbein JA. J Am Dent Assoc, June 1, 2000; 131(6):777-785.
- *Lasers in dentistry: Separating science from hype*. Dedrich DN, Bushick RD. J Am Dent Assoc, Feb 1, 2004;135(2):204-212.

LSU We have no experience with lasers.

MISS Lasers are currently used for soft tissue applications here. Primarily it is used in the Periodontics department. Based on university guidelines for laser use, it is not practical at this point to utilize lasers for hard tissue removal in our clinical settings on a large scale with students. We do have Waterlase MD units available but only for use in select settings with certain faculty.

UOK At this time, it seems to be an expensive alternative to an existing cost-effective method (burs).

TENN We are just beginning to investigate this area. Problems in dedicating a specific enclosed site for use are limiting.

UTSA We do not teach lasers in cavity preparation.

UTH No official view. Not routinely utilizing lasers in operative dentistry.

VI. SURVEY – COMPOSITE REPAIR

The survey on composite repair was a special request from a member school. The information was tabulated and forwarded to the requesting school, and therefore, will not be published in the regional reports manual. Please check the web site for this information. Thank you to all the schools who participated in this survey.

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.

NO REGIONAL AGENDA SUBMITTED

Suggestions for CODE.

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

NO RESPONSES SUBMITTED

CODE REGIONAL MEETING REPORT FORM

REGION IV (Great Lakes)

LOCATION AND DATE OF MEETING:

University: State University of New York at Buffalo

Address: Buffalo, NY

Date: October 14 - 15, 2010

CHAIRPERSON:

Name:	Dr. Camil Sabatini	Phone #:	716-829-6343
University:	SUNY-Buffalo	Fax #:	716-829-2440
Address:	Buffalo, NY 14214	E-mail:	cs252@buffalo.edu

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

Suggested Agenda Items for Next Year:

No responses submitted

LOCATION AND DATE OF NEXT REGIONAL MEETING:

Name:	Dr. Mary Ellen McLean	Phone #:	734-615-8353
University:	University of Michigan School of Dentistry	Fax #:	
Address:	Ann Arbor, MI	E-mail:	memclean@umich.edu
Date:	**TBA**		

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 IV Attendees Form

NAME	**UNIVERSITY**	**PHONE #**	**FAX #**	**E-MAIL ADDRESS**
Ed DeSchepper	Indiana	317-274-5331	317-274-2818	edeschep@iupui.edu
Paul Reifeis	Indiana	317-278-1858	317-274-2818	pereifei@uipui.edu
Marco Tauil	Detroit Mercy	248-202-7652	313-494-6781	tauilma@udmercy.edu
Carl Stone	Detroit Mercy	313-494-6681	313-494-6781	stonecr@udmercy.edu
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Mike Bagby	West Virginia	304-293-3370		mbagby@hsc.wvu.edu
Mary Ellen McLean	Michigan	734-615-8353		memclean@umich.edu
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2010 NATIONAL CODE AGENDA
REGION IV
SUMMARY RESPONSES TO NATIONAL AGENDA

(Editor note: Questions condensed for printing purposes)

I. CURRICULUM

The perception is that dental amalgam use is declining in general but this may not be due to any health concerns. The FDA reclassification has not been a factor in any school or state action. Vast majority of schools indicate an increase in resin composites versus amalgam in the past few years. All of the schools arrange operative technique procedures differently in the preclinical curriculum. All schools separate techniques based on direct/indirect or on the basis of material. Some have experimented with different arrangements but generally go back to a traditional approach. All schools begin direct restorations technique in the first year followed by indirect late in the first year or in the second year. Several schools teach complex direct restorations in second year. Several schools have increased resin composite instruction particularly in the Class II area either in the last 5 years or are considering an increase. All schools have some form of web-based information available to students including podcasts, videos and other resource material. Advantages include easy access for students at school or elsewhere. Disadvantages include the amount of time necessary to create web-based material and that many students do not use certain types of resources even when available in an easy format. All schools require some form of self assessment but development of these techniques varies. Some incorporate the self assessment within the grading system and all tend to have a standardized checklist for consistent evaluation. Vast majority have minimal requirements as far as numbers of restorations and almost all have some sort of competency exam that includes the clinical restoration of teeth. No school seemed to be very aware of CODA standards.

II. INSTRUMENTATION

Very difficult to summarize here. However all schools felt that repetitive behavior during the first and second years preclinical and again in the third and fourth years clinical was important. All schools teach the use of hand instruments but admit that their clinical usage is low. Fewer than half the schools teach the usage of bevels on the gingival and proximal margins for a posterior resin. It depends on what book they use for their students and all admit there is some disagreement in this area.

III. MAGNIFICATION

Although as schools indicate that a sizeable number of faculty and students use magnification aids, only one school makes the purchase mandatory for all students.

IV. MATERIALS

All schools use RMGIC materials. All use the materials as liners, split on its use as a base and only one school uses them as a build-up material. Most use RMGIC for Class V lesions. Most popular brand names are Vitrabond, Fuji II LC and Photac Fil. Vast majority of schools use Optibond 5th generation. Others include Optibond All-in-One (7th gen), Scotchbond MultiPurpose and Prime and Bond NT (5th gen). Most schools do not teach the usage of Chlorhexidine as a re-wetting agent. Desensitizing agents are either not used or available at the discretion of the operator. Only one school indicated that an agent is routinely indicated under any direct or indirect restoration. All schools used different manufacturers and/or types.

V. TECHNOLOGY

All schools either have CAD-CAM available or are considering it. Some use them or would like to use them in the preclinical laboratory for grading purposes as well as in the clinic. All schools indicated that they do not use lasers in surface treatment for bonding and generally are not considering them. All schools are not teaching or using lasers in cavity preparation in the general student population. Only one school indicated that a laser is used periodically on a case-by-case basis.

VI. SURVEY – COMPOSITE REPAIR

The survey on composite repair was a special request from a member school. The information was tabulated and forwarded to the requesting school, and therefore, will not be published in the regional reports manual. Please check the web site for this information. Thank you to all the schools who participated in this survey.

2010 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. CURRICULUM

1. 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?

CWRU No response submitted.

UDM Not to our knowledge.

UIC The FDA reclassification of amalgam as a Class II medical device provides reassurance of the safety and effectiveness of the device by a "special control" in addition to the general control where the manufacturing practice is regulated. The special controls that the FDA is imposing on dental amalgam are contained in a guidance document that contains recommendations on performance testing, device composition, and labeling statements. The labeling include: a warning against the use of dental amalgam in patients with mercury allergy; a warning that dental professionals use adequate ventilation when handling dental amalgam; and a statement discussing the scientific evidence on the benefits and risk of dental amalgam, including the risks of inhaled mercury vapor (FDA news release, July 28, 2009). So far, this classification has not affected the use of dental amalgam at UIC, but it will help instructors and patients make informed decisions about its use. The state of Illinois has not taken any action with regards to this new classification.

IND Not to our knowledge.

MICH No new concerns as a result of this. Gold alloys, denture resins, pit and fissure sealants etc are also classified as Class 2. (Source: www.fda.gov). Disposal of mercury in the Great Lakes region is the bigger issue. Dentists are now required to have amalgam separators in their offices.

OSU No changes.

PITT No.

SUNY Yes, the use of amalgam has declined but the perception has not.

WVU Not in Operative Dentistry

UWO No response submitted.

2. Clinically, has there been a change observed in the ratio of amalgam to composite resin procedures?

CWRU No response submitted.

UDM Probably not.

UIC Yes, we have compared through AxiUm the academic year of 04-05 with the academic year of 09-10. We looked at 1, 2, 3 and 4 surfaces restorations. The percentages have changed as follows:
-Year 04-05 62% of posterior restorations were amalgam, 37% were posterior composite.
-Year 09-10 41% of posterior restorations were amalgam, 58% were posterior composite.

IND In the last ten years, our students have placed more resins in the posterior than the previous ten years. Amalgam is still used widely but patient demand has fueled an increase in resin composite usage, so the ratio of amalgam to resin has decreased.

MICH Not as a result of the above change. Until 1998, more amalgam restorations were done than composite resins in the student clinics. In 1998, the ratio changed where more composite resins were done than amalgams and the percentage of composite resins has continually increased every year. For the graduating class of 2009, the ratio was 70% composite resin restorations to 30% amalgam restorations. These changes are driven primarily by patient desire.

OSU Increase in composite–posterior restorations. Some due to greater comfort level of faculty in supervising these procedures as well as exposure of the students to these procedures.

PITT Slight increase in composites but amalgam is the primary restoration in the molar areas.

SUNY Yes, the school ratio of 1:4 amalgams to composites.

WVU Yes, more composites

UWO No response submitted.

3. How are amalgam, adhesive resin, and indirect restorative techniques organized into the preclinical curriculum?

CWRU No response submitted.

UDM Basic cariology and amalgam/composite restorations in Fall, DS1. Advanced amalgam operative taught in Winter, DS1. Resin/composite operative taught in Fall, DS2. Indirect partial tooth restoration lectures included in Crown and Bridge I, Fall DS2, and mentioned in CEREC lectures, Winter, DS2.

UIC We have altered the sequence over the years. We tried grouping by lesion classification – such as restorative options for Class I lesions or defects: amalgam, resin composite and indirect restorations. This year we returned to separation of direct and indirect restorations on different days because it seems less confusing for students.

IND Amalgam, resin composite, glass ionomer and indirect single tooth gold casting and indirect resin/porcelain restorations are delivered in a lecture/laboratory setting during the first year starting in October. Indirect techniques are continued in second year with crown and bridge. During the third year, we give an Advanced Operative lecture.

MICH Composite resins are taught first since the preparation is not as technically demanding and the students are still learning handpiece skills. Since amalgam preparations are more precise, these are taught later on, once students have developed improved skills. Teaching composite resins first also follows the minimally invasive philosophy that is stressed so that less invasive restorations are taught first, progressing toward more preparations with more tooth structure removed.
Dental anatomy – D1 Summer (students begin July 1)
Cariology and Adhesive resins (sealants, bonding, Class III & IV composite resin restorations) – D1 Fall
Adhesive resins (Class V composite resins/glass ionomers) – D1 Winter
Silver amalgam restorations (Class I & V, followed by Class II) – D1 Winter
Adhesive resins (Class II composite resins) – D1 Spring
Complex amalgams/Core buildups (amalgam and resin) – D2 Fall
Indirect restorations – D2 Fall & Winter
Advanced indirect restorations and esthetic procedures – D4 Fall
Dental materials is taught over the course of D1 year.
Students assist in the clinic during D1 year and start seeing patients independently doing restorative dentistry during their second (D2) year.
We are currently undergoing a major curriculum revision so this timeline may change in the near future.

OSU After trying a "small caries to large caries model with composite initially, we have gone back to our traditional model teaching Class I and II followed by Class V, III and IV in first year. Summer of second year moves to large amalgams and posterior composites. Beginning of third year covers esthetic restorations, both direct and indirect, (lecture and lab), gold inlay/onlays (lecture only).

PITT Dental Anatomy - to the D1 class in their first term (Fall)
Amalgam - to the D1 class in their second term (Spring)
Direct Composite - to the D1 class in their third term (Summer)
Indirect Restorations (crowns, inlays, onlays, veneers) – D2 all year

SUNY Direct and indirect procedures are taught separately. Amalgam and resins are taught in the direct restorations course.

WVU Amalgam (spring 1st year; composite (summer 1st year and fall 3rd year; gold (fall 2nd year).

UWO No response submitted.

4. When (semester/year) are they taught?

CWRU No response submitted.

UDM See answer to previous question.

UIC Our sequence is:

- Basic preparation techniques and instrumentation with a focus on understanding evaluation criteria and accurate student self-assessment – fall D1 year
- Class I lesions – amalgam and composite – spring D1 year
- Class II lesions amalgam and composite – spring D1 year
- Class V lesions amalgam and composite – spring D1 year
- Class III and Class IV lesions including diastema closure – resin composite – summer D2 year
- Class I and II lesions - Indirect restorations – gold and ceramic inlays and onlays, ceramic veneers – summer D2 year
- Case based review and application of all types of restorations - focus on

preparation for managing more complex treatment needs, treatment planning, diagnostic wax-ups, and organization and efficiency prior to full transition to patient care. All material for this course is posted sequentially online (Blackboard). Each session begins with a small group huddle – 8 -10 students for each faculty facilitator. Fall – D2 year.

IND Fall-Spring 1st year: Single Tooth Direct Restorations (amalgam, resin, GI)
Spring 1st year: Single Tooth Indirect Restorations (inlay, onlay, crown)
Fall-Spring 2nd year: Fixed Prosthodontics (Crown and Bridge)
Fall-Spring 3rd year: Advanced Operative Dentistry Lecture

MICH See answer to previous question.

OSU See answer to previous question.

PITT See answer to previous question.

SUNY Direct restorations in the D1 Spring semester. Indirect restorations in the D2 Fall and Spring semesters.

WVU See answer to previous question.

UWO No response submitted.

5. Has there been any change in the number of hours in the curriculum dedicated for each restorative material?

CWRU No response submitted.

UDM No, however, the entire restorative curriculum is under review with significant changes under consideration.

UIC There is less emphasis on cast gold restorations. There is only brief mention of direct gold (gold foil) restorations. No other significant changes at present but likely there will be a gradual shift in favor of tooth-colored restorative options. Initial discussion of preparations for amalgam is still preferred because it allows the beginning student to grasp basic cavity preparation concepts using well established objective criteria and terminology.

IND Not really. We tweak the time allotted as necessary but find it difficult to reduce amalgam instruction due to its more demanding preparations.

MICH Not recently but we anticipate an increase in the number of hours devoted to Class II composite resins next year as a result of curriculum revision.

OSU Not really. Amalgam preparations provide the foundation for posterior resins, so are still useful to teach. In moving to semesters, we have managed to maintain the same number of clock hours for our operative instruction.

PITT Not in the last 5 years.

SUNY Yes, more time is devoted to resin composites. Approximately, it has changed from a 75% amalgam: 25% resin to a 50%:50%.

WVU Added 7 half days for composites, 5 years ago.

UWO No response submitted.

6. Are you using web-based tools for teaching Operative dentistry? If yes, provide examples and comments including advantages/disadvantages.

CWRU No response submitted.

UDM Somewhat. The Brown and Herbranson Tooth Atlas is an adjunct to our dental anatomy course. Blackboard is also used as a resource for posting grades as well as course documents (syllabus, handouts, etc). Some web material may be included in individual lectures/presentations. At the present time web material is supplemental to faculty developed presentations and information.

UIC We have a heavy use of online material via a Blackboard site that is established for each course. Handouts and reading material are posted in PDF format when possible to discourage making unneeded paper copies of course resource material. The photographs demonstrating step by step procedures that are discussed in lecture provide a valuable resource for students in pre-patient care clinic areas. The pre-patient care clinics have computer monitors to allow opening of files near each unit. The pictures of ideal preparations are useful for students while learning concepts and procedures. Currently all formal lecture presentations are being recorded using Camtasia Studio software – this will allow students to review lectures when they wish. This will also provide access to resource material when students are not able to attend lectures due to off site activities or rotations or are not expected to attend lectures as our curriculum continues to change to favor small group discussions vs. traditional full class lecture sessions. The recorded Camtasia sessions are posted on Blackboard. Dental procedural video is also available to the students for selected procedures and these are posted on Blackboard as well. Our faculty have narrated, captured, and edited these videos using materials the students have available to them in our preclinical and clinical settings. By providing the video online, students can review at any time.

IND All of our resource material can be obtained on websites (lecture outlines, podcasts, videos, instructional aids). We do not use any computer assisted grading or other student evaluation methods. On line material is good for the students who utilize it and come prepared. We recognize that not all students learn the same way but our best students learn in any and all manners. Making videos and podcasts can be time consuming and we are not sure of the actual impact on the students' learning. They still appear in laboratory with same questions as students twenty years ago. We sometimes feel we give them too many choices to learn.

MICH Yes. Most courses have a website listing course information, syllabi etc. Some courses have links to resources. Some post lecture notes and handouts online in advance of class. Some courses have lab demonstration videos available online for review. Advantages: Students can review material on their own time. Students can print handouts on their own if they wish, decreasing printing costs. If students and faculty review course material ahead of time, less time needs to be spent in class on lectures/videos and more time can be spent with hands-on activities. Disadvantages: Lack of compliance with reviewing course material before class results in students being unprepared, requiring more one-on-one attention from faculty. Reviewing material during class with students also keeps faculty on the same page. Maintaining websites, posting materials can be time consuming. Producing digitized videos, editing videos and posting videos is extremely labor intensive and time consuming. Changing/revising videos at later date is complicated.

OSU We keep lecture materials on our learning management system (Carmen; Desire2Learn). We provide links to small instructional videos as they are developed (still in process of adding content). We have a calibration initiative where we will hopefully provide information to teach faculty and students how we evaluate preparations and restorations.

PITT In the third year the students are required to present a question or problem to be answered using evidence-based learning in small group (8-9 students) sessions twice a term for two terms. It is to pertain to a clinical patient they are treating.

SUNY Vital source is used as the reference material.

WVU Videos from You-Tube and book videos.

UWO No response submitted.

7. 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?)

CWRU No response submitted.

UDM Students are required to self-evaluate to standardized criteria all preclinical and clinical restorative procedures. If the procedure is for an examination, a portion (1/3rd) of the student's exam grade is determined by whether the student's self-evaluation conforms to the faculty evaluation.

UIC Our students learn, during the first semester, the use of criterion to assess their performance and develop their ability to self critique their work. These criteria are used in all pre-patient care and patient care operative courses as well as in their dental anatomy wax-ups evaluation. The first performance exam grade (Class amalgam preparation) is based 100% in their ability to self assess their product. As the curriculum progresses more weight is given to performance outcomes and less weight to self-assessment, but there is always a self assessment component for any performance examination.

IND Preclinically, we use written criteria driven evaluations that the student can use to self evaluate. However, most of the students' assessment is prompted by an instructor before the instructors' evaluation. So it is generally more informal. Clinical assessments are also made on an informal basis. However, during clinical competencies, students are required to assess their performance before instructor input.

MICH Evaluation criteria sheets are used for evaluating preclinical daily work (though students are not graded on daily work), practical exams, and clinical test cases by both the students and faculty. Students must self-evaluate before asking for faculty feedback when completing preclinical lab exercises. Students must self-evaluate as part of the grading process of all preclinical practical exams and clinic competency exams. Criteria sheets have been developed for all major procedures performed in preclinic and clinic in all disciplines. These list the categories or aspects being evaluated with descriptions of the ideal ("R" – Meets all standards of excellence) as well as variations from ideal ("S" – Satisfactory with minor corrections, "T" – Major correction required, or "V" – Fundamental concepts not demonstrated where failure would be inevitable). Where grading is accomplished, points are assigned to the letter grades. Current system is based on original rating system developed by G.T. Charbenau described in the appendix of the textbook "Principles and Practices of Operative Dentistry – 2nd Edition" (1981).

OSU Our D3 competency requires self-assessment. In addition, our intent with the calibration mentioned above is to provide consistent criteria and interpretations. We have required self-assessment in some lab courses in the past, but it has been inconsistent. It is hoped that using a single calibration system might minimize discrepancies between student and faculty evaluations. One part of the planned calibration exercise will be an OSCE where different procedures will be evaluated with responses tallied and used to assess reliability.

PITT Rubrics have been developed for all preclinical and clinical operative courses. In some courses students must self assess their work before being graded. All competencies have a self assessment aspect to the exam.

SUNY On each practical exam, they have a self-evaluation component. There are about 8 criteria between the preparation and restoration. They receive 1 additional point to the final score if there's agreement between the faculty and students comments on half the number of criteria, and 2 additional points if there's agreement in all the criteria.

WVU Self evaluations are included for performance assessments.

UWO No response submitted.

8. How are you testing for competency during the CLINICAL phase of school in Operative Dentistry? Do you have clinical restorative requirements? If yes, how does it mesh with CODA Standards?

CWRU No response submitted.

UDM Mock Board examinations, preferably on a patient but if necessary on a typodont, are conducted for amalgam and resin competency. Course grades are based on competency scores and total Clinic Performance Unit points compared to a normalized distribution of CPU's in the class. Unsure as to CODA standards.

UIC There are no requirements – no specific numbers of procedures to be completed. Competency is tested by performance examination on patients (Class II amalgam, Class III composite, mock boards which include Class III composite, Class II amalgam OR Class II composite). Indirect restoration performance examinations are now on dentechs. In addition there is a caries management performance exam.

IND The Operative Clinical Competency exam consists of a student preparing and placing 5 direct restorations (can be different patients over several appointments). The student is evaluated on preparation, isolation, restoration and general knowledge. Our clinical requirements are point driven meaning the students receives point(s) for each accomplishment in the clinic (one point for an amalgam, 3 points for a casting, etc). Seven clinic directors monitor the student progress and refers patients with certain needs to that student who is lacking in experiences.

MICH Students must pass the following clinical competency exams during the year/term listed: (Note - only restorative exams are listed. Students must also pass competency exams in other clinical disciplines)
D2 – Rubber Dam Caries removal
D3 Summer/Fall – Caries Removal/Composite Resin Prep & Restoration/Amalgam Prep & Restoration
D3 Winter – Composite Prep & Restoration (2 or more surfaces restoring proximal contact) Amalgam Prep and Restoration (2 or more surfaces restoring proximal contact)
D4 Summer/Fall – Mock NERB exam (Class II amalgam and Class III or IV composite resin prep and restoration during one clinic session). Complex Composite Prep & Restoration (3 or more surfaces restoring proximal contact/angle). Complex Amalgam Prep & Restoration (3 or more surfaces restoring proximal contact)
D4 Winter - Complex Composite Prep & Restoration (3 or more surfaces restoring proximal contact/angle). Complex Amalgam Prep & Restoration (3 or more surfaces restoring proximal contact)
All students also must pass both the D3 and D4 OSCE (Objectivity Structured Clinical Examination) which covers all clinical disciplines. There are no precise clinical restorative requirements but in addition to other requirements for graduation, students must achieve a total of 1050 CEU's over the course of D3 and D4 year and have 15 patient case completions with post-treatment evaluations by the faculty. For the graduating class of 2009, the average number of composite resin restorations done per student was 79 (Range: 141 – 46) and the average number of amalgam restorations was 32 (Range: 58-13).

OSU In the D3 year students are required to pass an amalgam and composite competency exam after they have completed a minimum number of direct restorations. The exam is modeled after the NERB exam with less stringent tooth requirements. Students are to self-assess before being evaluated by specific clinic faculty.

PITT Students have progression exams in the spring of their third year and a progression exam in the fall of their fourth year with the criteria similar to the NERB exam. They may challenge their final competency in operative in the spring of their fourth year as long as they have met the 85 restorations completed "gate".

SUNY Students have a number of CPEs that they are required to complete before graduation in all different disciplines. There is a Class II and III competencies. Each student has to complete 12 surfaces of amalgams and resins before they can take the competency test in amalgam or resin.

WVU Students qualify for clinical performance assessments by having a set number of clinical experiences performed at an acceptable level. Then they do six required clinical performance assessments.

UWO No response submitted.

II. INSTRUMENTATION

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

CWRU No response submitted.

UDM Students are started out by learning patient-operator positioning as well as ergonomics, correct grasping of instruments, etc. Then they proceed to prep on prefabricated blocks simulating dental tissues. Later they make their preps on typodont teeth. We encourage repetition of not acceptable projects in order to enhance the learned skills until clinically acceptable.

UIC The best technique is to achieve high level of clinical simulation to allow a seamless transition from the pre-patient care to a patient care practice. Reproduction of clinical settings with immediate feedback would be a very effective method of enhancing students hand skills. It is important to look at the process and provide feedback during the procedures, not only looking at the product. In actuality UIC COD pre-patient care facility consists of simulator heads and dentechs attached to dental chairs, in which students perform preparations and restorations according to an established criteria. Students also have dental procedural video available to them via Blackboard. The videos have been produced using materials familiar to the students. The students are able to see how the instruments and materials are manipulated. These videos are available to the students prior to clinical activities and questions regarding the video are answered in small group sessions. The video allows for improved vision and consistent presentation to the students in addition or sometimes in place of faculty demonstration. In addition to Blackboard, videos have also been presented to students during class in segments and students are encouraged to interact by asking questions about the techniques illustrated. Students are even able to access these videos at chairside during clinical session.

IND We develop hand skill from the first month of school. Tooth morphology is taught didactically but also by waxing complete crowns on prepared typodont teeth and sitting for two competency exams. We feel the waxing teaches three things: 1) wax handling, 2) tooth morphology and 3) hand skills. We then introduce the handpiece and have the students prepare different designs on an Ivorine rectangular block using high speed and low speed. Other exercises include evaluation of angles, curves, distances (1 mm vs 2 mm, etc) to train hand/eye skills. By far the best technique is repetitive behavior over time.

MICH At our school, the following techniques are used:
"Form 1 Prep" exercise: The first lab exercise that D1 students perform in the Fall involves cutting a rectangular 3mm x 5mm preparation on a flat typodont tooth using solely a high speed handpiece and 245 bur. The preparation is 2mm deep with 2 parallel walls and 2 tapered walls and is also evaluated on the smoothness of margins and walls. The purpose of the exercise is to develop skill using a high speed handpiece, to learn to make small refinements to a preparation to meet preparation criteria, to introduce cavity preparation terminology, and to develop initial mirror skills once the preparation is performed inside the manikin head. This prep is used initially so that students can begin developing handpiece skills while learning other fundamental concepts necessary for the understanding of real clinically applicable cavity preparations. Mirror exercises (drawing and writing using a mirror) are performed prior to using a handpiece intraorally in the preclinic manikin head. Students are required to do extensive numbers of preparations in preclinic during their D1 and D2 year. Simulation units are used using water spray and indirect vision starting early Fall of D1 year. Diagnostic waxing exercises are also done initially with first year students in Dental Anatomy. Pilot exercises have been tried using computer simulation software but no significant improvement in performance was noted.

OSU We use the Learn-A-Prep in the first quarter and then immediately move to the typodont on a post with skull and mask for subsequent procedures and simulation. Most operative skills are taught initially in the amalgam course which covers most techniques necessary.

PITT Use the Learn-A-Prep at the beginning of their D1 amalgam course. Proper utilization of instruments during their waxing and restorative courses, much practice and repetition

SUNY Dental anatomy waxing course. Learn-A-Prep followed by small preparations with 330 carbide bur.

WVU Repeated waxing exercises, preparations, restorations.

UWO No response submitted.

2. Are students taught the use of hand instruments for cutting, shaping, and refining tooth preparation in Operative Dentistry? What is the level of clinical utilization?

CWRU No response submitted.

UDM Yes, they are taught some hand instruments (spoon excavator) and their use at the simulation lab. The rest of the hand instruments are not really taught and are of very limited use in the clinics. Mainly rotary instruments are used in the clinics.

UIC Yes, the students learn during their pre-patient care course the use of the enamel hatchet, gingival margin trimmers and the spoon excavator. All instruments are part of the amalgam and composite cassette. However, we have reduced the number of hand instruments that are introduced in pre-patient care and then subsequently made available in clinic instrument cassettes. As mentioned, our cassettes contain 2 margin trimmers (10-95-7-14 and 10-80-7-14), 1 enamel hatchet (10-7-14), 2 spoon excavators (small and large). In patient care, the spoon excavator is the most commonly used hand instrument. On occasion, when a faculty member prompts a student, the student uses a gingival margin trimmer or enamel hatchet to smooth and refine walls and margins of preparations when needed. We no longer instruct regarding use of chisels, hoes, or angle formers and we do not advocate sharp internal line angles for preparations.

IND Yes, we teach the usage of hatchets and margin trimmers among others. The best students use them clinically, however, the average student only does so when prompted, so the usage clinically is not as good as we wish for.

MICH Yes, they are taught the use of hatchets, chisels, hoes, and gingival margin trimmers for refining amalgam preparations in preclinic. However, observation of actual use in clinical situations is low.

OSU We teach the use of the 8-9 hatchet and the 28 and 29 margin trimmers. However, their use in the clinic is minimal as perceived by most faculty. Some of this is due to the number of large amalgams that are replaced and provide access by the high speed hand piece rather than needing hand instruments.

PITT Students are taught to use hatchets, margin trimmers, hoes to refine preps and spoons for caries excavation in the preclinical courses. Other than a spoon, I do not think the other instruments are used that often in the clinic. I use them but many other faculty, especially the part time faculty, do not.

SUNY We use enamel hatchets and hoes in the preclinic. However, these hand instruments are not included in the cassette. Instead, they are available as a separate kit in the clinic.

WVU Yes, as needed in the clinic for caries excavation and margin refinement.

UWO No response submitted.

3. Does your school teach or not teach bevels on the gingival and proximal cavosurface margins for posterior Class II composite resin restorations? What are the observations? What is the evidence in support of the teaching?

CWRU No response submitted.

UDM We do not teach them. Literature evidence is conflicting on the teaching or not of bevels for Class II composite restorations.

UIC Our school does not teach bevels on the gingival and proximal surfaces for posterior Class II composite restorations. In some instances it might be necessary to remove any unsupported enamel rods due to the orientation of the gingival enamel rods. The intention is to maintain as much enamel as possible in this area to achieve a good seal with all margins in enamel. In case the preparation extends onto the root surface (cementum), no difference in preparation is suggested, but ideal isolation is mandatory and the use of a RMGI is required since it may help reduce microleakage and recurrent caries. The evidence presents conflicting recommendations with regards to the placement of bevels on the gingival and proximal cavosurface margin. Some studies have shown no benefit to the marginal seal when placing gingival bevels in Class II composite restorations. The location of the gingival margin rather than the marginal configuration, is a more critical factor that influences the marginal microleakage of a Class II resin composite restoration. (Opdam JPD, 1998, Summit 2006, Coehlo de Souza, 2010).

IND We do not teach bevels in those areas as a general rule, However, the operator may wish to bevel slightly to increase surface area, expose more enamel rods or otherwise attempt to improve retention. (Strudevant's 5th edition).

MICH Yes, bevels are taught to be placed on the proximal and gingival margins of Class II composite resin preparations when there is sufficient gingival enamel still present and when access allows without damaging the adjacent tooth. Rationale is to improve marginal seal. Reference: Summitt textbook - 3rd edition, p. 307.

OSU We do not teach bevels except for the removal of gingival unsupported enamel. No real observations to report.

PITT We do not teach the students to bevel Class II composite restorations.

SUNY Yes, according to Summitt textbook, bevels at the gingival cavosurface margins are indicated if on enamel. If in dentin, no bevel.

WVU Yes and No. Depends on the course director.

UWO No response submitted.

III. MAGNIFICATION

1. The use of magnification in the practice of dentistry has become widespread enough that it is now the morn rather than the exception. While there is no argument that magnification allows for a more detailed view of one's work, does the use of magnification y educators improve the evaluation of that work? In other words, is there a statistically significant difference between performance evaluation with and without the use of magnification? What is the basis for the response? Opinion, observation, evidence (*Please cite the evidence*).

CWRU No response submitted.

UDM There is definitely a need for magnification in the practice of Dentistry. When using magnification you can pinpoint minor flaws that cannot be seen clearly by the naked eye. As we work with dental students over the years, we have found that it is of a benefit to our students to discuss and recommend the use of magnification in the clinic as well as the preclinic. According to Meraner,(*Magnification in dental practice and education: experience and attitudes of a dental school faculty*, J Dent Educ. 2008 Jun;72(6):698-706) 61 % of magnification users in his study indicated they make a point to talk to students about the uses and benefits of magnification. While 91 % of users said that magnification offers significant benefits, only 73 % believe it should be a program requirement, and 61 % think it should be required beginning in the first year of the curriculum. From studying these numbers we can conclude that there is strong drive toward using magnification in a teaching environment. At our school, the use of magnification is not mandatory for either faculty or students but we see an increasing tendency of both groups to use it.

UIC Magnification is not required, however most students do use loupe magnification. Lights are becoming more popular with our students. Magnification is not required for faculty either.

IND Many of our students choose to buy magnifying aids but they are not required to do so. Likewise some faculty members use them routinely, but many do not. Although one can see a preparation better with magnification, we do not feel perceived differences under higher power reveal critical errors that are missed without the magnification. General observations reveal that faculty use them as they get older and students who purchase them do not necessarily improve.

MICH Magnification is optional. It is used by faculty and students solely on an individual basis and is determined by personal preference. It is not mandatory for faculty or students. Many faculty use it out of necessity because of deteriorating eyesight with age, not because of any evidence of improved evaluation.

OSU Not required. Many faculty encourage. I generally will say something if posture dictates. I would guess we have well over half of the students using loupes. Students are able to have the cost added to the student loans. No. Over the last 10 years I have noticed a large increase in the faculty use of magnification. Currently, the majority of restorative/prosthetic faculty use magnification in the clinic. Faculty can generally get the same discount as the students. I have found this to be about the same as the most discounted rates at meetings such as ADEA. I don't believe we will ever have a mandate.

PITT We do not require our students to purchase magnification. However, about 80 - 85% do purchase them. The faculty usage is around 90%. My opinion is it permits closer evaluation of the work, but does not improve the hand skills of the student.

SUNY 90% of the restorative faculty uses magnification. Purchase of magnification loupes is mandatory for all students.

WVU Probably better, opinion.

UWO No response submitted.

IV. MATERIALS

1. How are you teaching the use and handling of true RMGIC's (resin modified glass ionomer cements) at your school? (liner, base, build-up material, Class V restorations, open and closed sandwich restorations, with resin composite and amalgam). Which products are you using and do you adhere to manufacturer's mixing instructions and proportions?

CWRU No response submitted.

UDM Vitrebond Plus (3M) for a liner. Fuji II LC capsules (GC) for Class V. Yes, we adhere to manufacturer's instructions.

UIC Yes, our COD restorative philosophy supports the placement of RMGIC's as a liner in moderate to deep preparations in both composite and amalgam restorations. The use of RMGI as a base is only indicated for indirect restorations (inlays, onlays) to block undercuts and achieve ideal thickness for the restorative material selected. We do not teach the use of RMGI as a build up material. It is used as a "longer term" temporary for endodontically treated teeth. A composite core material (such as Biscore Blue) is the material commonly used for build ups prior to crown preparation. For Class V restorations, materials such as conventional glass ionomer or RMGI might be considered for carious lesions when the potential benefit of fluoride release is felt to be important (high caries risk patients). When moisture control cannot be achieved, a RMGI restoration might be less moisture sensitive than a composite restoration (Anusavice, 2003). Because RMGIs do not provide excellent esthetics results and fast surface degradation, we prefer to use it more as a sandwich technique under a composite when a liner is needed for pulp protection, not to replace dentin. The decision of open versus close sandwich technique is based on clinical judgment, whether margins of the preparation are on dentin or enamel. Our material of choice is Fuji Lining LC.

IND We use RMGIC for Class V restorations (Photac-Fil) especially when there is little or no enamel at the cervical. Some instructors prefer it as a liner (Vitrebond) and we approve its use as a sandwich restoration. We do not use RMGIC as a true base and never as a build-up material. We follow manufacturer instructions.

MICH Liners – yes, but only in deep preparations (GC Liner). (Not using light cured because of logistics… students would have to check out a curing light just to place a liner if they are doing an amalgam). Bases – no. Buildups – no. Class V restorations – yes (Photac-Fil). Sandwich technique – yes (with composite resin) (taught concept didactically but not used clinically very often). Yes, manufacturer's directions are followed.

OSU No response submitted.

PITT We do not use RMGIC for buildups but do use Vitrebond and Fuji Lining LC for liners. We do teach the sandwich technique especially in preps with deep gingival floors. We follow the manufacturers instructions.

SUNY We use them as liner/base, build-up material, Class V restorations, open & closed sandwich restoration, with resin composite and amalgam. We adhere to the DFUs from the manufacturer.

WVU Vitrebond and Fuji II LC.

UWO No response submitted.

2. What is the primary bonding agent type used in your undergraduate operative clinic? Specify by "generation."

CWRU No response submitted.

UDM Mostly: OptiBond Solo Plus, Unidose, (Kerr), 5th generation
Small amount: OptiBond All-in-One ,Unidose, (Kerr), 5th generation

UIC OptiBond Solo Plus, 5th generation

IND OptiBond Solo Plus, Unidose, 5th generation no self-etching

MICH OptiBond Solo Plus, Unidose, 5th generation (Combined primer/adhesive with separate etch)

OSU OptiBond Solo Plus, 5th generation

PITT Prime&Bond - 5th generation

SUNY OptiBond Solo Plus, 5th generation two step etch and rinse

WVU Scotchbond MultiPurpose

UWO No response submitted.

3. Do you teach and use chlorhexidine or other material as a re-wetting agent, or to preserve the hybrid layer prior to applying bonding agent?

CWRU No response submitted.

UDM No.

UIC Yes, dentin can be re-moistened with water or a cavity cleaning agent such as 2% chlorhexidine gluconate.

IND No.

MICH No.

OSU No. It is mentioned in lecture, but not used in clinic.

PITT We teach chlorhexidine as a disinfectant but Gluma as a re-wetting agent. Primarily, however, we teach not to desiccate the prep after etching.

SUNY No, but we probably should. It is available in the clinic for student or faculty use at their discretion.

WVU Some do.

UWO No response submitted.

4. Are you using desensitizing agents such as Gluma under restorations or crowns?

CWRU No response submitted.

UDM No.

UIC Yes, Gluma is indicated under amalgam restoration as a sealer, but is also recommended as a desensitizing agent under any direct or indirect restoration. Allbond 2 is sometimes used in our clinics as a sealer under amalgam restorations.

IND No.

MICH No.

OSU Gluma is available in the clinics but is not always used.

PITT Sometimes, or Hurriseal.

SUNY Desensitizing agents are not taught in the school curriculum but other types of desensitizing agents are available for use.

WVU No.

UWO No response submitted.

5. What type of luting media is being used for conventional inlays, onlays, and crowns?

CWRU No response submitted.

UDM FujiCEM Automix (GC); Fuji Plus (GC); Calibra Resin Cement (Kerr)

UIC FujiCEM RMGIC for all metal restorations (FGC and PFM). Resin based cement Calibra for all ceramic restorations.

IND Nearly all of our castings are cemented with Ketac Cem (capsule). We still have Zinc Phosphate available.

MICH Fuji Plus

OSU We still use Fleck's zinc phosphate cement as the official luting agent for conventional restorations. However, there has unofficially been glass ionomer (Ketac Cem) available.

PITT FujiCEM primarily. Calibra - resin cement for veneers, all porcelain

SUNY MultiLink Automix and Fuji I.

WVU Resin reinforced glass ionomer

UWO No response submitted.

V. TECHNOLOGY

1. What new technologies relating to the computer assisted dental simulators and grading or imaging technology are being utilized or considered at your school?

CWRU No response submitted.

UDM We have decided not to invest in computer assisted dental simulators with a grading system after a number of analyses. Instead, we have recently integrated digital impression capability and CAD/CAM chairside technology to our curriculum. We have recently purchased three 3I LAVA COS units and ten CEREC units that are being utilized in the simulation lab courses and clinic. These units are excellent teaching tools as we can magnify preparations, move them around and

communicate with students efficiently where they might need to improve their preparations.

UIC Students have an opportunity to use PerioSim which is a computer assisted simulator for perio probing and explorer use. We have found that the simulation is only adequate for the novice user as an exercise and that clinical experience provides the students with a more realistic and educational experience. We are not using any grading technology at this time. We are using video technology to capture and narrate procedures for students to review and study. The view is magnified for improved vision and important clinical concepts are highlighted during the presentation. We may consider the use of CAD/CAM technology in the future to evaluate preparations and restorations.

IND We are currently evaluating imaging systems for digital impressions and other restorative uses (CEREC, e.g.). Our new laboratory based simulators will not be computer assisted for evaluation or grading.

MICH Have used Z Brush computer 3-D simulation software as part of a pilot research study. Will be obtaining a Simodent unit next year for future pilot/research studies.

OSU None. We are undertaking a renovation of the audio visual system in our preclinic laboratory this year. This system will project models, computer images and movies and allow annotation of the images for student instruction. We have CEREC units as well as a Biolase Erbium/Chromium-YSGG and a diode laser are available in our technology clinic.

PITT All clinical grading is done electronically on AxiUm. The simulation clinic has a computer with a monitor at each station. CAD/CAM is being considered.

SUNY Digital radiography currently in use. Daily electronic evaluation currently under discussion. Electronic caries detectors.

WVU CEREC

UWO No response submitted.

2. What is your school's (and/or department's) view on the use of lasers in surface treatment of bonding?

CWRU No response submitted.

UDM The Department of Restorative Dentistry has not investigated using lasers for restorative curriculum.

UIC Our school does not use lasers in surface treatment for bonding. The literature is still inconclusive. 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 with 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.

IND Not used. No plans as far as we know.

MICH Not used. Only soft tissue lasers used in faculty practice and grad clinics.

OSU Used periodically in the technology clinic on a patient-by-patient basis, but no course currently taught.

PITT Not using or teaching lasers at this time.

SUNY Not taught

WVU Not used.

UWO No response submitted.

3. What is your school's (and/or department's) view on the use of lasers in cavity preparation?

CWRU No response submitted.

UDM We are currently not using lasers in cavity preparation. The Department of Endodontics is the only one who is looking into it. At this point, we are about to integrate electric handpieces for cavity preparation.

UIC Our school does not use lasers in cavity preparation either. As mentioned above safety, efficacy and effectiveness still need improvement. Studies have shown patient acceptability is excellent due to the use of less anesthesia. One disadvantage is inefficiency in term of time, since its use might need more time for a simple cavity preparation.

IND Not used nor planned.

MICH Not used. Only soft tissue lasers used in faculty practice and grad clinics.

OSU Used periodically in the technology clinic on a patient-by-patient basis, no course currently taught.

PITT Not using or teaching lasers at this time.

SUNY Not taught.

WVU Not used.

UWO No response submitted.

VI. SURVEY – COMPOSITE REPAIR

The survey on composite repair was a special request from a member school. The information was tabulated and forwarded to the requesting school, and therefore, will not be published in the regional reports manual. Please check the web site for this information. Thank you to all the schools who participated in this survey.

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.

NO RESPONSES SUBMITTED

Suggestions for CODE

To locate the web site via a search engine, enter Consortium of Operative Dentistry Educators or Academy of Operative Dentistry and then use the link, CODE.

NO RESPONSES SUBMITTED

CODE REGIONAL MEETING REPORT FORM

REGION V (Northeast)

LOCATION AND DATE OF MEETING:

University: Columbia University

Address: New York, New York

Date: October 5-6, 2010

CHAIRPERSON:

Name:	Dr. Richard Lichtenthal	Phone #:	216--305-9898
University:	Columbia University	Fax #:	212-305-8493
Address:	New York, New York	E-mail:	rm1l@columbia.edu

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

Suggested Agenda Items for Next Year:

No responses submitted

LOCATION AND DATE OF NEXT REGIONAL MEETING:

Name:	Dr. Richard Lichtenthal	Phone #:	216--305-9898
University:	Columbia University	Fax #:	212-305-8493
Address:	New York, New York	E-mail:	rm1l@columbia.edu
Date:	October 5 -6, 2011		

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 _____V_____ Attendees Form

NAME	UNIVERSITY	PHONE #	FAX #	E-MAIL ADDRESS
Magrit Maggio	Penn	215-573-7847	215-573-4075	mmaggio@pobox.upenn.edu
Andrew Schwartz	SUNY-SB	631-632-9904	631-632-9105	agswartz@sunysb.edu
Ann Nasti	SUNY-SB	631-632-8930	631-632-6105	anasti@sunysd.edu
Peter Yaman	WREB	734-647-3726	734-936-1597	pyam@umich.edu
Angelica Levin	Tufts	617-636-0419	617-636-0309	angelica.gil_levin@ tufts.edu
George Keleher	Boston	617-638-4682	617-638-4490	gkeleher@bu.edu
James LoPresti	NYU	212-998-9709	212-995-4867	jtl1@nyu.edu
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Richard Lichtenthal	Columbia	212-305-9898	212-305-8493	rml1@columbia.edu

2010 NATIONAL CODE AGENDA
REGION V
SUMMARY RESPONSES TO NATIONAL AGENDA

(Editor note: Questions condensed for printing purposes)

I. CURRICULUM

No significant change has taken place as a result of the FDA action. Composites have increased relative to amalgam. Relative agreement in organization into the first and second years semesters 1, 2, 3, and 4. All, but one school, have seen in increase in the curricular hours devoted to the composite restoration. The majority of schools have adopted web based teaching tools for restorative dentistry. All schools utilize self assessment techniques and use preclinical and clinical examinations to determine competency. All meet CODA standards, however clinical requirements vary.

II. INSTRUMENTATION

Exercises on typodont ivorine teeth are the most common method of developing hand skills. Hand instrumentation is generally taught in the preclinic. However, utilization in clinical restorative dentistry is not universally applied. A few schools teach bevels, most do not, so there is not a consensus [in this region].

III. MAGNIFICATION

Only one school requires magnification. It is, however, utilized in most institutions on an ad hoc basis. There does not seem to be any evidence of statistical difference.

IV. MATERIALS

All schools teach the use of RMGIC to some extent. Its application varies greatly. Prime&Bond NT appears to be the o ne most widely used in our region. Chlorhexidine is not widely utilized. No consensus on desensitizing agents, use is not overwhelming. Rely-X appears to be the most widely used luting media.

V. TECHNOLOGY

Except for one institution, there appears to be little use of computer aided dental simulators. Lasers are not utilized in our region. Lasers for cavity preparation are not recommended nor utilized; taught as part of global technology information.

VI. SURVEY – COMPOSITE REPAIR

The survey on composite repair was a special request from a member school. The information was tabulated and forwarded to the requesting school, and therefore, will not be published in the regional reports manual. Please check the web site for this information. Thank you to all the schools who participated in this survey.

2010 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

I. CURRICULUM

1. 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?

BU There has been no discussion of this at the faculty level. Amalgam continues to be used for most posterior restorations.

CLMB Not at this time. New York State has instituted regulations regarding the use of amalgam, i.e., amalgam separators and patient information brochures.

CONN No.

DAL No responses submitted.

HARV No responses submitted.

HOW No responses submitted

UMD This has not caused any concerns. The school has posted risk/benefits of restorative materials that patients can view.

LAV No responses submitted.

MCG No responses submitted

UMON No responses submitted.

UMNJ No.

NYU The total number of amalgams performed is about 10% of the total number of intracoronal posterior restorations performed. NY State has mandated amalgam mercury separators in the waste line of dental offices and clinics.

PENN The city of Philadelphia has responded to this FDA Classification by mandating all dental practices in the city to give patients a Philadelphia Department of Health Information sheet regarding amalgam. The patient needs to sign this and it has to be part of the patient record/chart. We have complied and this is part of our treatment planning procedure.

SUNY No.

TEMP In late 2009, the City of Philadelphia passed a resolution requiring all dentists in the city to provide patients with an information sheet regarding the safety of dental fillings containing amalgam.. All patients are given this information sheet/informed consent document during admissions. This document has raised the awareness and concern of the clinic patients regarding amalgam and may have resulted in an increased use of resin over amalgams. (Actual data not available) Therefore a heightened awareness already exists and the recent FDA classification appears to have had minimal impact.

UTOR No responses submitted.

TUFT No responses submitted.

USN No responses submitted.

2. Clinically, has there been a change observed in the ratio of amalgam to composite resin procedures?

BU More composites are being placed - an increase of about 40%.

CLMB A 10% increase in posterior composites vs. amalgam has occurred in the last year.

CONN Posterior, not in the last five years.

DAL No responses submitted.

HARV No responses submitted.

HOW No responses submitted

UMD In the last 5 years, there has been a shift for an increase in the numbers of posterior composite resins being placed relative to amalgams.

LAV No responses submitted.

MCG No responses submitted

UMON No responses submitted.

UMNJ No.

NYU Over the last ten years definitely. The current ratio has stayed the same in the last three years.

PENN Not appreciably.

SUNY The ratio of completed amalgam and resin restorations has not changed over the last five years.

TEMP Official data is unavailable at this time. There appears to be a slight increase in the treatment planning of composite resin (for posterior teeth) by faculty and more patients are asking for composite resin restoration.

UTOR No responses submitted.

TUFT No responses submitted.

USN No responses submitted.

3. How are amalgam, adhesive resin, and indirect restorative techniques organized into the preclinical curriculum?

BU Year 1 – Class II Amalgam, Class III Composites; Year 2 - Complex Amalgams, Adjacent amalgams, Class IV and V Composites and composite veneers.

CLMB Year 1, semesters 1 and 2 - Basic amalgam and composite restorations;
Year 2, semester 1, - Posterior composite restorations and indirect restorative techniques. In semester 4 (year 2) all restorative procedures are taught as part of a preclinical comprehensive care curriculum

CONN Taught in years 1 and 2. Resin/amalgam taught at the same time with indirect coming at the end.

DAL No responses submitted.

HARV No responses submitted.

HOW No responses submitted

UMD The organization in the preclinical curriculum: D1 - Operative -Amalgam first, Composite second; D2 - Fixed Prosthodontics-indirect restorative techniques.

LAV No responses submitted.

MCG No responses submitted

UMON No responses submitted.

UMNJ Extensive schedule available.

NYU In the preclinic all restorative procedures are presented as case based exercises. Prior to beginning the lab exercise the course director reviews the selection of materials and their benefits and liabilities. All techniques are performed in the preclinic.

PENN All topics taught are taught didactically and in the laboratory during the D1 year, second semester. Also in the D3 year advanced lectures are given on these topics. First: Bonded amalgam: simple to complex; Second: Composite resin procedures: simple to complex; Third:. Indirect restorations.

SUNY Operative Dentistry I course in year 1 fall/spring semester - amalgam and direct adhesive. Operative Dentistry II course year 2 fall semester - indirect restorative techniques, inlays/onlays.

TEMP Freshman Year- Fall semester -modified materials lab integrated into dental anatomy course for amalgam and composite restorations. Spring semester - Fundamental principles of amalgam and composite preparation and restoration. Single gold crown and fixed partial denture. Sophomore Year: Fall semester - PFM single unit and fixed partial denture, preparation technique for gold inlay and onlay. Differences in preparation design for ceramic is discussed. Junior/Senior Year: Principles of indirect composite preparations and restorations is discussed in lecture. Selected lab experience in porcelain veneers.

UTOR No responses submitted.

TUFT No responses submitted.

USN No responses submitted.

4. When (semester/year) are they taught?

BU See response to previous question.

CLMB See response to previous question.

CONN Years 1 and 2

DAL No responses submitted.

HARV No responses submitted.

HOW No responses submitted

UMD See response to previous question.

LAV No responses submitted.

MCG No responses submitted

UMON No responses submitted.

UMNJ Second and third trimesters of freshman year and all three semesters of sophomore year.

NYU Amalgam/composite in second semester first year.

PENN See response to previous question.

SUNY See response to previous question.

TEMP See response to previous question.

UTOR No responses submitted.

TUFT No responses submitted.

USN No responses submitted.

5. Has there been any change in the number of hours in the curriculum dedicated for each restorative material?

BU Not in the past five years.

CLMB There has been an increase in the hours devoted to the direct posterior composite restoration as well as indirect ceramic restorations.

CONN Yes, resins have more time because of the Class III, IV and facial veneers that are taught.

DAL No responses submitted.

HARV No responses submitted.

HOW No responses submitted

UMD A decrease in the number of hours for amalgam; increase in the number of hours for composite resin; increase in the number of hours for indirect restorations - porcelain veneers, CAD/CAM.

LAV No responses submitted.

MCG No responses submitted

UMON No responses submitted.

UMNJ Last year, two sessions of cast gold exercises were eliminated and the time was given to additional composite exercises.

NYU Yes, an increase in composite procedures.

PENN Over the past three years time for composite procedures has been increased but not at the expense of the amalgam procedure. Instead, laboratory procedures for the cast gold inlay/onlay were consolidated. Time was taken from there and added to the composite module.

SUNY Yes. We increased the number of hours for didactic and lab teaching within Operative Dentistry I. Amalgam preparation didactic lecture: 8 hrs., Amalgam procedures lab exercises :33 hrs. Composite preparation didactic lecture:2 hrs., Composite procedures lab exercise:2 hrs. Amalgam didactic restoration lecture: 6 hrs., Amalgam procedures lab exercise: 12 hrs., Composite didactic restoration lecture: 6 hrs., Composite procedures lab exercise : 12 hrs.

TEMP No.

UTOR No responses submitted.

TUFT No responses submitted.

USN No responses submitted.

6. Are you using web-based tools for teaching Operative dentistry? If yes, provide examples and comments including advantages/disadvantages.

BU No.

CLMB Yes. All course materials: lecture power point presentations, technique videos, handouts and grading sheets are available on the Columbia University Intranet server : Courseworks/sakai. All lectures are recorded and are available as pod casts. Faculty/student interactive blogs are utilized for case discussion and question/answer regarding course material during off hours. The advantages are many. Students today are attuned to web-based information and thrive on it, they can access the material at any time, they can discuss questions that they have during study with faculty at any time, computer assisted instruction is available at the laboratory stations reducing the need for constant faculty intervention, faculty can access all information to remain current, to name a few. The students are still required to attend lecture/discussion sessions and textbook reading assignments are required. There do not appear to be any disadvantages.

CONN Yes, Blackboard is used, but depending on use it might not be considered as a teaching tool. An example on Blackboard is posting of a exam with feedback on the NERB manual that is intended to coerce students to read the manual. Lecture presentations are posted.

DAL No responses submitted.

HARV No responses submitted.

HOW No responses submitted

UMD Yes. Web-based tools are all accessible 24/7 and are required by administration for all courses: Blackboard for course organization, course documents, presentations in power point format, technique and teaching videos, announcements about courses throughout the semesters. Mediasite: this is a lecture/seminar, briefing, video recording program format. Students can access all lectures/seminars in real time remote from presentation site; all lectures/seminars are recorded. Students can also use this site to view and access all technique and teaching videos. iTunes University: students can download select lectures as podcasts for viewing when not connected to the internet. E-mail - students do not make themselves as available for in-office faculty meetings and use e-mail to respond to faculty inquiries. Advantages: Students can view

and listen to educational materials with unlimited access. Students can communicate to faculty directly. Allows a faculty member to create a comprehensive curriculum with all parts accessible. When a faculty member cannot present during a scheduled time it can be pre-recorded for student viewing and access. This works well with invited speakers where the schedule of the course is in conflict with availability. This is a different generation of students who are always connected with computers, Smartphones and other devices. This access to education works with the current student attitudes and actions of computer/internet/information connectivity. Disadvantages: Attendance has been steadily declining in lectures and simulation because of unlimited availability of materials. Some faculty are discouraged by lack of student attendance. Faculty morale has suffered.

LAV No responses submitted.

MCG No responses submitted

UMON No responses submitted.

UMNJ No.

NYU Yes, Blackboard, vital book and the intranet. Videos of each procedure are provided on both Blackboard and the intranet, sometimes depending on file size. It is easier to host larger files on the intranet. It gives students the opportunity to see and review the procedure before performing it in the lab. Vital book is an excellent resource for looking up didactic material. Unfortunately, students do not often use this.

PENN Yes. The operative dentistry courses could not run without it. These courses are all on Blackboard. Examples of tools utilized in Blackboard include: Course techniques manuals, entrance terminology quizzes, lecture videos with interactive quizzes, demonstration videos of all procedures. Links to evidence based articles (examples: amalgam safety, bonded amalgam, minimal preparation design) to name a few. Communications are all through this medium. Only advantages have been seen from the use of this tool. No major disadvantages can be reported.

SUNY Yes all didactic material and instructional videos are posted within courses on C-base (institutional electronic system). Similarly, material with clinical relevance, procedure protocols and instructional videos are posted on computers in clinic to be accessed as needed. We do not have, at this time, interactive web-based support.

TEMP Blackboard for management of online content. Online lab manuals for preclinical courses provide a cookbook sequence for all laboratory projects. Streaming videos are available 24/7. Color pictures of ample work provide students with an opportunity to view and evaluate sample preparations and restorations with an emphasis on teaching self evaluation skills. We are currently implementing class capture for all lectures. Students have 24/7 access with potential for viewing on hand held devices with links to available on line education resources and product information. Some faculty utilize blogs and wikis in an effort to encourage critical thinking and foster discussion. We use AxiUm software for charting and treatment planning. Advantages: Faculty calibration, self paced student driven study, links to available educational resources. Disadvantages: Initial high resource and manpower costs, ongoing site maintenance and peer review of online educational resources.

UTOR No responses submitted.

TUFT No responses submitted.

USN No responses submitted.

7. 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?)

BU Mock summatives, before being eligible for the summative exams.

CLMB All preclinical and clinical evaluations are two part instruments: one side is the student self-evaluation and the other side is the faculty evaluation. Grades are given relative to each.

CONN We have a self assessment package used in the preclinical course.

DAL No responses submitted.

HARV No responses submitted.

HOW No responses submitted

UMD Each simulation station has an independent computer and ability to use a laptop to view self instructional materials. Although there are many programs/videos that are accessible for self instructional teaching there are no self-critique aspects of the curriculum currently being used. The self limiting factor is poor faculty to student ratio and lack of student attendance in a down-sized curriculum otherwise.

LAV No responses submitted.

MCG No responses submitted

UMON No responses submitted.

UMNJ All preclinic exercise grade sheets have a column for self-assessment as well as all clinical grade sheets. Students may not receive a faculty critique until they have self-evaluated their own work first.

NYU Students are required to complete specific criteria forms for the different procedures prior to faculty evaluation.

PENN Begins with "exit exam" after first semester advanced simulation laboratory. A Class II preparation (on a tooth with simulated caries) is completed. No computer aided evaluation is given. Student has to self evaluate their work on the examination worksheet. Self evaluation videos are online via Blackboard. Then during the second semester operative dentistry course every procedure has a self evaluation sheet in the manual that the student fills out prior to the faculty evaluation. Same approach follows for D2 year courses. On the clinical floor, self evaluation check off sheets are incorporated in the grading form for each procedure.

SUNY Student self assessment skills are learned during our preclinical operative courses first. Specific evaluation forms with exact procedure criteria were developed for each procedure. Those are then used also as a reference or check list so students can follow them. Evaluation forms are to be filled out every time a student seeks final evaluation by faculty and discrepancies are discussed. Evaluation of practical exams is based not only on student ability to perform the procedure but also on ability to recognize critical errors. During clinical education dental students evaluate their own performances against a set of criteria related to important competencies or the knowledge, abilities and skills underlying a competency. This approach might involve a form with rating scales associated with specific criteria. Students might also provide narratives evaluating their performance and reflecting on lessons learned and strategies for enhancement or modification of performance in the future.

TEMP In the preclinic students self assess all daily work and practical exams using a standardized detailed evaluation form. This detailed form condenses for clinical use. A formal self assessment is not used in the clinic. Faculty are encouraged to interact with the students during the operative procedure quizzing and teaching during the procedure. Also, faculty encourage students to verbally review and self assess what they did in clinic and discuss what they did right

or wrong.

UTOR No responses submitted.

TUFT No responses submitted.

USN No responses submitted.

8. How are you testing for competency during the CLINICAL phase of school in Operative Dentistry? Do you have clinical restorative requirements? If yes, how does it mesh with CODA Standards?

BU Summative exams are given for amalgam and composite restorations: a total of 10. The only requirement is that a student must do a specific number of surfaces before being eligible for the summative examinations.

CLMB There are basic and advanced preclinical skill assessments in each restorative category and basic and advanced clinical skill assessments given in each restorative category. There are comprehensive care clinical requirements (case completion). Competency is determined by the successful completion of all skill assessments and clinical case completions. CODA standards and beyond are considered for completion of the DDS curriculum.

CONN We have progress evaluations. No clinical requirements, but we have a set number of prerequisite procedures in each of the progress evaluation categories that must be completed before challenging the progress evaluation.

DAL No responses submitted.

HARV No responses submitted.

HOW No responses submitted

UMD D3 has two simulation competency examinations using bilayered caries teeth with a typodont that parallels the format of the NERB licensure examination. D3 has a clinical management competency examination - student needs to select a tooth that is vital and has radiographic caries. The student needs to prepare that tooth and manage the caries independently. D3 has a diagnostic competency to identify four teeth that have minimal caries/defective restorations that meet set criteria. D4 has two competency examinations that follow the format of the NERB licensure examination. There are clinical requirements for minimal activities in operative dentistry but no requirements for specific procedures. These competencies and requirements are consistent with CODA standards.

LAV No responses submitted.

MCG No responses submitted

UMON No responses submitted.

UMNJ Five competency exams in junior year (Class V amalgam or composite, Class II amalgam on manikin, Class III composite on manikin, caries removal) Six competency exams in senior year (complex amalgam, Class II composite, two Class II amalgams, two class composites). Yes we have clinical requirements and we meet CODA standards.

NYU Yes, clinically students have a two year window. 3rd year students have a threshold number they are required to reach. This minimum number than allows them to challenge competency examinations taken in specific clinical areas administered by the select calibrated faculty.

PENN Clinical progress reviews quarterly (CRB); OSCE examination, Clinical review Board. We have clinical restorative requirements that are in synch with CODA standards.

SUNY A series of clinical competencies are given starting in year 2, all of which are patient based. Year 2 - any Class 1, Class II or Class III lesion regardless of restorative material but the lesion must require the administration of local anesthesia and the placement of a rubber dam. Year 3 - Class II amalgam and Class III composite, Year 4 - no clinical competencies, from 2010 - experience based curriculum.

TEMP We have clinical restorative requirements. Satisfying clinical requirements is necessary for graduation and necessary to help fulfil the mission of providing care. Skill assessments occur in the junior year for individual procedures such as rubber dam, cavity preps, restorations, decay removal and base placement. Students are eligible to take the skills exam after a minimum threshold of procedures has been completed. Seniors are tested using competency exams after a minimum threshold of procedures has been completed.

UTOR No responses submitted.

TUFT No responses submitted.

USN No responses submitted.

II. INSTRUMENTATION

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

BU Our summative exams.

CLMB Repetitive simulated exercises on ivorine teeth in a typodont utilizing rotary and hand instruments to duplicate pre-determined precise geometric parameters for cavity preparations.

CONN Don't know.

DAL No responses submitted.

HARV No responses submitted.

HOW No responses submitted

UMD Student hand skills are best acquired with repetition of specific procedures that focus not only on the final result but how the result was accomplished to include finger rests, ergonomic seating position, operatory light positioning, how to hold the instrument, use of the dental mirror and how to use instruments to assess results.

LAV No responses submitted.

MCG No responses submitted

UMON No responses submitted.

UMNJ Don't understand the question.

NYU The use of typodonts for surgical simulation and repetition of these procedures is the most reliable predictor.

PENN Advanced simulation, regular simulation and repetition.

SUNY The student hand skills are developed through repetitive practice of ideal procedures. As known, the skill is acquired in individual pace. We are working on early assessment of the skill potential and applying an early intervention via individual tutoring.

TEMP Ivorine blocks (hand skills and cavity preparation design) followed by natural teeth (decay removal and distinguishing enamel from dentin) and finally ivorine teeth.

UTOR No responses submitted.

TUFT No responses submitted.

USN No responses submitted.

2. Are students taught the use of hand instruments for cutting, shaping, and refining tooth preparation in Operative Dentistry? What is the level of clinical utilization?

BU Yes, to define walls and margins.

CLMB The use of hand instruments for refining tooth preparation is taught and required in preclinical and clinical restorative dentistry.

CONN Yes, students are taught to use hand instruments but clinical utilization in minimal especially with resins.

DAL No responses submitted.

HARV No responses submitted.

HOW No responses submitted

UMD Hand instruments for cutting, shaping and refining tooth preparation is taught and used in preclinic. Students are not taught how to sharpen instruments (new instruments are provided at the start of the semester and only two hand instruments, one chisel and one hatchet are provided). Once in clinic hand instruments are rarely utilized.

LAV No responses submitted.

MCG No responses submitted

UMON No responses submitted.

UMNJ Yes hand instrumentation is taught. Every cavity preparation must be refined using hand instruments.

NYU Students are taught the use of hand instruments in refining Class II preparations. They are available in the clinic but are rarely used.

PENN Yes. Clinical utilization is somewhat less, less hand instruments in the operative cassette than in D1 and D2 preclinical laboratories.

SUNY Yes. Theoretically high. The same instruments presented in the preclinical operative course are available for clinical use. Faculty calibration and interest in the use of hand instruments varies

TEMP Students are taught hand instruments in preclinical lab. Minimal utilization in the clinic depending on the preference of the supervising faculty.

UTOR No responses submitted.

TUFT No responses submitted.

USN No responses submitted.

3. Does your school teach or not teach bevels on the gingival and proximal cavosurface margins for posterior Class II composite resin restorations? What are the observations? What is the evidence in support of the teaching?

BU Sometimes for the gingival margin.

CLMB No bevels are required for the posterior Class II composite. Marginal instrumentation is used only for removal of unsupported enamel.

CONN No, with no observations and no evidence.

DAL No responses submitted.

HARV No responses submitted.

HOW No responses submitted

UMD We do not teach bevels of the margins or proximal margins for Class II composite restorations. The rationale for not teaching is that when a matrix is tightened, it will almost always collapse on the bevels placed.

LAV No responses submitted.

MCG No responses submitted

UMON No responses submitted.

UMNJ We do not teach this for the same reason we do not teach beveling gingival margin of Class V composite preparations. The enamel is generally to thin to receive a bevel.

NYU We do not teach any accessory enamel bevels on any portions of the Class II. We have no evidence that we found that enamel bevels significantly improve the longevity of Class II composite restorations.

PENN No.

SUNY The gingival and proximal margins in posterior composite resin is taught. Observations are that it is difficult to teach students a consistent way of creating these bevels with the use of hand instrumentation. The use of burs for the creation of these bevels is taught as well. Beveling the cavosurface margin may improve enamel/composite marginal seal.

TEMP In the preclinic students are taught that bevels are acceptable on the gingival margin if the preparation is greater than 1mm from the CEJ (goal is enamel preservation) and is accessible. Beveling of the proximal cavosurface is acceptable if accessible. While beveling these surfaces is acceptable, it is not encouraged because of the potential for adjacent tooth damage and the nullifying effect of the matrix band. Textbook citations support this concept.

UTOR No responses submitted.

TUFT No responses submitted.

USN No responses submitted.

III. MAGNIFICATION

1. The use of magnification in the practice of dentistry has become widespread enough that it is now the morn rather than the exception. While there is no argument that magnification allows for a more detailed view of one's work, does the use of magnification y educators improve the evaluation of that work? In other words, is there a statistically significant difference between performance evaluation with and without the use of magnification? What is the basis for the response? Opinion, observation, evidence (*Please cite the evidence*).

BU Definitely yes. No statistical evidence, just experience and opinion.

CLMB Magnification is not required. However, students and faculty seem to have adopted the use of magnification lenses. There is no evidence that it improves the quality or the evaluation of the work done. It does, however, improve the chairside ergonomics for both the student and faculty.

CONN Most of our students use magnification. It is not required. I see a big difference in the precision of what I see with and without it.

DAL No responses submitted.

HARV No responses submitted.

HOW No responses submitted

UMD Cannot respond to this question. It has not been evaluated.

LAV No responses submitted.

MCG No responses submitted

UMON No responses submitted.

UMNJ I am not aware of any studies that have shown statistical significance. However grading is much more critical and accurate when faculty use loupes. In our opinion students do better work when they use loupes as compared to not using loupes. In addition, chairside posture is greatly improved when using loupes because the working distance is constant.

NYU It seems intuitive that the better you can see and discriminate, the better you should be able to perform specific procedures. The obvious question, depending on the magnification, is it possible to see better than your hand can perform? A study was done twenty years ago that demonstrated two things: 1) visual acuity increased significantly and 2) some of the students who participated were unable, even with magnification, to discriminate to a level approaching 100 microns.

PENN Yes we use magnification. There seems to be a significant difference between performance with and without. Recent scientific study, soon to be published (Quintessence Inter. January 2011) shows preclinical students performed operative dentistry preparations better and faster with the use of magnification. The difference between the groups was statistically significant.

SUNY Yes. Magnification is currently required for all students and clinical faculty. Evidence: J Dent Educ 76(6) and JADA 137(11).

TEMP Answer based on opinion and observation. Magnification improves evaluation only if both parties are using it and have similar knowledge base regarding the evaluation criteria.

UTOR No responses submitted.

TUFT No responses submitted.

USN No responses submitted.

IV. MATERIALS

1. How are you teaching the use and handling of true RMGIC's (resin modified glass ionomer cements) at your school? (liner, base, build-up material, Class V restorations, open and closed sandwich restorations, with resin composite and amalgam). Which products are you using and do you adhere to manufacturer's mixing instructions and proportions?

BU RMGIC's are used as liners. Class V restorations and in areas where access and presence of saliva make the use of other materials impossible. We use Vitrebond Plus.

CLMB RMGIC is used occasionally as a liner for pulp capping procedures over calcium hydroxide. Fuji II LC and Vitrebond are available.

CONN We use GC products and 3M Vitremer following manufacturers' guidelines.

DAL No responses submitted.

HARV No responses submitted.

HOW No responses submitted

UMD Liner - Vitrebond (measuring scoop and liquid dispensing bottles), Class V Fuji II LC pre-dose capsules. Taught in simulation, one exercise for each, with support lectures in D1 and D2.

LAV No responses submitted.

MCG No responses submitted

UMON No responses submitted.

UMNJ Base under amalgam, temporary to short term restoration after endodontic treatment, sandwich technique with composites when eugenol containing temporary was used previously, flowable RMGIC used as a liner under amalgam restorations. Used exclusively in Pediatrics.

NYU RMGIC is used on a limited basis primarily as a base during direct and indirect pulp caps. It is placed over calcium hydroxide prior to placement of the final restorative material.

PENN Liner, base, root caries.

SUNY Fuji lining cement - GC America - liner; Ti-Core for buildup; composite resin for Class V.

TEMP RMGIC are used in all situations described. Products include Fuji II LC (capsule), Vitrebond LC powder and liquid.

UTOR No responses submitted.

TUFT No responses submitted.

USN No responses submitted.

2. What is the primary bonding agent type used in your undergraduate operative clinic? Specify by "generation."

BU 3rd generation (etch and rinse)

CLMB Prime&Bond NT

CONN One bottle total etch and two bottles of self etch.

DAL No responses submitted.

HARV No responses submitted.

HOW No responses submitted

UMD 5th generation (OptiBond Solo Plus, Kerr)

LAV No responses submitted.

MCG No responses submitted

UMON No responses submitted.

UMNJ 5th generation

NYU The bonding agent used is PEEK by Ultradent. It is a three step process - etch, bond, composite.

PENN Total etch: 5th generation; self- etch: 7th generation

SUNY Dentsply Caulk - Prime&Bond NT

TEMP Prime&Bond NT

UTOR No responses submitted.

TUFT No responses submitted.

USN No responses submitted.

3. Do you teach and use chlorhexidine or other material as a re-wetting agent, or to preserve the hybrid layer prior to applying bonding agent?

BU No.

CLMB No.

CONN Yes.

DAL No responses submitted.

HARV No responses submitted.

HOW No responses submitted

UMD Not currently being used. In process of investigating use in clinic.

LAV No responses submitted.

MCG No responses submitted

UMON No responses submitted.

UMNJ No, but under review.

NYU No.

PENN It is discussed in lecture with literature links but it is not standard procedure in the clinic.

SUNY No - but should be considered. (On-line article cited: Sept 2009 Eur J Oral Sci)

TEMP No.

UTOR No responses submitted.

TUFT No responses submitted.

USN No responses submitted.

4. Are you using desensitizing agents such as Gluma under restorations or crowns?

BU Yes.

CLMB Not on a routine basis.

CONN Not normally, but it is available in our desensitizer, Protect from Caulk.

DAL No responses submitted.

HARV No responses submitted.

HOW No responses submitted

UMD We are using desensitizing agents under restorations on a case-by-case basis. It is faculty member/supervisor driven.

LAV No responses submitted.

MCG No responses submitted

UMON No responses submitted.

UMNJ No, but under review.

NYU No.

PENN Not standard for every crown.

SUNY No.

TEMP Not on a regular basis but is it available for use by faculty if requested.

UTOR No responses submitted.

TUFT No responses submitted.

USN No responses submitted.

5. What type of luting media is being used for conventional inlays, onlays, and crowns?

BU RMGIC - RelyX luting cement

CLMB Zinc phosphate cement, RelyX and Calibra

CONN Fuji Plus - RMGIC

DAL No responses submitted.

HARV No responses submitted.

HOW No responses submitted

UMD RMGIC - FujiCEM

LAV No responses submitted.

MCG No responses submitted

UMON No responses submitted.

UMNJ Zinc phosphate cement, RelyX, Durelon

NYU RelyX is most commonly used

PENN MaxCem, Infinity, zinc phosphate

SUNY RelyX, Multilink, zinc phosphate

TEMP Zinc phosphate, RelyX, RelyX-arc.

UTOR No responses submitted.

TUFT No responses submitted.

USN No responses submitted.

V. TECHNOLOGY

1. What new technologies relating to the computer assisted dental simulators and grading or imaging technology are being utilized or considered at your school?

BU None

CLMB Digital imaging and Cone Beam imaging technology are utilized. We are not using any computer assisted dental simulators, i.e. DentSim or Haptics at the present time. Digital impression techniques are being introduced this year in the pre-clinic and clinic.

CONN None

DAL No responses submitted.

HARV No responses submitted.

HOW No responses submitted.

UMD None at the current time.

LAV No responses submitted.

MCG No responses submitted

UMON No responses submitted.

UMNJ None at the present. We may consider bringing in computer assisted dental simulators in the future.

NYU None.

PENN It is an integral part of the D1 and D2 curriculum as well as with the International Program.

SUNY We have removed the VR DentSim simulators from our curriculum mainly due to difficult implementation and need of an upgrade that was financially unfeasible to accomplish. Currently we are working with Haptics in skill assessment and are in pilot research state.

TEMP No DentSim at this time. Regarding imaging technology, digital radiology is in initial implementation phase in the graduate clinics and a cone beam scanner is used for digital imaging (mostly implant treatment planning and placement).

UTOR No responses submitted.

TUFT No responses submitted.

USN No responses submitted.

2. What is your school's (and/or department's) view on the use of lasers in surface treatment of bonding?

BU Not being used.

CLMB We are not using lasers for any hard tissue treatment.

CONN Cannot use lasers in dental school due to health center requirements for shielding.

DAL No responses submitted.

HARV No responses submitted.

HOW No responses submitted.

UMD Lasers are not being used in surface treatments for adhesion.

LAV No responses submitted.

MCG No responses submitted.

UMON No responses submitted.

UMNJ We will watch new developments and literature but not presently being done here.

NYU Do not believe that there is a significant difference or improvement and the cost is prohibitive.

PENN It is not taught. The topic was offered as a selective course for interested students.

SUNY We are not actively pursuing the application of this technology at this time.

TEMP No discussion of lasers at the department or school level.

UTOR No responses submitted.

TUFT No responses submitted.

USN No responses submitted.

3. What is your school's (and/or department's) view on the use of lasers in cavity preparation?

BU No distinct advantage to conventional methods.

CLMB Lectures and video demonstrations are provided as part of the preclinical curriculum. Clinically, lasers are utilized, faculty assisted, in gingival recontouring in conjunction with aesthetic dentistry. It is not used for cavity preparation

CONN N/A

DAL No responses submitted.

HARV No responses submitted.

HOW No responses submitted

UMD Lasers are not being used in cavity preparations for direct placement restorations.

LAV No responses submitted.

MCG No responses submitted

UMON No responses submitted.

UMNJ See answer to previous question.

NYU Students receive lectures on hard and soft tissue lasers. Students in the aesthetic honors program get to use lasers.

PENN It is not taught. Offered as a selective course for interested students.

SUNY Not pursuing this technology.

TEMP No discussion of lasers at the department or school level.

UTOR No responses submitted.

TUFT No responses submitted.

USN No responses submitted.

VI. SURVEY – COMPOSITE REPAIR

The survey on composite repair was a special request from a member school. The information was tabulated and forwarded to the requesting school, and therefore, will not be published in the regional reports manual. Please check the web site for this information. Thank you to all the schools who participated in this survey.

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.

NO RESPONSES SUBMITTED

Suggestions for CODE

To locate the web site via a search engine, enter Consortium of Operative Dentistry Educators or Academy of Operative Dentistry and then use the link, CODE.

NO RESPONSES SUBMITTED

CODE REGIONAL MEETING REPORT FORM

REGION VI (South)

LOCATION AND DATE OF MEETING:

University: Medical University of South Carolina

Address: Charleston, South Carolina 29425

Date: October 20-22, 2010

CHAIRPERSON:

Name:	Dr. Mullen O. (Mo) Coover	Phone #:	843-792-3765
University:	MUSC	Fax #:	843-792-2847
Address:	Charleston, South carolina	E-mail:	coover@musc.edu

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

Suggested Agenda Items for Next Year:

1. Surgical & Non-surgical interventions for carious lesions
2. Teaching dental anatomy (waxing course) and Operative Dentistry
3. Faculty teaching time commitment
4. Ethics and restorative dentistry

LOCATION AND DATE OF NEXT REGIONAL MEETING:

Name:	Dr.	Phone #:	
University:	University of Alabama	Fax #:	
Address:	Birmingham, Al	E-mail:	@uab.edu
Date:	**TBA**		

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 _____VI_____ Attendees Form

NAME	**UNIVERSITY**	**PHONE #**	**FAX #**	**E-MAIL ADDRESS**
Andrew Kious	MCG/GHSU	706-721-2881	706-721-8349	akious@georgiahealth.edu
Gary Holmes	MCG/GHSU	706-721-2881	706-721-8349	rholmes@georgiahealth.edu
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Mullen Coover	South Carolina	843-792-3765	843-792-2847	coover@musc.edu
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2010 NATIONAL CODE AGENDA
REGION VI
SUMMARY RESPONSES TO NATIONAL AGENDA

(Editor note: Questions condensed for printing purposes)

I. CURRICULUM

9 out of 10 schools reported "No" concerning the future use of amalgam. 7 of the 10 schools responding have seen a shift towards more resin with ratios of 2:1 or 3:1 resin to amalgam. In most cases the sequence is amalgam, direct resin, then indirect techniques during the first two years. 6 of the 10 responding schools reported a change in the curriculum hours. 8 of the 10 schools put course materials and/or lectures on their websites using a variety of applications such as WebCT, Vista, BlackBoard, Tegrity, etc. All schools have various techniques including: self-critique, peer assessment, extensive rubrics for pre-clinic based on clinic assessment, practice practicals, discriminative learning techniques, models and photos. All schools have clinical testing for competency but most DO NOT have strict requirements substitution points or sessions or hours of comprehensive care for procedure numbers.

II. INSTRUMENTATION

Enhancing hand skills through repetition, Learn-A-Prep in and out of the manikin; DentSims and waxing instrument use for several weeks before Operative were mentioned by multiple schools. All schools teach hand instrument use in pre-clinic (some extensively), but clinic use is low and faculty-dependent. 6 of the 10 schools teach gingival bevels if there is enough enamel present. Most schools teach proximal bevels of flares to improve the marginal seal.

III. MAGNIFICATION

Opinion: magnification does improve the ability, but improvement in evaluation depends on knowledge and understanding how to apply criteria. Other benefits of magnification include compensating for decreasing vision with age and improved posture due to narrow focal ranges.

IV. MATERIALS

Most schools use RMGIC's for liners/bases, luting cements, and Class V restorations while few schools use them as core build-ups. 4^{th} and 5^{th} generation bonding agents are used by almost all schools. Half of our schools teach and use chlorhexidine while others just teach it. Half of our schools use a desensitizer. All schools use RMGI (e.g., RelyX, Fuji, Ketac), while zinc phosphate and resin are used less commonly.

V. TECHNOLOGY

Examples of technology use include: AxiUm, MiPACs, digital cameras, CAD/CAM, DentSim units. No schools in our region either teach lasers or use them. Some schools teach lasers for cavity preparation, but there is very little utilization in student clinics.

VI. SURVEY – COMPOSITE REPAIR

The survey on composite repair was a special request from a member school. The information was tabulated and forwarded to the requesting school, and therefore, will not be published in the regional reports manual. Please check the web site for this information. Thank you to all the schools who participated in this survey.

2010 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
GHSU**	Georgia Health Sciences University**	NOVA	Nova Southeastern University
UKY	University of Kentucky	UPR	University of Puerto Rico
ULSD	University of Louisville	MUSC	Medical University of South Carolina
		VCU	Virginia Commonwealth University

** **Editors note**: Medical College of Georgia (MCG) changed to Georgia Health Sciences University (GHSU) in February of 2011

2010 NATIONAL CODE AGENDA

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

I. CURRICULUM

1. 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?

UAB Yes, to some extent. Patients are constantly challenging the practitioners about its safety, less and less want it placed and more wish to have the amalgams replaced. Issues of concern are related to water contamination issues as well.

UFL There has been no additional concern other than what has existed up to this point related to dental amalgam disposal.

GHSU Not at this time. The percentage of amalgam restorations being performed is gradually decreasing for other reasons (minimal-intervention philosophies, patient desire for esthetic procedures, more dependable non-amalgam restorative materials, etc.)

UKY No.

ULSD No.

MMC No.

UNC No.

NOVA At this time there have been no changes in the protocols for use of amalgam in our school. Interestingly NBC evening news recently had a segment on the hazards of resin composite sealants and tooth colored restorations relating to Bisphenol A. The FDA link below shows the classification of composite resin also as a Class II medical device:
Http://www.fda.gov/downloads/MedicalDevices/DeviceRegulationsGuidance/GuidanceDocuments/ucm071631.pdf
The scope of this guidance is limited to the devices in the table below:

Table 1: Devices within the scope of this guidance document:
Device Classification Class Product Code
Tooth Shade Resin Material 21 CFR 872.3690 II EBF
Pit and Fissure Sealant and Conditioner 21 CFR 872.3765 II EBC
These devices are intended to fill and restore small to large defe4cts or carious lesions. These devices may be supplied as two-part base and catalyst systems, cured by chemical activation, or one-part systems, cured by photo initiation, with or without chemical activation.

UPR No responses submitted.

MUSC No, not yet

VCU Not to my knowledge.

2. Clinically, has there been a change observed in the ratio of amalgam to composite resin procedures?

UAB In the more recent yrs (5-6), from an academic/clinical experience stand point, the numbers of amalgam or posterior composite restorations required have remained the same. However, a greater number of posterior composites are placed at the end of each academic year. This year, it has been brought to my attention that students are already having problems with the number of Class II amalgams/cases.

UFL Yes. Specifically here, in the years 2004-2006 was when the swing in the use of composite vs. amalgam shifted from approximately 30% composite - 70% amalgam to 70% composite - 30% amalgam occurred for restoration of posterior teeth. It has been relatively consistent since. We published an article about this matter: *Amalgam and Composite Posterior Restorations: Curriculum vs Practice in Operative Dentistry at a US Dental School* - Ottenga ME, Mjor IA, Operative Dentistry, Sept/Oct 2007, 32(5):524-528.

GHSU Yes, the ratio of resin to amalgam for the Class of 2010 years of clinical data is 3:1. The Class of 2011 is trending the same way. 5 years ago it was almost even.

UKY No.

ULSD Posterior composite resin has probably increased as there is now a required clinical competency for the Class II. Composite resin is optional for the Class I competency and other Class competencies.

MMC Yes.

UNC No.

NOVA Yes we have seen a decrease in the number of amalgam restoration in the last few years.

UPR No responses submitted.

MUSC Yes, but not due to the FDA change. There has been a slow yearly trend toward more composite/fewer amalgams.

VCU We seem to be restoring more teeth with composite than amalgams. Class II restorations: approximately 66% composite and 34% amalgam.

3. How are amalgam, adhesive resin, and indirect restorative techniques organized into the preclinical curriculum?

UAB The techniques and rationale for use are taught both at the pre-clinical and clinical level Preclinical sequence: Sealants, PRR's, Class I resin, Class I amalgam, Class II amalgam, Class V amalgam and resin and GI, Anterior resin, posterior resin, indirect CAD/CAM then single crowns (CAD/CAM and single crowns are taught in the D-2 Summer and Fall semesters.)

UFL We have three main pre-clinical operative courses, not including Dental Anatomy. The content of each course is listed in the attachment "National Question #3 Preclinical Courses (2010 Semesters)".

GHSU Our general preclinical sequence = direct restorative in 1st year (OPER 5001) & indirect in the 2nd year (FIXP 5001 & 5002). The preparation designs are initially based on traditional amalgam preparations. Amalgam is introduced first in the Operative course (OPER), followed by conservative preparation design principles & resin-composite. Onlays and inlays are not part of OPER 5001, due to the limited amount of time in the course. Onlays are discussed in FIXP 5001 as well as in the junior year Esthetic Dentistry course (ESTD 5001) as part of their introduction to CEREC use.

UKY Amalgam and adhesive resin is taught in two separate courses in the 1st year curriculum (Fundamentals of Operative Dentistry I, and Esthetic Dentistry I).
Indirect techniques related to processed heat-cured composites are taught in the 3rd year curriculum (Advanced Esthetics in Restorative Dentistry).
Indirect techniques related to single units (i.e. FGC, PFM, inlays, onlays) are taught in the 2nd year preclinical restorative & prosthodontic class.
FPD's are taught in the 3rd year preclinical restorative & prosthodontic class.

ULSD Amalgam, composite resin, and glass ionomer are in the DA/Operative course (summer, fall, and spring semester – first year). Introduction to Indirect Restorations has the onlay and single crown (fall semester – second year). Preclinical Fixed Prosthodontics has the FPD (spring semester – second year).

MMC Amalgam 1st, Indirect 2nd, Adhesive resins 3rd.

UNC The preclinical course teaches preparation design based on the location and amount of caries. Restorative materials are chosen based on the characteristics of the resultant cavity preparation and ability to control the oral environment.

NOVA We start the Operative courses in the second semester of the freshman year. (Jan). There are 4 courses; 2 didactic and 2 labs. The first course introduces basic operative dentistry. Included in this class is instrumentation, pulpal considerations, amalgam preparations and amalgam restorations. This section runs for around 19 weeks and teaches the students all aspects of traditional preparation design including complex restorations. The second course which is also approximately 19 weeks runs through June. This module concentrates on all aspects of adhesive dentistry including resin reinforced glass ionomers and resin composite preparations and restorations.

UPR No responses submitted.

MUSC Operative I – Amalgam (Fall Semester ,sophomore year); Operative II Composite Spring semester, sophomore year. The only indirect techniques taught currently are full crown restorations in Fixed Pros.

VCU Amalgam then adhesive resin direst restorations 1st year, then indirect restorative techniques the 2nd year.

4. When (semester/year) are they taught?

UAB D-1 Fall and Spring semesters.

UFL The courses are taught three semesters (4 months in each semester) in a row starting in semester 2 of the student's freshman year.

GHSU Freshmen Operative begins half-way through Semester #1 and concludes at the end of Semester #2. Indirect Restorative- Cast Gold begins in Semester 4, Indirect Restorative-Porcelain Fused to Metal begins in Semester 5, Indirect Restorative-All-Ceramic is taught in Semester #7 (Fall Jr. year).

UKY 1st and 2nd semesters of the 1st year; 1st and 2nd semester of the 2nd year; 1st semester of the 3rd year.

ULSD See answer to previous question.

MMC 1st and 2nd semester D2 year.

UNC Amalgam/Composite resin = Spring/DDS1
Indirect restorations = Fall/DDS2

NOVA D1 year January through June

UPR No responses submitted.

MUSC Operative I – Amalgam (Fall semester, sophomore year);
Operative II Composite Spring semester, sophomore year
Fixed Pros I – Spring, Freshman year (basic preps and temps)
Fixed Pros II - Fall, Sophomore year (equilibration, gold crown fabrication, bridge preps)
Fixed Pros III (E4D CAD/CAM) - Spring, Sophomore year (PBM, ceramics, E4D)

VCU See answer to previous question.

5. Has there been any change in the number of hours in the curriculum dedicated for each restorative material?

UAB Yes - pre-clinical courses increased the time with adhesive resins and with indirect esthetic restorations.

UFL Yes. More time has been allocated for the teaching of composite resin versus amalgam and new lectures have just been added this year: CAD/CAM Dentistry - Caries Control - Restorations (Refurbishment, Repair, Replacement) - Fiber Posts.

GHSU Yes, the hours have shifted in favor of resin by 10% in Freshman Operative, and more time has been added for All-Ceramic in Junior Esthetic Dentistry (Semester #7).

UKY No.

ULSD No.

MMC Yes, decrease - Cast Gold.

UNC No.

NOVA Yes, in the last 4 years we have increased the emphasis on composite resin and lengthened the course by one month.

UPR No responses submitted.

MUSC Yes, E4D CAD/CAM has increased.

VCU Not in the past 2 years.

6. Are you using web-based tools for teaching Operative dentistry? If yes, provide examples and comments including advantages/disadvantages.

UAB Yes. We use Blackboard as the online tool. It is what the campus subscribes to.

Advantages:

- Saving paper and copying costs/time.
- PCD and Didactic OP Courses (D-1, D-3 and D-4)
- The students have the teaching materials at their fingertips. In preclinic and OP didactic, we post course schedule, course syllabus, grades, course and clinic manuals, PowerPoint presentations (pdf format), articles from refereed journals (pdf format), and photos/instructions which will be useful in laboratory (preparations, restorations, etc.).
- Students tend to take notes on the computer.
- Exam and quiz/exercises grades are posted on Blackboard. Posting on the wall or bulletin board is no longer practiced. Blackboard allows only the instructor and the student to look at the grade (better compliance with FERPA)
- Most course materials are now in one location.
- Exams and quizzes on Blackboard offer immediate grading and offer other advantages in administering the exam or quiz.

Disadvantages include:

- Some lecturers do not want to post their lectures on Blackboard. Some invited lecturers NEVER give the course director the ppt to post.
- The students feel that the handout/ppt is the only material they may have to cover (like the hard copy)

There is a learning curve for using Blackboard (relatively short learning curve), some have a more difficult time than others. Each department is supposed to have a designated staff person trained to assist with Blackboard. Their expertise varies tremendously.

Giving exams through Backboard: We still have some problems with all 60 students getting online at the same time and in the same physical area for taking quizzes and/or exams.

UFL We are videotaping all of our lectures that are posted in Mediasite for the use of our students at their leisure on our ECO (Electronic Curriculum Organizer) website, which is similar to Blackboard. ECO has many tools that are available from all of our pre-clinical and clinical courses. We are using the 3D Dental Anatomy Atlas in our Dental Anatomy course, as well.

GHSU Our schools places all lectures on a website called “Vista8". All PowerPoint are converted to PDF and uploaded. Also any MPEG or movie files can be placed there. Also we just started using “Tegrity” to audio record all lectures.

UKY Yes, we utilize the EVOLVE web site accompanying Sturdevant’s textbook. It includes a variety of multimedia tools including video clips detailing operative procedures and the complete textbook image collection available for downloading into classroom PowerPoint presentations. The advantage is that the video clips can be observed anytime by the students. One disadvantage is that there is no narrator who speaks during the operative procedure (no audio).

ULSD Lectures are on BlackBoard for access by students during lecture and other times.

MMC No. Internet - U of Michigan - Podcasts - Operative

UNC No.

NOVA Yes we upload all the lecture and lab outlines, syllabi, schedules, and project check-off forms on a Web-based program, WebCT. The program is set up with weekly course content icons. Each week has three icons; reading, lab, lecture. A few have additional icons for videos that have been created and uploaded for a particular procedure.

UPR No responses submitted.

MUSC We place all PowerPoints, handouts, etc. on WebCT so that students can access from anywhere. We also use Tegrity to record all lectures and those are also accessible by students from anywhere.

VCU Yes. Posting lectures and videos on BlackBoard website. Advantages: 24 hour access, can review material both before and after lecture/lab.

7. 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 Primarily we use written criteria and models of the preparations and pictures of the exercises (preparations and restorations). Students compare their work to these criteria and then ask for feedback. Rubric development is in progress for preclinical courses.

UFL We have no specific instruments or techniques other than to stress the grading criteria that we have established and require that they critique their work as part of their regular assignments and exams. We place an area on each of our competency and grading forms for self evaluation with comments and reward the students with an increase in their grade if they can specifically identify an error made in their pre-clinical courses.

GHSU A discriminative learning exercise that exposes students to a very rudimentary form of self assessment is introduced in the freshman operative course. Periodic self-evaluation of routine work occurs in lab courses and on practical exams in both operative and the cast gold course. Accurate self-evaluation could earn the student some bonus points.

UKY Self-assessment is an integral part of our teaching. If a student doesn't learn from their own mistakes, then they're prone to repeat the same mistakes over and over. Pre-clinical courses have self-assessment worksheets accompanying each laboratory project. In some courses, during the final examinations, the averages of the self-assessment are compared to the faculty averages. Students with numerical averages close to that of the faculty member are awarded extra points towards their final grade average. In student dental clinics, evaluation sheets are divided into two sections: one for student self-evaluation and one for the faculty evaluation. Students constantly received written feedback to assess their performance.

ULSD Extensive rubrics (based on 3, 2, 1, 0 scale) are used in pre-clinic operative and the same are used in clinical operative. Students must self-assess on all pre-clinic and clinical competency exams.

MMC Peer assessment, review of own procedures and comments.

UNC Pre-clinical operative courses utilize a scoring tool (rubric) which encourages an organized approach to assessment of the product. Students evaluate their own progress as compared with optimal performance followed by faculty evaluation.

NOVA Students self-evaluate in preclinical practical exams and in all clinical competency exams and all daily restorative procedures utilizing the same evaluation form used by the faculty for faculty assessment of the student. The self assessment vs. faculty assessment may then be reviewed with the student by the course director or designee.

UPR No responses submitted.

MUSC In Operative I & II, they are encouraged to critique work on practicals; if they do a good job, they get extra points.

VCU Practice practical's in the Operative Dentistry course that requires students to objectively look at their work and self-assess their progress. Also, Dental Anatomy, Operative Dentistry and Fixed Prosthodontics all utilize a grading form that includes a self-assessment component.

8. How are you testing for competency during the CLINICAL phase of school in Operative Dentistry? Do you have clinical restorative requirements? If yes, how does it mesh with CODA Standards?

UAB There are clinical competencies and requirements in place for D-3 and D-4. All restorative areas (OP, RPD, FPD, CD) have requirements and competencies. They should fit in with the CODA standards because patients/cases are assigned to students.

UFL We base the Operative Dentistry clinical grade 80% on clinical competencies in eight categories of operative procedures. The students must show competence in six of the eight categories during their third year of clinical study and eight of the eight during their fourth year. The other 20% of their clinical grade is based on daily grades and professionalism. The students must also complete a set number of cumulative RVU's (Relative Value Units) in each of their third and fourth years to ascertain that they are achieving the amount of clinical experiences that we feel are needed.

GHSU Yes, throughout the Junior and Senior years. We have a variety of operative clinical competency exams: Class I or V (amalgam, resin, or glass Ionomer); Class II amalgam and resin, Class III/IV resin. We even have a rubber dam competency in the Sophomore Block Clinical Course. CODA- We have strict requirements in the Junior Clinical Course but requirements count for less than 1/3 of the course grade; while 50% comes from competency exams and 20% is derived from subjective evaluations. Senior clinical grades are based on point totals that are influenced by numbers of procedures but not strictly aligned with numbers as is the case in the junior year. "Requirements" ensure attendance and enable development of proficiency prior to challenging competency.

UKY Competencies are administered during the 2nd, 3rd, and 4th years in the student dental clinics under the auspices of the courses in Clinical Restorative Dentistry 821/831/841. Numerical grades are recorded on these evaluation sheets and the sheets monitored to check a student's progression in clinic. We do not have requirements for the number of procedures a student performs. Instead, we have "clinical encounters" which is essentially the number of clinical sessions attended by the student. If a team leader deems that a student doesn't have enough "clinical experience", they will assign the student additional cases. Do you have clinical restorative requirements? Yes. If yes, how does it mesh with CODA Standards? The clinical restorative requirements are listed separately in each course syllabus under the "Goals and Outcomes" of the respective course.

ULSD We have block operative competencies that mimic the licensure boards. These occur during the junior and senior year. These competencies are listed below:
Do you have clinical restorative requirements? If yes, how does it mesh with CODA Standards?
No - there are recommended experiences but this is not a set number in that students can petition early to attempt competencies if they feel they are ready; or the group manager and course director may feel the student may need to do more than the minimal recommended experiences before they are ready to attempt a competency.

Competency Examinations/ Grading Policy:
During the Junior year, each student will be required to successfully complete four (4) competency examinations (on permanent, adult, vital teeth) on patients before the end of the Spring Semester:
1 Direct Posterior Class I preparation/restoration (Occlusal):

- virgin lesion with significant decay.
- restored with amalgam or composite.

1 Direct Posterior Class II preparation/restoration (MO, DO, MOD):
- must have at least one virgin proximal lesion or evidence of significant clinical decay.
- restored with amalgam or composite.

1 Direct Anterior Class III/ IV preparation/restoration (ML, DL, MF, DF + I):
- must have at least one virgin proximal lesion or evidence of significant clinical decay.
- restored with composite resin.

1 Direct Anterior/Posterior Class V preparation/restoration (B, F):
- virgin lesion with significant decay.
- restored with amalgam or composite or glass ionomer

Competency Examinations/ Grading Policy:

During the Senior year, in order to receive a final course grade, each student will be required to successfully complete (on permanent, adult, vital teeth):

3 Direct Posterior Class II preparation/restoration (MO, DO, MOD):
one must be restored with composite resin
one must be restored with amalgam
one can be restored with either amalgam or composite resin

2 Direct Anterior Class III/ IV preparation/restoration (ML, DL, MF, DF + I)

Two of these competencies must be successfully completed prior to participating in the Mock Boards. Two of these competencies must be successfully completed on the Mock Boards. Successful completion of Clinical Operative I is required in order to be eligible for the Mock Board examination.

MMC Series of practical examinations – Junior and Senior Years – Senior Year – FCCE (Final Clinical Competency Exam).

UNC DDS2 Students must pass a preclinical competency to enter clinics.
DDS3 Students must pass a mock board in addition to the successful completion of a Class II and a Class III restorative competency procedure.
Clinical restorative requirements insure a minimum level of exposure and experience in all various basic operative procedures and is in compliance with CODA requirements.

NOVA Please see attached PDF file for clinical competencies and requirements. *(Editor's Note: No PDF furnished by Regional responder*) Our competencies and requirements are based on the intent in Standards 2-23 and 5-2.

2-23 At a minimum, graduates must be competent in providing oral health care within the scope of general dentistry, as defined by the school, including:
a. patient assessment, diagnosis, comprehensive treatment planning;
b. prognosis, and informed consent;
c. recognizing the complexity of patient treatment and identifying when referral is indicated;
d. health promotion and disease prevention;
e. anesthesia, and pain and anxiety control;
f. restoration of teeth;
g. communicating and managing dental laboratory procedures in support of patient care;
h. replacement of teeth including fixed, removable and dental implant prosthodontic therapies;
j. pulpal therapy;

Intent: *Graduates should be able to evaluate, assess, and apply current and emerging science and technology. Graduates should possess the basic knowledge, skills, and values to practice dentistry, independently, at the time of graduation. The school identifies the competencies that will be included in the curriculum based on the school's goals, resources, accepted general practitioner responsibilities and other*

influencing factors. The comprehensive care experiences provided for patients by students should be adequate to ensure competency in all components of general dentistry practice. Programs should assess overall competency, not simply individual competencies in order to measure the graduate's readiness to enter the practice of general dentistry.

5-2 Patient care must be evidenced-based, integrating the best research evidence and patient values.

Intent: *The dental school should use evidence to evaluate new technology and products and to guide diagnosis and treatment decisions.*

UPR No responses submitted.

MUSC Yes, there is a Pre-clinical assessment in the spring of the Sophomore year and two Technical Assessments. There are no "requirements"; it's based on hours spent treating restorative patients.

VCU Patients in clinic, manikins in lab. No. There are not specific operative "requirements". Students accumulate points (for procedures completed) which is transferred into a grade. We also have operative competencies.

II. INSTRUMENTATION

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

UAB We use the Whip Mix Learn-A-Prep block. The best technique for learning hand skills; in a single word: repetition.

UFL We use Learn-A-Prep as a starter for freshmen. We work with the students individually and we are strongly considering the implementation of dental simulators in the near future.

GHSU Our students use waxing instruments in the Dental Anatomy course for several weeks prior to starting the Freshman Operative course. In the operative course they also use the Learn-A-Prep prior to actually making preparations on plastic teeth. Placing the Learn-A-Prep in the manikin head facilitates teaching indirect vision and ergonomic principles.

UKY
a) Lecture presentation format for familiarization of instruments, nomenclature, instrument numbering systems, differences between instruments and their roles/functions.
b) Preclinical instruction on dentoforms or dental materials on proper use. This would also include sharpening procedures.
c) Clinical use on patients with proper supervision and instruction.

ULSD We are trying the combined DA/Operative course. Students are now preparing teeth three weeks after beginning the summer session.

MMC DentSim Laboratory, Repetition of Procedures.

UNC Currently plastic dentoform teeth are being utilized to provide experience, however these do not perform like enamel/dentin. Current teaching of instrument sharpening techniques in the near future.

NOVA **Combination** of different techniques – conventional simulation lab in mannequin, virtual reality-type simulation, indirect vision exercises and constant reinforcement use of indirect vision. **Repetition** and practice. **Evaluative feedback especially working hands-on with students individually** to observe their technique to help them correct and improve.

UPR No responses submitted.

MUSC Repetition of procedures in the simulation lab seems to be the key. We start with Learn-A-Prep then move into typodont teeth and natural teeth (both mounted in stone and in the typodont).

VCU DentSim; significant laboratory and clinic time; demonstrations.

2. Are students taught the use of hand instruments for cutting, shaping, and refining tooth preparation in Operative Dentistry? What is the level of clinical utilization?

UAB Yes. What is the level of clinical utilization? Less than in PCD but also used.

UFL Students are taught the use of hand instruments in our pre-clinical courses. The clinical use is very spotty and not as well used in clinic as they are in pre-clinic.

GHSU Hand-cutting instrument use is taught in the Freshman Operative Dentistry course from the very first session with the Learn-A-Prep exercises. Clinic utilization is student- and faculty-dependent. Some clinical faculty emphasize hand instrument use more than others and as a result, student use varies in accordance with personal preference and faculty influence.

UKY Yes. What is the level of clinical utilization? Instrument use is mandatory in all aspects of clinical utilization.

ULSD Yes. Hand instruments are not reinforced to a great extent in clinic.

MMC Yes. In pre-clinical/course, very low except for decay removal.

UNC Students are taught the use of hand instruments but utilization in the clinics is low.

NOVA Yes. What is the level of clinical utilization? LOW

UPR No responses submitted.

MUSC Extensive teaching in technique labs, only moderate use in clinic.

VCU Yes. What is the level of clinical utilization? It seems as though students use hand instruments for cutting, shaping and refining tooth preps more frequently in pre-clinic than in clinic.

3. Does your school teach or not teach bevels on the gingival and proximal cavosurface margins for posterior Class II composite resin restorations? What are the observations? What is the evidence in support of the teaching?

UAB Teaching of smooth enamel margins at PCD and clinical, **without** removal of undermined enamel. **The gingival margin is not beveled**. Buccal and lingual proximal cavosurface margin bevels are "optional" as it depends on the individual preparation (size/location of the proximal margin). No bevel taught at the occlusal cavosurface margins.

UFL We do not teach bevels (on) gingival or proximal surfaces of Class II preparations.

GHSU Bevels are NOT taught for Class II resin preparations (rationale - less chance of adjacent tooth damage). Observation - No significant improvement in marginal adaptation of the resin restorative material occurs; in fact it is probably more likely (for beginners) to over-finish the resin on the hard-to-see facial & lingual proximal bevels.

UKY Yes, we teach bevels although there is some differences of opinion on proximal bevel placement among other faculty. What are the observations? Students place the correct width of bevels and understand the differences in enamel rod configuration for a particular situation. Many students prefer to use a finishing bur for bevel placement, but are encouraged to use a diamond bur so they can easily see the bevel. What is the evidence in support of the teaching? Preclinical teaching includes graded written assessment with bevel placement emphasized.

ULSD We do teach (pre-clinically) bevels on gingival only if in enamel and flaring the proximal walls. *Efficacy of Beveling Posterior Composite Resin Preparations.* J Esthet and Restor Dent 2:70-3, 1990. A clinical study was conducted to evaluate the controversy over the need to bevel the occlusal cavosurface margins of posterior composite resin preparations. A total of 43 standard amalgam type cavity preparations were generated. On a randomized basis the preparations were either beveled or left unmodified. The width of the bevel in each case approximated 1 µm. Impressions were made of each preparation to verify occlusal dimension. Each preparation was restored with Estilux Posterior (Kulzer, Inc.) using conventional techniques. Polyvinyl siloxane impressions were generated and then cast with die stone. These casts were evaluated for wear at baseline, 6 months, 1, and 2 years. The loss of composite resin in the beveled preparation at 2 years averaged 81.2 µm. while the non-beveled averaged 69-8 µm . On the basis of this study, it was concluded that beveling of the occlusal cavosurface did not enhance the wear resistance of the composite resin restoration nor any other clinical characteristics evaluated in the study.
Necessity of bevels for box only Class II composite restorations. J Prosth Dent 1998;80:274-9. Tooth preparation of a bevel is recommended for an optimal marginal seal in small box-type Class II composite restorations.
Fracture resistance and gap formation of MOD restorations: influence of restorative technique, bevel preparation and water storage. Oper Dent. 2008 Jan-Feb;33(1):37-43. After 24 hours, the beveled restorations exhibited higher fracture strength values than the non-beveled restorations, and all groups showed resistance similar or superior to sound teeth. After six months, the highest fracture resistance was obtained for beveled inlays and the lowest values were observed for direct restorations with butt joints. It was concluded that storage with thermal cycling decreased fracture resistance, bevels improved fracture resistance and, in general, indirect restorations were not superior to direct restorations.
Cavity preparation factors and microleakage of Class II composite restorations filled at intraoral temperatures. Am J Dent. 1999 Jun;12(3):123-30.Vertical walls without bevels exhibited pronounced microleakage. Beveled vertical proximal walls exhibited significantly less facial and lingual wall microleakage compared to all other groups, and less gingival marginal leakage compared to the control group.

MMC Bevels at the cervical margin is taught for the same reason as for amalgam-removing loose-unsupported enamel rods.

UNC Bevels are acceptable but are not taught as a necessary part of the operative procedure. Emphasis is placed on insuring that there is enamel with bevel placement emphasized.

NOVA We do not teach placing bevels on the gingival margin but we do teach that beveling the buccal and lingual margins is an acceptable technique. In order to preserve tooth structure we do not however routinely bevel the buccal and lingual margins. We do teach that the composite resin preparation should exit the tooth at an obtuse angle to expose the ends of the enamel rods and obtain better adhesive strengths. This technique is supported by our textbook in the paragraph below.

> *Since enamel rods exit the tooth at approximately right angles to the external tooth surface, it is necessary for the cavity preparation to form an obtuse angle (greater than 90 degrees) with the external tooth surface to expose the ends of the enamel rods. If the external cavosurface margin forms a right angle with the tooth surface, conservative bevels (0.5 mm) should be placed at an approximately 45-degree angle to the surface, on the facial and lingual cavosurface margins of the proximal box preparation (Figs 10-22d and 10-22e). This will achieve the benefits of beveling, as well as aid in placing the margins in a more accessible location for finishing and polishing. Research has demonstrated that bevels on these margins significantly reduce marginal leakage.235,236 If the preparation exits the tooth at an obtuse angle, no further beveling of the proximal walls is necessary (Fig 10-22f*). Summitt, James B.. Fundamentals of Operative Dentistry: A Contemporary Approach, 3rd Edition. Quintessence Publishing (IL), 012006. 10.9.2.1). <vbk:0-86715-452-7#outline(10.9.2.1)>

UPR No responses submitted.

MUSC Teach bevel of gingival margin only if in healthy enamel and flaring of facial & lingual walls only if it can be done without injuring the adjacent tooth or removing excessive tooth structure from the tooth being treated.

VCU Proximal yes, but not if the walls have to be excessively extended to place a bevel, or the walls are in close proximity to the adjacent tooth or restoration. Gingival only if adequate band of enamel remains.

III. MAGNIFICATION

1. The use of magnification in the practice of dentistry has become widespread enough that it is now the morn rather than the exception. While there is no argument that magnification allows for a more detailed view of one's work, does the use of magnification y educators improve the evaluation of that work? In other words, is there a statistically significant difference between performance evaluation with and without the use of magnification? What is the basis for the response? Opinion, observation, evidence (*Please cite the evidence*).

UAB Not sure it improves evaluation if the user can see well with or without it. Loupes definitely improve posture and may be more necessary item as vision acuity decreases over time. The downside of the use of loupes is that the magnified field of vision is diminished and unskilled operator may ignore surrounding operating area.

UFL No response submitted.

GHSU Opinion - using magnification does improve the ABILITY to evaluate fine-detailed procedures, but whether it improves the EVALUATION in terms of meeting or failing to meet criteria depends on knowledge of and application of the criteria. Students can see better with magnification but that doesn't mean their work will be better unless they understand what they are trying to achieve and have criteria that they understand to allow them to make a meaningful evaluation (or self-evaluation in this case). The same is true for faculty, knowing the criteria is not the same as applying it.

UKY Yes, it permits the educator to evaluate dental work more precisely and provide more critical feedback to the student. Personal opinion, observation and feedback from faculty members. Evidence: a) Sturdevant's Art & Science of Operative Dentistry, pages 417-418; Summit's Fundamentals of Operative Dentistry, pages 153-155; and most recently, b) Dentistry Today (April 2009), pages 132-136.

ULSD I could not find any literature on the subject. Observation: Some of our pre-clinic faculty use magnification during grading and some do not. I have looked at all grades and there does not seem to be any correlation.

MMC Evaluation of the use of magnification has not been tracked. The opinion of faculty is "it helps to see detail of preps; allows for accurate correction).

UNC This has not been tested.

NOVA Since magnification allows for a more detailed view of the student's work it would follow that magnification by educators would improve the evaluation of the work. We cannot evaluate what we cannot see. This is especially true with composite resin restorations where surface finish and marginal integrity is difficult to see without magnification. The basis for this response is opinion and observational. We are not aware of any randomized clinical trials on this subject.

UPR No responses submitted.

MUSC I personally believe it allows more detailed inspection of work. It improves posture. If too strong, it limits the field of view and may allow something to be missed. About half the faculty use loupes. About half the students get them in the second year; by graduation almost all have them.

VCU No response submitted.

IV. MATERIALS

1. How are you teaching the use and handling of true RMGIC's (resin modified glass ionomer cements) at your school? (liner, base, build-up material, Class V restorations, open and closed sandwich restorations, with resin composite and amalgam). Which products are you using and do you adhere to manufacturer's mixing instructions and proportions?

UAB RMGIC's are used as liner, base, open sandwich technique and definitive restorative material. It is used routinely in the treatment of patients with rampant caries. Liner for composite and amalgam, open/closed sandwich with composite (when indicated, not routinely). It is NOT used for build up. We also have a formulation of conventional GI that is used less frequently. Which products are you using and do you adhere to manufacturer's mixing instructions and proportions? All products are used according to manufacturer's recommendations and we are using pre-measured, pre-encapsulated whenever available. Products: Fuji Liner, Fuji II LC and Fuji IX .

UFL We do teach the use of RMGI. We teach their use as liners, open and closed sandwich restorations, Class V definitive restorations and as interim restorations in caries control. We use Vitrebond Plus and Fuji II LC and we do follow the manufacturer's instructions.

GHSU Vitrebond is used as a base/liner. Fuji II LC is used as a Class V restorative material, a provisional restoration, and a base. It would not normally be used as a build-up unless it was for an isolated area and most likely as an undercut block out material.

UKY RMGI restorations are taught in the 1st year composite course for use as liners, bases, Class V restorations, and the open & closed sandwich techniques. The uses of RMGI are also taught extensively to the 3rd year students in the advanced esthetics course and to the 4th year students in the board review course. We do not use RMGI in student clinic.

ULSD Liner – yes, Base – yes, Build-up material – no, Class V restorations – yes, Open & closed sandwich restoration – yes, with resin composite – extended base for Class II, and amalgam - base. Which products are you using – Fuji II LC, Fuji Lining LC. Do you adhere to manufacturer's mixing instructions & proportions – yes .

MMC Fuji – required for all fixed cementations, rarely used as base. It is used as core build up for crowns.

UNC We use Vitrabond as a liner/base only and it is mixed according to the manufacturer's instructions.

NOVA We are using Fuji Lining Cement LC , Fuji IX, Triage, and Fuji Plus. The lining cement is a paste-paste formulation which automatically dispenses equal parts of base and catalyst and the other products come in capsule form that are pre-measured and mixed in the triturator.

UPR No responses submitted.

MUSC Class V restorations, both open and closed sandwich technique. We use Vitrebond and Fuji II LC [we also use Fuji IX (same indications)and Triage (temps)] Yes, we follow the directions!

VCU We use them as liners and bases for amalgams and composites, and some Class V restorations. Open and closed sandwich techniques are mentioned in lecture. Which products are you using & do you adhere to manufacturer's mixing instructions & proportions? Vitrebond, Fuji II LC. Yes.

2. What is the primary bonding agent type used in your undergraduate operative clinic? Specify by "generation."

UAB Either 4th or 5th generation bonding agents.

UFL OptiBond FL, 4th generation

GHSU OptiBond FL, (3-step), 4th generation

UKY OptiBond FL, 4th generation

ULSD XP Bond etch and rinse, two-step dental adhesive (aka 5th generation)

MMC Dentsply, Prime&Bond NT. A self-priming adhesive - 5th generation

UNC We use single dose OptiBond Solo Plus or Singlebond Plus as part of total etch bonding technique. (5th generation)

NOVA OptiBond FL, 4th generation

UPR No responses submitted.

MUSC 4th generation: Optibond FL ; 6th generation: Clearfil SE . For the past 3-5 years Optibond Solo Plus was the main bonding agent. We switched to Optibond FL this year as the literature indicates is has a better/longer lasting bond to dentin

VCU We use Optibond Solo Plus (5th generation) for composites and Scotchbond Multipurpose Plus 5-step (4th generation) for amalgam bonding. The students can also use Optibond Solo Plus as sealers for amalgam, or the 3-step Scotchbond Multipurpose to seal amalgam, or as bonding agents for certain core build-up materials.

3. Do you teach and use chlorhexidine or other material as a re-wetting agent, or to preserve the hybrid layer prior to applying bonding agent?

UAB No use of chlorhexidine with this purpose. The primer used in the adhesive system is water based.

UFL No, we do not.

GHSU It is taught or described in lecture, not routinely performed in clinic.

UKY Yes, we teach the use of chlorhexidine to disinfect the tooth preparation, however it is optional for use by the dentist in student clinic.

ULSD Yes.
The role of host-derived dentinal matrix metalloproteinases in reducing dentin bonding of resin adhesives. Int J Oral Sci. 2009 Dec;1(4):163-76. The aim of this review is to summarize the current knowledge of the role of dentinal host-derived MMPs in dentin matrix degradation. We also discuss various available MMP inhibitors, especially chlorhexidine, and suggest that they could provide a potential pathway for inhibiting collagen degradation in bonding interfaces thereby increasing dentin bonding durability.
Effect of concentration of chlorhexidine on bonding durability of dentine and resin. Zhonghua Kou Qiang Yi Xue Za Zhi. 2010 Feb;45(2):94-7 Chlorhexidine could increase the bonding durability of resin and dentin. Higher than 0.2% concentration of chlorhexidine couldn't

improve bonding durability.
Effect of chlorhexidine application on long-term shear bond strength of resin cements to dentin. J Prosthodont Res. 2010 Mar 9. Chlorhexidine 2% can diminish the loss of bonding effectiveness over time associated to etch-and-rinse and self-etch cements, although it appears not have any effect on self-adhesive cement.
Chlorhexidine stabilizes the adhesive interface: a 2-year in vitro study. Dent Mater. 2010 Apr;26(4):320-5. CHX significantly lowered the loss of bond strength and nanoleakage seen in acid-etched resin-bonded dentin artificially aged for 2 years.

MMC No. Teach re-wetting with moist cotton pellet.

UNC Not currently, but it is under consideration.

NOVA We teach the use of Gluma Desensitizer TM in the clinic to kill "bugs" and prevent sensitivity. (Gluma which is approximately 60% water serves as a re-wetting agent)

UPR No responses submitted.

MUSC Yes; based in large part on Pashley and Tay's work on matrix metalloprotienases.

VCU Yes, we teach to use it to improve long term stability. Moon P, Weaver J, Books C. *Review of Matrix Metalloproteinases' Effect on the Hybrid Dentin Bond.* The Open Dentistry Journal, 2010, 4, 147-152.

4. Are you using desensitizing agents such as Gluma under restorations or crowns?

UAB Sometimes under crown preparations.

UFL No, but we are considering the use of "immediate sealing" after crown preparations prior to impression taking.

GHSU Not routinely.

UKY Yes, we teach the use of desensitizing agents such as Gluma. The use of Gluma in clinic is at the discretion of the student dentist.

ULSD No. *Comparative in vivo study on the desensitizing efficacy of dentin desensitizers and one-bottle self-etching adhesives*. Oper Dent. 2010 May-Jun;35(3):279-86. The sensitive teeth were randomly assigned into five groups and treated with one of the following materials: iBond, Heraeus; Xeno V, Dentsply; Gluma desensitizer, Heraeus; Bifluorid 12, Voco; placebo (water). All dental materials significantly reduced the dentin hypersensitivity immediately ($p < 0.05$) and one month after treatment ($p < 0.05$), with the exception of Bifluorid 12 for mechanical tooth sensitivity.

MMC No, we use D/Sense Crystal-Centrix.

UNC Yes.

NOVA Yes.

UPR No responses submitted.

MUSC Yes.

VCU No.

5. What type of luting media is being used for conventional inlays, onlays, and crowns?

UAB For PFM crowns: RelyX; for metal inlays and onlays: RelyX; for ceramic inlays and onlays: Variolink II.

UFL Primarily Fuji Plus

GHSU RelyX Luting plus cement in the clicker dispenser is our primary luting material. Chemically-cured resin is available for isolated applications.

UKY After air abrading the metal, we normally use Ketac-Cem. In the question of minimal retention (i.e., short walls), we would use Panavia 21.

ULSD Glass ionomer cement - Fuji Plus

MMC Glass ionomer for crowns - zinc phosphate cement for inlays and onlays, due to the low "film thickness" of $ZnPO_4$.

UNC RelyX- Luting Plus - a RMGI cement

NOVA PFM - RMGI Fuji Plus; Ceramic - Ivoclar Multilink Automiz.

UPR No responses submitted.

MUSC RMGI - RelyX Luting Cem

VCU FujiCEM

V. TECHNOLOGY

1. What new technologies relating to the computer assisted dental simulators and grading or imaging technology are being utilized or considered at your school?

UAB None for the teaching or grading at this time due to cost. CAD/CAM is used clinically.

UFL We have nothing now but we are considering DentSim.

GHSU None at this time; however, various new technologies have been considered for our new dental school facility that is scheduled to open Fall Semester 2011.

UKY None.

ULSD None.

MMC Installed 5 DentSim units.

UNC None at this time.

NOVA DentSim - We have been using DentSim for computer assisted dental simulation with D1 students for 5 years. AxiUm - Grading in AxiUm is done for some clinical disciplines at this time. MiPACS and other radiograph imaging programs - all radiograph imaging in the predoctoral program is digital. Digital Cameras - students may sign out for intraoral photography imaging use in the CDM clinics. CAD/CAM - offered as a D4 elective, with clinical application after taking and passing the elective, and under the supervision of the specifically trained faculty members.

UPR No responses submitted.

MUSC AxiUm is used for grading in all departments (in place 4-5 years); all records are digital in AxiUm (in place 1+ year). All radiographs are digital as well (in place 1+ year) CAD/CAM (E4D) instruction begins for all students in Freshman year (in place 1+ year).

VCU DentSim and 3D software for dental anatomy.

2. What is your school's (and/or department's) view on the use of lasers in surface treatment of bonding?

UAB Not used for surface treatment. We have laser for hard tissue ablation and for soft tissue but not used in cavity pretreatment for bonding.

UFL This is a topic that has not been discussed or considered.

GHSU We have not incorporated lasers as a cavity surface treatment for bonding in our pre-doctoral clinics. There is no conclusive evidence to suggest that laser-assisted techniques and procedures are more effective or efficient than phosphoric acid-etching, so the increased cost and safety considerations do not warrant using lasers at this time.

UKY We lecture on the use of lasers in surface bonding, but do not use them in clinic.

ULSD Don't recommend or teach.
The effect of Er,Cr:YSGG laser and air abrasion on shear bond strength of a fissure sealant to enamel. J Am Dent Assoc. 2010 Feb;141(2):157-61. Pretreatment of enamel surfaces with air abrasion increased the bond strength of fissure sealant, but pretreatment with Er,Cr:YSGG laser did not increase the effectiveness of conventional acid etching of enamel in sealant bonds.
Effect of Er:YAG laser on dentin bonding durability under simulated pulpal pressure. J Adhes Dent. 2009 Oct;11(5):361-8. Er:YAG laser ablation to dentin adversely affected the microTBS and the sealing ability of SE Bond bonded to dentin under simulated pulpal condition.
Effect of the Nd:YAG and the Er:YAG laser on the adhesive-dentin interface: a scanning electron microscopy study. Photomed Laser Surg. 2010 Apr;28(2):195-200. Nd:YAG laser application on the dentin surface, prior to the adhesive procedures, resulted in a thinner hybrid layer with fewer resin tags. Er:YAG laser application on the dentin surface, prior to the adhesive procedures, did not allow the formation of a hybrid layer but formed resin tags.

Bond strength of an etch-and-rinse adhesive to KrF excimer laser-treated dentin. Photomed Laser Surg. 2010 Feb;28(1):97-102. The cone-shaped texture produced by treating dentin with KrF laser radiation does not improve the bond strength of the tested etch-and rinse adhesive system when compared to the traditional acid-etching technique.

MMC Not used at our school.

UNC No benefit.

NOVA In general, it is advised that a bonding agent is used in laser created cavities, e.g. Erbium YAG and Erbium YSS.

UPR No responses submitted.

MUSC Don't recommend, don't teach.

VCU We mention them in lecture, and encourage students to learn more about them, but we do not use any of them in the curriculum.

3. What is your school's (and/or department's) view on the use of lasers in cavity preparation?

UAB Very seldom used because only trained faculty can use equipment; takes longer to prepare; is not indicated for every prep; and cannot be used to remove existing restorations.

UFL We started using Biolae lasers several years ago, but found their used cumbersome, time consuming and the machines were too fragile for the dental school environment. The lasers were very difficult to keep from breaking down.

GHSU We have not incorporated lasers for cavity preparation in our pre-doctoral clinics. There is no conclusive evidence to suggest that laser-assisted techniques and procedures are more effective or efficient than conventional rotary instrumentation, so the increased cost and safety considerations do not warrant using lasers at this time.

UKY We lecture on the use of lasers in tooth preparation, but do not use them in clinic.

ULSD Don't recommend or teach.
Leakage pathway of different nano-restorative materials in class V cavities prepared by Er:YAG laser and bur preparation. Photomed Laser Surg. 2009 Oct;27(5):783-9.
It may be concluded that the cavities prepared by Er:YAG laser showed higher degree of microleakage than those conventionally prepared by bur, regardless of the restorative material at enamel margins.
Laser-assisted Cavity Preparation and Adhesion to Erbium-lased Tooth Structure: Part 2. Present-day Adhesion to Erbium-lased Tooth Structure in Permanent Teeth. J Adhes Dent. 2009 Sep 30. doi: 10.3290/j.jad.a17523. [Epub ahead of print] Recent research has shown that lasing of enamel and dentin may result in surface and subsurface alterations that have negative effects on both adhesion and seal. It is concluded that at present, it is advisable to respect the conventional pretreatment procedures as needed for the respective adhesive materials.
Laser-assisted cavity preparation and adhesion to erbium-lased tooth structure: part 1. Laser-assisted cavity preparation. J Adhes Dent. 2009 Dec;11(6):427-38. doi: 10.3290/j.jad.a18136.
We conclude that erbium lasers (Er:YAG and Er,Cr:YSGG) are most efficient and, with the right parameters, the thermal side effects are small.

MMC Demonstration several years ago was not impressive - too slow, no undercut preps.

UNC Inefficient, no benefit.

NOVA The Erbium YAG and Erbium YSSG lasers are suitable for cavity preparation.

UPR No responses submitted.

MUSC No responses submitted.

VCU We mention this in lecture, and encourage students to learn more about it, but we don't use any lasers in the curriculum.

VI. SURVEY – COMPOSITE REPAIR

The survey on composite repair was a special request from a member school. The information was tabulated and forwarded to the requesting school, and therefore, will not be published in the regional reports manual. Please check the web site for this information. Thank you to all the schools who participated in this survey.

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.

SEE NEXT SECTION

Suggestions for CODE

To locate the web site via a search engine, enter Consortium of Operative Dentistry Educators or Academy of Operative Dentistry and then use the link, CODE.

NO RESPONSES SUBMITTED

2010 NATIONAL CODE AGENDA
REGION VI
SUMMARY RESPONSES TO REGIONAL AGENDA

(Editor note: Questions condensed for printing purposes)

I. SURGICAL AND NON-SURGICAL INTERVENTIONS FOR CARIOUS LESIONS

Six of the ten schools use the DEJ as the landmark for depth of the carious lesion to recommend surgical intervention. Others use the enamel inner 1/3 or mid-enamel, but the patient's caries risk assessment is also considered. It was noted that radiographic interpretation is subject to error so other methods of diagnosis are useful to confirm apparent radiographic depth. Other criteria include: Caries Risk Assessment, role of the tooth in the treatment plan, visual and trans-illumination, cavitation, and explorer examination. Tactile with an explorer, visual inspection (demineralization or discoloration), cavitation, radiographs, and caries history. Visual inspection (white spot decalcification), cavitation, caries risk status, and careful use of an explorer. Fluoride treatments- Prescription dentifrices, rinses, gels and varnishes, MI (ACP) Paste, frequent recalls, emphasis on home hygiene, polishing and recontouring, and sealants.

II. TEACHING DENTAL ANATOMY (WAXING COURSE) AND OPERATIVE DENTISTRY

All schools report that their Dental Anatomy course is in the same Department as the Preclinical Operative Dentistry Course. With one exception, the percentage of faculty that teach Dental Anatomy and Operative ranges from 66.6% to 100% (4 schools have 100%). Other teaching faculty include Prosthodontics, Periodontics, Laboratory Tech students and in one case- the dental school Dean. In all schools but two, Dental Anatomy precedes or overlaps pre-clinical Operative Dentistry by 2-3 months. Operative is taught before Dental Anatomy in one school and taught simultaneously in another. Innovative materials/techniques: 3-D Dental Anatomy Atlas software, waxing simulated crown preps instead of pegs, coordinating posterior and anterior tooth anatomy lectures along with posterior and anterior cavity preparation exercises.

III. FACULTY TEACHING TIME COMMITMENT

The range of half-day commitment varies from 2 to 9 half-days with an average of 6 half-days in the Fall and Spring semesters with "no change' or a decrease reported in the Summer. In 8 of the 10 of schools, they report that their teaching commitment has remained the same over the past 5 years. The 2 schools reporting an increase cite faculty shortages and increased responsibilities such as with General Practice student groups. Current commitments are not expected to change or the change is unknown at this time. Most schools have no part-time faculty in their pre-clinical courses although one reported as much as 50%. Part-time faculty are more common in the clinical courses ranging from 30-50% in most schools. Most schools anticipate an increase in part-time faculty to keep up with expanding class sizes and adoption of general dentistry clinic models.

IV. ETHICS AND RESTORATIVE DENTISTRY

Only one school described ethics content in a restorative course related to choices between metallic and non-metallic restorative options in a Junior Esthetic Dentistry Course. Ethical restorative considerations are discussed as part of other more general ethics courses with lectures, small group discussions, and web-based resources using a case-based approach. Most schools (6 out of 10) report no restorative faculty involved with teaching ethics, while one faculty is an ethics course director and two other schools have restorative faculty that participate in case-based discussions. The punishment can range from reprimand, restrictions, probation, suspension, dismissal, to expulsion depending on the severity of the violation. Some schools shared their due process procedures involved with ethics and conduct violations.

2010 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
GHSU**	Georgia Health Sciences University**	NOVA	Nova Southeastern University
UKY	University of Kentucky	UPR	University of Puerto Rico
ULSD	University of Louisville	MUSC	Medical University of South Carolina
		VCU	Virginia Commonwealth University

** ***Editors note**: Medical College of Georgia (MCG) changed to Georgia Health Sciences University (GHSU) in February of 2011 (E-mail changes from @mcg.edu to @georgiahealth.edu)*

I. SURGICAL AND NON-SURGICAL INTERVENTIONS FOR CARIOUS LESIONS

1. What radiographic carious lesion depth do you use to make the decision to prepare the mesial or distal surface of a tooth? When the lesion extends to the: mid-point of the enamel; inner 1/3 of the enamel (next to the DEJ); DEJ ; outer 1/3 of the dentin (next to the DEJ)? Indicate/describe if another depth used to make the decision.

UAB DEJ

UFL DEJ

GHSU Inner 1/3 of the enamel (next to the DEJ)

UKY DEJ

ULSD The literature indicates that determining the depth of caries progress on radiographs is problematic:
Radiographic detection of approximal caries: a comparison of dental films and digital imaging systems. Dento maxillo facial radiology, Vol. 29, No. 5. (September 2000), pp. 312-318.
OBJECTIVES: To compare the diagnostic accuracy for the detection of approximal caries of two dental X-ray films, two CCD-based digital systems and two storage phosphor (SP) digital systems. Caries depth was underestimated. Radiologists performed significantly better than general practitioners whatever the recording system.
Radiographic detection of approximal caries: a comparison between senior dental students and senior dental hygiene students. Journal of Dental Hygiene 2003 Fall;77(4):246-51
The majority of lesions that were initially thought to be caries confined to enamel (classification 1) were eventually classified as non-carious.

MMC Mid-point of the enamel

UNC Spread at the DEJ

NOVA At this time we use the radiographic DEJ and the patient's Caries Risk Assessment as criteria for when to surgically intervene. If a lesion is radiographically close to the DEJ on a moderate to high risk patient surgical intervention would be recommended.

UPR No responses submitted.

MUSC Inner 1/3 of the enamel but also take into account patient's caries risk.

VCU DEJ - but we look at other factors as well - not just radiographically.

2. Do you use some other criteria or diagnostic information in addition to the above to make the decision to "cut" on these (mesial or distal) surfaces? Please specify

UAB Yes. If lesion is cavitated or not, presence of multiple lesions. If not cavitated, the patient's caries risk, level of hygiene and motivation, dexterity, compliance/adherence to treatment protocol, extent of caries observed in other treated lesions (is the clinical scenario a close resemblance of the radiographic image? Anterior teeth are transilluminated in an attempt to visualize the extent of lesion (still must ve to the dentin).

UFL We use only radiographic findings and, in a dry field, visually inspect any accessible lesions for cavitation or other signs of probable carious invasion of the dentin.

GHSU Visual with magnification and good lighting conditions, transillumination, separation of teeth along with visual and explorer inspection, patient's previous history and current caries status.

UKY Visual and transillumination. Often, you can see the white decalcification occurring. If there is enough room interproximally, you can also use the fiber optic light on your high speed handpiece to see the darkening below the enamel.

ULSD Caries activity.

MMC Yes, if the tooth will serve as an abutment for partial or fixed denture.

UNC We ask: Is the enamel surface cavitated?

NOVA Caries Risk Assessment

UPR No responses submitted.

MUSC The patient's Caries Risk Assessment (low, medium, high)

VCU Yes. We look at the Caries Risk Assessment. We check clinically for broken surface, discolored marginal ridge, etc. We also use serial bitewings if they are available.

3. What criteria or diagnostic information do you use to make the decision to prepare a tooth when a carious lesion is on the occlusal surface?

UAB Extent of explorer penetration to the pit or suspicious area; enamel discolored around the suspected area; discoloration under the enamel itself (dark or opacious appearance); lastly the bitewing examination.

UFL In a dry field, we visually inspect any lesions for cavitation or other signs of probable carious invasion of the dentin and we use radiographic findings as an adjunct to clinical findings. We discourage the use of an explorer.

GHSU Visual, Radiographic, Tactile (with the understanding that explorers used for diagnosis are inadequate alone), Caries history and current status.

UKY Visual inspection supported by an explorer "stick" for confirmation is used to make the decision to prepare a tooth when a carious lesion is on the occlusal surface. Often, you may see the radiolucency on a radiograph occlusally and this may prompt the dentist to restore the tooth. In addition, a dark area or a "stick" in a deep fissure may not necessitate restoring the tooth, and the dentist may opt for a preventive resin restoration or a sealant.

ULSD Evident cavitation; pits and fissures strongly stained and extended with bottom softened; pits, fissures with enamel discolored from lack of dentin support/caries.
An in vitro assessment of the extent of caries under small occlusal cavities. Caries Res 1992; 26(2):89-93. The presence of visible cavitation of the enamel surface is, in most cases,

synonymous with dentinal involvement. When definite cavitation is present, the question generally becomes not if, but how far, the carious process has penetrated into the dentin. In one study of 60 molars with small visible cavitations, caries had reached the DEJ in 25% of the teeth. For the remaining 75%, the caries process extended far into the dentin.
A relatively new protocol: International Caries Detection & Assessment System (ICDAS)
Influence of the ICDAS E-Learning Program for Occlusal Caries Detection on Dental Students. J Dent Educ. 74(8): 862-868 2010. In conclusion, the ICDAS e-learning program improved the reproducibility and validity in terms of specificity of the diagnostic skills of the students for the detection of occlusal caries lesions in permanent teeth. It could be suggested that the ICDAS e-learning program can be a helpful tool for providing feedback to students on caries detection protocol. http://www.icdas.org/elearning.htm http://www.icdas.org/overview.htm

MMC Penetration to DEJ or a cavitated lesion.

UNC Are there clinical signs of demineralization adjacent to the stained fissure? Is there radiographic evidence of demineralization?

NOVA Visual, DIAGNOdent, radiographs, light tactile exploration.

UPR No responses submitted.

MUSC Light tactical exploration, radiograph, visual examination of clean, dry tooth

VCU Softening/cavitation at the base of a pit/fissure; chalkiness of enamel surrounding pit/fissure; Caries Risk status.

4. What criteria or diagnostic information do you use to make the decision to prepare a tooth when a carious lesion is on the facial or lingual surfaces?

UAB Restore when: cavitated, soft to the explorer, enamel is so frail that it easily breaks off (without much pressure on inspection)

UFL Again, in a dry field, we visually inspect any lesions for cavitation or other signs of probable carious invasion of the dentin. If there is no obvious sign of cavitation, we try to remineralize, unless there is an esthetic issue with the lesion.

GHSU Condition of the tooth surface - intact or cavitated, color, surface hardness.

UKY Visual inspection for white decalcification followed by an explorer "stick" if caries is present for confirmation, however, occasionally you may see a slight radiolucency radiographically.

ULSD These areas are carious if they are (1) either decalcified or if there is a white spot as evidence of subsurface demineralization and (2) if the area is found to be soft by penetration with the explorer, or scraping the area with the explorer.

MMC Anterior teeth-Esthetics Incipient caries treat with non-invasive method, fluoride treatments and better oral hygiene.

UNC Enamel cavitated? Area cleansable?

NOVA Visual, light touch explorer

UPR No responses submitted.

MUSC Visual (with lesion dry) matte surface, likely caries into dentin, shiny surface, likely not into dentin; light tactical exploration.

VCU Cavitation and Caries Risk status. Otherwise, we try to remineralize first with fluorides.

5. For CHARTED lesions considered too shallow to surgically prepare, what type of preventive interventions such as remineralization are routinely performed in student clinics? Are you tracking the effectiveness of these non-surgical interventions?

UAB Treatment falls under categories: non-surgical, surgical and preventive or maintenance
Non-surgical active treatment

- Caries Risk Assessment is used, determine risk level (hygiene, dietary habits, medical history and medications, systemic and oral implications, etc)
- Hygiene skill and drill with emphasis on flossing
- Fluoride rinse in the daytime
- ACP paste, ACP + Fluoride, fluoride gel/paste nightly. May choose to use varnish, especially for smooth surface lesions
- Recall every 6 mos for prophy, reassess hygiene, compliance, new exam and fluoride. There is a recall system in place for our clinic but these patients are NOT singled out or examined/evaluated in a different way.

UFL With each patient we are having the students do a caries risk assessment and caries management plan that includes options for management of high fluoride content rinses and prescription toothpastes, fluoride gel and varnish treatments and MI Paste. A few faculty have had students use the ICON system of resin infiltration for early to moderate enamel caries lesions.

GHSU We are currently organizing our non-surgical therapeutic approaches. At this time - polishing or recontouring to improve hygiene or reduce plaque retention, topical and prescription fluorides, Fluoride Varnish, MI-Paste.

UKY Students may opt to remineralize the lesion through fluoride treatments, place a sealant, or place a preventive resin restoration. No tracking.

ULSD Fluoride treatment. Not tracking.

MMC Usually a sealant application or a PRR. No tracking, but we plan to.

UNC Students perform caries risk assessments and high risk patients are encouraged to use Prevident 5000 or other sources of Fluoride. Currently the effectiveness of this intervention is not being tracked.

NOVA Fluoride varnish, 5000 ppm toothpaste, MI paste, fluoride trays. Yes, in the QA clinic we are reassessing the Caries Risk Assessment and preventive treatment plans.

UPR No responses submitted.

MUSC 5000 ppm fluoride dentifrice, fluoride varnish, fluoride rinses, fluoride trays. This is not specifically tracked in restorative dept but all these patients are followed in the Maintenance/Recall program (a sophomore clinical course).

VCU Explore the pits and fissures and seal with pit and fissure sealants as appropriate. We do not have formal tracking, but we do have an Oral Disease Control therapy protocol in place at the completion of disease control, as well as a recall system when these lesions would be checked.

II. TEACHING DENTAL ANATOMY (WAXING COURSE) AND OPERATIVE DENTISTRY

1. What Department or Division is your Dental Anatomy course assigned to? Is it the same Department or Division as the one your Pre-clinical Operative Dentistry course(s) is assigned to?

UAB Department of General Dental Sciences, Division of Predoctoral General Dentistry.

UFL Operative Department. Yes.

GHSU Department of Oral Rehabilitation. Yes.

UKY Department of Oral Health Practice, Division of Restorative Dentistry and Prosthodontics. Yes.

ULSD Department of General Dentistry and Oral Medicine. Both for Dental Anatomy and Operative.

MMC Department of Restorative Dentistry. Yes.

UNC Operative Dentistry. Yes.

NOVA Cariology and Restorative Dentistry. Yes.

UPR No responses submitted.

MUSC Restorative Division of the Oral Rehabilitation Department. Yes.

VCU Department of General Practice Dentistry. Yes.

2. What percentage of the teaching faculty in Dental Anatomy also teach Pre-clinical Operative Dentistry? If there are Dental Anatomy teachers that are NOT Operative teachers, what department or discipline are they associated with?

UAB 100%

UFL 80%. The Dean and Perio.

GHSU 100%

UKY 66.6% Prosthodontics

ULSD 100% as Dental Anatomy and Operative are one course.

MMC 0%. Fixed Prosthodontics, Prosthodontics Dental (tooth) Morphology

UNC 80 - 100% Prosthodontics

NOVA 80 - 100%

UPR No responses submitted.

MUSC 100%

VCU Approximately 75% laboratory technician students

3. Does Dental Anatomy precede, overlap, or follow pre-clinical Operative Dentistry in your curriculum? If these courses overlap, which comes first and how much overlap is involved?

UAB Precedes. For a few years we overlapped and this worked very well. Dental Anatomy started on Monday of the first week of the D-1 year. Preclinical Operative started the same week on Thursday. With D-1 curriculum changes in 2008, UAB again teaches the D-1 Dental Anatomy and Occlusion course to completion and then the Preclinical Operative Course, with no overlap.

UFL It precedes pre-clinical Operative Dentistry.

GHSU Overlap. Dental Anatomy is sequenced first in Semester #1. The Freshman Operative Dentistry Course starts half-way through Semester #1 with a 7-week overlap.

UKY Overlap. Dental Anatomy begins in August and ends in December. Pre-clinical Operative Dentistry begins in September and ends in May. The courses overlap in time, but very little didactically (the only exception being dental nomenclature).

ULSD Dental Anatomy and Operative are one course that runs during the Summer, Fall, and Spring sessions.

MMC Precedes D2 Fall semester, Preclinic Operative - Spring of D1 year. D1- Pre-clinic Operative in Spring before Dental Tooth Morphology.

UNC Precedes

NOVA Precedes

UPR No responses submitted.

MUSC Dental Anatomy is taught in the freshman year, Operative Dentistry begins in the sophomore year.

VCU Overlap. Dental Anatomy begins at the same time as operative, but only overlaps for 3 months, and then operative continues by itself for 6 more months.

4. Are you using any in**NOVA**tive materials or techniques to teach Dental Anatomy that might be influenced by the connection to Operative or Restorative faculty via your department organization chart, or overlap between such courses where they exist? (N/A if no connection between Dental Anatomy and Operative / Restorative)

UAB For waxing exercises, the Dental Anatomy course uses dentoform teeth and a dentoform with several PFTM preparations. (The dentoform company- Kilgore - reproduces the preparations provided by the course director. These are in the student instrument kit.) We have observed that this carries over to contouring restorations more than carving random missing portions of a plastic tooth without adjacent teeth.

UFL The 3D Dental Anatomy Atlas and just good, basic waxing of the entire crown of multiple teeth.

GHSU In Dental Anatomy all wax-ups are performed on half-tooth preps or simulated full crown preps instead of generic tooth pegs. Reviewing posterior cavity preparation outline form along with teaching posterior tooth occlusal anatomy.

UKY Dental nomenclature such as anatomical contouring in waxing carries over to anatomical contouring in carving amalgam restorations.

ULSD Nothing to innovative. We only wax two full crowns and those are waxed on full crown preparations, not pegs. A dental technician from Whip Mix demonstrates the waxing. We present the premolar and molar dental anatomy lectures as we have the students do Class I and II preparations/restorations and the incisor and canine lectures when they do Class III, IV V and veneers.

MMC Types of Black's cavity criteria. Mandibular 1st premolar, maxillary 1st premolar, maxillary 1st molar.

UNC No.

NOVA N/A

UPR No responses submitted.

MUSC N/A

VCU We are using 3D software to teach dental anatomy that could also be of use in endo courses, although those courses are taught in the endo department.

III. FACULTY TEACHING TIME COMMITMENT

1. What is the average number of half days (5 days = 10 half days) of teaching (direct student contact) that your FULL-TIME Operative / Restorative faculty provide in the Fall and Spring Semesters? Does this teaching commitment change (more, less) during the Summer Semester?

(Adjust your answer if your school is on academic quarters instead of semesters)

UAB See response to III-3.

UFL 5 - 8 depending on if they are in Faculty Practice. No (change during summer)..

GHSU The average time commitment for full-time faculty is 5 half-days of teaching. The commitment decreases in the summer semester to approximately 3 - 4 half-days.

UKY The average is 4 half days per week during the Fall Semester. 20 weeks during the Fall Semester x 4 = 80 half days. 21 weeks during the Spring Semester x 4 = 84 half days. Less in summer, since the students are not attending dental school during the month of July.

ULSD For our department, it depends on if they have course directorships (and therefore prep time), if they are group leaders, if they are tenure/term, and if they are in Faculty Practice. It's difficult to determine an average because everyone is different. In general, faculty are scheduled 80% of the time or 8 half days. Yes - it is lighter in the summer session because we encourage our faculty to take their vacation then and schedule each week based on planned vacations.

MMC 100% - minus 1/2 day release time due to Faculty shortage. Ratio 1:5.

UNC 2, no change during summers.

NOVA Full time faculty average 7.5 half days of direct student contact. Faculty are tasked to maximum capacity throughout the year.

UPR No responses submitted.

MUSC 7 half days student contact time, 2 half days faculty practice, 1 half day admin. It's the same during the summer.

VCU 6 - 8 half-days. Sometimes less during the summer.

2. Has this teaching time commitment increased, decreased or remained the same over the past 5 years? If a change has occurred, can you cite a reason(s) as to why this has happened? Do you expect your teaching time commitment to change in the NEXT 5 years? If so, will it increase or decrease?

UAB See response to III-3

UFL Pretty much the same, but a slight tendency toward increasing time; Decrease in overall faculty numbers with the department: Not sure regarding increase/decrease.

GHSU The time commitment has remained essentially the same with isolated changes occurring during short term faculty shortages due to retirement or departure and furlough days.

UKY Remained the same. No.

ULSD The percentage of time scheduled is about the same but everyone has taken on more responsibilities. We can't expect more commitment of time because everyone is scheduled to the max. Hopefully, an increase in the number of faculty hired and/or more efficient scheduling of clinic and courses will help future scheduling needs.

MMC Increased - Faculty shortage unknown next 5 years.

UNC No change. Do not expect change.

NOVA Teaching commitment has remained fairly constant. Regarding changes/increase/decrease: Unknown. Teaching time commitment may vary over the next 5 years to accommodate implementation of the new vertically and horizontally integrated curriculum and competency based model. Also changes may occur as we enhance the group leader model introduced June 2010.

UPR No responses submitted.

MUSC It has stayed the same. But it will likely increase beginning this coming year as the class size had increased from 60 to 70. So far there have been no increase in faculty.

VCU Probably increased. May have increased over the past years due to having 8 General Practice Groups that must be staffed as well as staffing labs up to 7 sessions per week. Unsure of increase/decrease.

3. Please give an estimate of the number (& %) of PART-TIME faculty (<.50 FTE) involved with teaching in your PRE-CLINICAL operative / restorative courses AND in your CLINICAL operative / restorative courses. Has the number (%) increased, decreased, or stayed the same over the past 5 years? Do you expect the number of PART-TIME faculty to change in the next 5 years? If so, will it increase or decrease?

UAB D-1 Preclinical Dental Anatomy and Operative: Three full time and one half time (0.50 FTE) faculty members – This has remained the same for about 4 years. Some semesters we only have three faculty (2 full time and one 0.50). (60 students)
D-2 Preclinical prosthodontics courses: a decrease in numbers of faculty occurred in 2009
Prior to 2009: Three full time faculty and one prosthodontics resident
2009 – present: Two full time faculty and two prosthodontics residents, thus an increase in the number of <0.5 FTE faculty in the preclinic prosthodontic courses (60 students)

UFL None in the pre-clinical teaching as of last year. Approximately 25% in clinics. Approximately the same. Not sure (change), but quite likely.

GHSU Pre-clinical: 0%. Clinical: 30% of the total faculty, but 20% of the total coverage.

UKY 9 part-time or 41%. Increased. Hopefully increase.

ULSD % part-time = only 1 of the 12 faculty who teach in our pre-clinic course is part-time.
% part-time in clinical operative courses = we have comprehensive care clinics so we don't really have a clinical restorative course (i.e. discipline based).

MMC One (1) <.50FTE. Yes, increase.

UNC Pre-clinical - no part time faculty. Clinical - 29 part time faculty. Part time faculty will likely increase.

NOVA 20/50 = 40% are part time The % of part time faculty to full time faculty has decreased. The number of part-time faculty is likely to increase over the next 5 years to best accommodate the curriculum changes and provide adequate back-up support for the group leader model.

UPR No responses submitted.

MUSC Pre-clinical: none (0/8) 0% Clinical: (4/8) 50% ; it will have to increase as the increased class size moves into the clinic next year.

VCU Approximately 50%. Unsure as to increases/decreases in future.

IV. ETHICS AND RESTORATIVE DENTISTRY

1. Is there any ethics instruction or other ethical didactic content in your restorative curriculum? Identify the courses by name (content), and year in your curriculum (Fresh, Soph, etc.).

UAB No, not as a course itself in restorative. There is an ethics course that the freshmen take in July – August. This is 3-hour course taught by multiple lecturers: Dr. Bill Myers is the course director

UFL There is not specific ethics instruction within the restorative curriculum, but there are a couple of courses within the college curriculum.

GHSU Ethical considerations for restorative treatment that involves choices between metallic and non-metallic esthetic treatment options are discussed with consideration given to longevity and durability in the Junior Esthetic Dentistry Course.

UKY No, an ethics course is taught in another department.

ULSD Dental Anatomy/Operative Dentistry (1st)

MMC No. Advice from College's Legal Counsel, Dr. Leavell - Dental Public Health.
(1) Behavioral Science: 3rd & 4th Year Students.
(2) Ethics and Code of Professional Conduct (ADA).

UNC Dent 100 Social and Ethical Issues in Dental Practice (DDS1)

NOVA There is a D1 course: Ethics and Professionalism, however, it is not specific to restorative dentistry or any one discipline. Ethical cases are discussed that cover different topics in patient care, including, but not limited to restorative dentistry. There is discussion related to live patient clinical board exams, selection of cases ("board lesions") in this context.

UPR No responses submitted.

MUSC No. There is a separate Ethics course in the senior year not connected to the restorative dept. Isolated ethical issues are discussed in restorative courses; things like informed consent; knowing the materials one uses, etc.

VCU There is an ethics course (Introduction to Professionalism, Ethics and Ethical Decisions) in the spring of the D2 year, but it is not taught as part of the restorative curriculum. In the past, we've had general practice faculty give a lecture for this course. We also have a yearly ethics lecture for all students in the fall, with an invited speaker.

2. If yes, what type of ethics instruction takes place in your restorative courses? Lecture only, small group discussions, on-line instruction, other?

UAB Ethics in Restorative is included in the case-based teaching with cases, small group discussions and write-ups. The cases are designed as application and reinforcement of skills learned during D1.

UFL N/A

GHSU Lecture only (Jr. Esthetics)

UKY N/A

ULSD Lecture only

MMC Ethics is discussed in all restorative courses.

UNC No response submitted.

NOVA The format is lecture, student group discussions and presentations, some web-based resources.

UPR No responses submitted.

MUSC N/A

VCU Small group discussion

3. Are your Operative / Restorative faculty involved with teaching ethics in ethics course(s) that is(are) directed by another department? If yes, how many are involved and please indicate the percentage of ethics teaching faculty in this (these) course(s).

UAB None of the restorative faculty teach in the ethics didactic course. Some faculty (4-5) participate in the case-based discussions.

UFL No response submitted.

GHSU One of our faculty discusses the subject in a Treatment Planning Course (with Oral Medicine). The message is basically that material selection needs to be made using an informed decision by the patient, not just for increased revenue to be gained by a provider who only does composites or all-ceramic restorations.

UKY No.

ULSD No.

MMC No.

UNC Operative faculty are not involved.

NOVA The course director is a member of the Restorative Dentistry faculty; other faculty are from other disciplines, including outside speakers, and a medical school faculty member. The course is currently housed in the Department of Community Dentistry.

UPR No responses submitted.

MUSC No.

VCU There is one operative faculty who teaches in the course out of five total.

4. If a student commits what would considered to be an ethics violation in an Operative / Restorative CLINICAL course, what types of punishment/sanction could they face if found guilty?

UAB Depends on the violation. Can have a failing grade, repeat the course, be removed from clinic, be placed under close supervision (HILAMP Program).

UFL They would appear before SPEC (Student Performance Evaluation Committee) and/or the Dean for punishment and/or sanctions that could include expulsion.

GHSU Our students are subject to both a Campus and a Dental School Code of Conduct that includes standards for ethical behavior that are part of being a dental professional. The students also know that they are being evaluated for professional behavior in classrooms and clinics. Our restorative faculty have two options for reporting transgressions. Classroom or Clinical misconduct is reported to the course director and/or the Associate Dean for Student Affairs (administers the school's Code of Conduct). Both the Course Director and the Associate Dean can hold meetings with the reporting faculty and student. The result of the meeting can be probation or a sanction. Sanctions can range from a course grade penalty to a recommendation for suspension or expulsion depending on the level of infraction and whether or not a conduct hearing is necessary. Conduct hearings are convened and conducted in a manner specified by the school's Code of Conduct. All decisions that involve a suspension or expulsion are made by the Dean.

UKY Based on the honor code at our institution, they could be reprimanded (oral or written), suspended, or expelled.

ULSD Code of Professional Responsibility lists sanctions ranging from:

1. Reprimand: Notice of violation of specified regulations and warning that further such conduct may result in a more severe disciplinary action.
2. Disciplinary Restrictions: Limiting of certain privileges or practices of the individual(s) involved in the offense.
3. Disciplinary Probation: Imposition of conditions on the individual(s) involved, with warning of possible graver action if further infractions occur (or if probation is violated).
4. Disciplinary Suspension: Immediate, temporary exclusion from the School of Dentistry for a period not to exceed fourteen calendar days.

5. Disciplinary Dismissal: Immediate exclusion from the School of Dentistry with student ineligible for readmission until the lapse of one or more regular terms, as specified.
6. Disciplinary Expulsion: Immediate, permanent exclusion from the School of Dentistry.

MMC Dismissal from clinic and loss of credits. Various disciplines including dismissal from school through Meharry Medical College.

UNC Worst case - expulsion

NOVA Behavioral/ethical violations should be reported by the clinical course faculty, go through the department, and then to the Student Progress Committee. The SPC makes recommendations to the Dean, who can accept or change the recommendations. If found guilty, the sanction could range from written reprimand to suspension or dismissal, depending on the severity of the violation. The student has the right to an appeals process. The determination of the appeals committee is final.

UPR No responses submitted.

MUSC Depends on severity; lowered grade, to course failure, to expulsion.

VCU Our school has a University's Honors System that we would follow in this case.

Suggestions for CODE

To locate the web site via a search engine, enter Consortium of Operative Dentistry Educators or Academy of Operative Dentistry and then use the link, CODE.

NO RESPONSE SUBMITTED