Consortium of Operative Dentistry Educators

(CODE)

REGIONAL REPORTS FALL
2013

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

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THE CODE 2013 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.

On February 20, 2014, CODE held a National/International meeting during the annual meeting of the Academy of Operative Dentistry in Chicago. Dr. So Ran Kwon presented the program: *Incorporation of Digital Technology in Dental Anatomy Grading* and Dr. Eric Levine presented the program: *Computer-Assisted Evaluation for Preclinical Dental Education*. CODE acknowledges, the work of Dr. Tilly Peters in helping to make the presentations possible. The Power Point of the presentations are posted on the CODE website.

I had the privilege of attending the 2013 Region II meeting at Southern Illinois University School of Dental Medicine in Alton, Illinois. Dr. Christa Hopp, served as a first-time host and she did an outstanding job of conducting the meeting, completing the regional report and showing the attendees excellent hospitality. There was lively discussion, great food and camaraderie and the Cardinals won their game. Outgoing National Director, Dr. Larry Haisch was also in attendance. I want to take this opportunity to thank Larry for his many years of outstanding contributions to this organization and his help to me in this inaugural year as National Director. I also want to thank Christa for hosting a wonderful meeting.

Consistent with Dr. Haisch's urgings, please continue to familiarize your Deans and Department chairs with CODE's objectives and its value to their school, and the operative discipline. The deans' support is crucial in providing the means for faculty to attend or host Regional meetings.

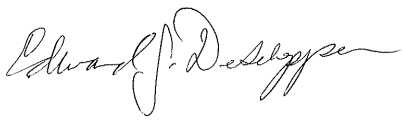
Spread the word about CODE and work to provide input to Licensure Boards on Restorative Dentistry. Encourage/invite members of the Licensure examining boards to attend the Fall Regional meetings. Invite our colleagues in the Armed and Public Health Services to our meetings - both Regional and National.
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. However, after only one "prompting", I am greatly appreciative of the timely response this year.

Thank you to webmaster, Dr. William Johnson, for the timely website updates and enhancements. Dr. Johnson has also become an At-Large Regional Director and has agreed to maintain the website, at least until I can obtain the support I need at my new position at Tennessee. My appreciation to the Regional Directors and the meeting hosts (Dr. Bernard Kula, Dr. Christa Hopp, Dr. Gary Frey, Dr. Mike Bagby, Dr. Richard Lichtenthal, and Dr. Phyllis Filker) the Operative Section of ADEA and the general membership for helping to make CODE what it is and what it accomplishes.

Thank you to my Dean, Dr. Timothy Hottel for his support. I could not have accomplished much of the operational aspects of CODE this first year without the assistance of Ms. Linda Diehl, Dr. William Johnson, and Dr. Larry Haisch. Thank you, one and all.

Sincerely,

Edward J. DeSchepper, MAEd, DDS, MSD



Consortium of Operative Dentistry Educators (CODE)
Foreward – Edward J. DeSchepper, MAEd. DDS, MSD
National Director
DeSchepper ED (ed.) CODE Regional Annual Reports 2013.
http://www.unmc.edu/CODE

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

This portion written by
Dr. Larry Haisch, DDS, Immediate Past National Director

Project ACORDE (A Consortium of Restorative Dentistry Education)

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

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

The Broad Goals and Functions of this committee were:

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

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

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

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

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

The benefit, most frequently cited by dental school faculty, was communication. The primary example of the communication begun by Project ACORDE, which has lasted well beyond the initial project, is CODE (Consortium of Operative Dentistry Educators). CODE has as its goal, the continuation of meetings for the purpose of information exchange among teachers of operative dentistry. Regional CODE meetings

are held annually with minutes of each session recorded and sent to the national director for distribution. This system is a direct spin-off of Project ACORDE.

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

The Early Years (1974-1977)

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

The Transition Years (1977-1980)

The first indication that the future of CODE was in jeopardy came in 1977, the first year that a national report could not be 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 - 2012 Larry Haisch (Nebraska)
2013- Present Ed DeSchepper (Tennessee)

ORGANIZATION OPERATION

The Section of Operative and Biomaterials of the American Dental Education Association (ADEA) has "oversight" responsibility for sustaining and managing the activities of CODE.

- The National Director of CODE will be appointed by the Executive Council of the Operative and Biomaterials Section for a three-year renewable term.
- The National Director will be selected from a list of one or more individuals nominated for the position by the CODE Advisory Committee after input from the regions.
- The National Director will perform the functions and duties as set forth by the Council.
- The National Director will be a joint member on the Council and will be expected to attend a regional CODE meeting and the annual meeting of the Council and Section. The National Director may also serve as an elected officer of the Council.

A CODE Advisory Committee will assist the National Director with his/her duties.

- A CODE Advisory Committee will consist of the Regional Directors from each of the six regions, the National Director and three 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 "nonpayment" 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 1-2-14)

	Region	Regional Director	Phone/E-mail	Term (3 years)
I	Pacific	Dr. Oanh Le UCSF San Francisco, CA	650-558-9253 oanh.le@ucsf.edu	2012- 2014
II	Midwest	Dr. Christa Hopp Southern Illinois University Alton, IL	618-474-7052 chopp@siue.edu	2012- 2014
III	South Midwest	Dr. Scott Phillips Mississippi School of Dentistry Jackson, MS	601-984-6042 smphillips@sod.umsmed.edu	2013- 2015
IV	Great Lakes	Dr. Marsha Babka MID University Downers Grove, IL	630-515-7476 mbabka@MID.edu	2013- 2015
V	Northeast	Dr. Richard Lichtenthal Columbia University New York, NY	212-305-9898 rml1@columbia.edu	2011- 2013
VI	South	Dr. Phyllis Joy Filker Nova Southeastern University Fort Lauderdale-Davie, FL	954-262-1628 filker@nova.edu	2013- 2015
II	At-Large	Dr. William Johnson UNMC Lincoln, NE	402-472-9406 wwjohnson@unmc.edu	2013- 2015
III	At-Large	Dr. Edmond Hewlett UCLA Los Angeles, CA	310-825-7097 ehewlett@dentistry.ucla.edu	2013 - 2015
VI	At-Large	Dr. Kevin Frazier Georgia Regents University August, GA	706-721-2881 kfrazier@gru.edu	2011- 2013
III	National Director	Dr. Ed DeSchepper UTHSC College of Dentistry Memphis, TN	901-448-1313 edeschep@uthsc.edu	2013- 2015
II	Web Master	Dr. William Johnson UNMC Lincoln, NE	402-472-9406 wwjohnson@unmc.edu	No Term

Consortium of Operative Dental Educators (CODE)
2012-2013
Paid – Regions and Schools

Paid members as of January 11, 2013 — 74 Schools (10 Canadian, 64 USA)

Region I (Pacific) - 14 Schools	**Region II (Midwest) - 10 Schools**
X Alberta- Canada	X Colorado
X ATSU – (Mesa), Arizona	X Creighton
X Midwestern University (Glendale), Arizona	X Iowa
X British Columbia- Canada	X Manitoba – Canada
X Loma Linda	X Marquette
X Nevada	X Minnesota
X Oregon	X UMKC – Missouri
X UOP - Arhtur Dugoni	X UNMC - Nebraska
X Roseman – Utah	X Saskatchewan – Canada
X UCLA	X Southern Illinois
X UCSF	
X USC - Herman Ostrow	
X Western University- California	
X Washington	
Region III (South Midwest) - 7 Schools	**Region IV (Great Lakes) - 11 Schools**
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 Midwestern University (Downers Grove, Illinois)
X UTHSC- Houston	X Ohio State
	X Pittsburgh
	X University of Buffalo
	X West Virginia
	X Western Ontario - Canada
Region V (Northeast) - 19 Schools	**Region VI (South) - 13 Schools**
X Boston	X Alabama
X Columbia	X East Carolina
X Connecticut	X Florida
N Dalhousie – Canada	X Georgia
X Harvard	X Kentucky
N Howard	NS Lake Erie College- Florida (Opened Fall 2012)
N Laval - Canada	X Louisville
X Maryland	X Meharry
X McGill – Canada	X North Carolina
N Montreal- Canada	X Nova Southeastern
NS New England – Maine (Opening Fall 2013)	X Puerto Rico
X New Jersey	X South Carolina
X NYU	X Virginia
X Pennsylvania	
X Stony Brook University	
X Temple	
X Toronto- Canada	
N Tufts	
X US Naval Dental School	

X = paid N= Not paid IP = In progress NS = New schools

ARD:Staff\CODE\Pd Rg&Sch

The National Agenda for 2013 was established after review of the suggestions contained in the reports of the 2012 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 to 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. ***Summary of responses to the National Agenda.***
3. ***Individual school responses to the National Agenda***
4. ***The Regional Agenda summary and responses. 5. CODE Regional Attendees Form*****

** (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", click on "member", then use the link "CODE & 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 20, 2014** from 4:15 pm to 6:00 pm at the **Drake Hotel, 140 East Walton Place, room TBA** 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,

Edward J. DeSchepper, MA.Ed., D.D.S., M.S.D.
National Director, C.O.D.E.
UTSCH College of Dentisty
875 Union Avenue, Suite S103
Memphis, TN 38163

edeschep@uthsc.edu
Office: 901-448-1313
Fax: 901-448-1625

2013 NATIONAL CODE AGENDA

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

I. CONSORTIUM OF OPERATIVE DENTISTRY EDUCATORS (C.O.D.E.)

The organization has grown and evolved over time. At present there is no organizational constitution and by-laws. Consideration is warranted.

A. What is the interest, need, value?
B. Are there concerns?
C. Who wishes to participate in the process of formulation of a constitution and by-laws?
Each region is to submit the name of one individual who wishes to participate on an ad-hoc constitution and by-laws committee.

II. MATERIALS/TECHNIQUES AND DEVICES

A. In recent years there have been articles indicating that glass ionomer sealants are just as effective as resin-based composite sealants.
1. What materials (both type and brand name) are used for pit and fissure sealants at your institution?
2. If glass ionomer products are used, are they used routinely or are they used under certain guidelines, e.g. partially erupted teeth, difficulty in isolation or in outreach clinics without the aid of suction?
3. What has been your experience with glass ionomer sealants?

B. Does your institution teach impression techniques using intraoral digital scanning devices?

1. If so, what brand(s) of intraoral impression scanners are being used?
2. How many scanners do you have? How are they funded or provided?
3. Do all students use the scanners for their patients?
4. If scanning access is limited, how do you determine who gains access?
5. What has been your experience with intraoral digital scanning devices?

C. Composite Resin

1. What are the limitations in your clinic for the placement of Class II composite restoration if any? What is your criterion for a Class II composite restoration placement?
2. What is taught for Class II composite restorations with gingival margins on dentin (apical to the CEJ); use of flowable or RMGI as an "open sandwich?"
3. Have esthetic inlays and onlays been increasing in frequency in your clinic? Do you see these increasing in the future as esthetic alternatives to large amalgam restorations instead of direct resin composite?
4. How many resin composite systems and bonding systems are available in your clinic? What bonding systems are being used? If there are multiple systems, are all systems taught in the pre-clinic courses also?
5. What type of matric systems are used for Class II posterior composites? How are these systems dispensed in your clinic?
6. How do you prevent voids in composite restorations? Are you heating the composite to provide better flow?
7. If known, what is the secondary caries rate of composite versus amalgam restorations?

D. Pins in Restorative Dentistry

1. Does your school teach the use of pins in the pre-clinical curriculum?
2. Do your students use pins in the clinic?
3. Which pin system(s) are used?
4. If used, are pins limited to amalgam restorations?

E. Posts in Restorative Dentistry

1. What is utilized in clinics? Prefab, cast, fiber
2. What criteria are used to determine the need for a post?
3. What criteria are used in the selection of post types?
4. Which systems are available at your school?

III. CURRICULUM

A. When is your first clinical experience in Restorative Dentistry scheduled?

1. Where do the patients come from?
2. Do they stay with the student?
3. What is the staffing ratio?
4. Any problems or recommendations?

B. Do you have a clinical course in Operative Dentistry in the Junior or Senior year?

1. How do you assign grades?
2. Do you have Skills Assessments? Are they photographed?
3. Are you evaluating portfolios?
4. Do you have points or procedures requirements?

C. How many contact time hours are dedicated to pre-clinical dentistry (lecture, lab, amalgam, composite, single unit restorations)?

D. Do you have enough faculty? (If not, why)

1. In your pre-clinical lab courses, what is the student/faculty ratio?
2. In your clinics, what is the student/faculty ratio?

E. Does your school use machine/computer grading in the pre-clinical courses?

1. If so, what software/manufacturer?
2. If so, for what type of restorations? F. National Boards

1. Do you have formal National Board preparation courses?
2. Review sessions?
3. Are the courses or reviews mandatory or optional?
4. Does your school purchase review materials for students (like Crack the Code or Exam Master)?

IV. CARIOLOGY

A. Caries Management

1. Does your school have a formal caries management plan as part of the comprehensive treatment plan?
2. How is the caries management plan tracked once it has been implemented?
3. How are reevaluations documented?
4. By treatment note only or by procedure code completion?
5. Does the school dispense remineralization products to patients? If so, how is it dispenses or purchased?
6. Are treatments being planned based on CAMBRA concepts?
7. Are such treatments accomplished as planned?

V. OTHER

A. Biomimetics has been defined as "the study of structure and function of biological systems as models for the design and engineering of materials and machines."

1. What is Biomimetic Dentistry?
2. Is this an application of a new term for existing techniques?

VI. REGIONAL CODE AGENDA

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

I. REGIONAL CODE AGENDA

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

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. Edward J. DeSchepper, National Director, UTHSC College of Dentistry, Memphis, TN 38163.
Deadline for return: 30 Days post-meeting
Office: 901 448-1313 Fax: 901-448-1625 E-mail: edeschep@uthsc.edu,
Also send the information 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

Consortium of Operative Dentistry Educators

(CODE)

REGION I (PACIFIC) ANNUAL REPORTS

Region I Director:
Dr. Oanh Le
UCSF
San Francisco, CA

Region I Annual Meeting Host:
Dr. Bernard Kula
University of Alberta
Edmonton, Canada

Region I Annual Report Editor:
Dr. Oanh Le
UCSF
San Francisco, CA

CODE REGIONAL MEETING FORM

REGION: I Pacific

LOCATION INFORMATION FOR 2013 REGIONAL MEETING

University: University of Alberta

Dates: September 19-20, 2013

Chairperson: Bernard Kula, DDS Phone # 780-492-4474

University: University of Alberta Fax # 780-492-7536

Address: 11405 87th ave E-mail kula@ualberta.ca

Edmonton, Alberta, Canada

List of Attendees: Please complete the CODE Regional Attendees form (See next page)

Suggested Agenda Items for Next Year:

1. Portfolio HIPPA requirements
2. Indirect pulp-caps step wise excavation and not going back
3. Marginal staining- When to go back?
4. Online blended flip class room learning
5. What kind of questions written and clinical exams?, what kind of format?. How do you measure your student performance?.
6. How do you calibrated your faculty for preclinical, clinic, and the different preferences of course directors and department chairs
7. How to address the problem of rampant caries in the children especially Native Americans and lower Social Economic group. Specifically beyond access such as outcomes?
8. Do you have a formal training program for calibration?
9. Does your clinical faculty go through the appropriate SimLab courses prior to supervising clinical treatment?
10. How do you control for consistency of treatment philosophy and quality control in the students' transition from SimLab to the clinic?

LOCATION INFORMATION FOR 2014 REGIONAL MEETING

University: Western University of Health Sciences

Dates: September 19-20, 2014

Chairperson: Dr. Brent Fung Phone # Office (909)469-8314, Cell (562)810-9013

University:	Western University of Health Sciences	Fax #	(909)706-3800
Address:	309 E. Second Street Pomona, CA 91766	E-mail	bfung@westernu.edu

Please return all completed enclosures to
Dr. Ed DeSchepper, National Director, University of Tennessee, College of Dentistry;
875 Union Avenue, Memphis, TN 38103

Office: 901-448-1313 Fax: 901-448-1625 E-mail: edeschep@uthsc.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 REGIONAL ATTENDEES FORM

REGION: I Pacific

NAME	UNIVERSITY	PHONE #	FAX #	E-mail
Jonathan Rothbart	UNLV	702-774-2516		Jonathan.rothbart@unlv.edu
Loris Abedi	USC	818-620-3906		labedi@usc.edu
Brent Fung	Western U	562-810-9013		bfung@westernu.edu
Brad Smith	MID U	623-572-3812		Bsmith@MID.edu
George Richards	Roseman U	801-878-1409	801-878-1316	grichards@roseman.edu
Robert Alder	Roseman U	801-878-1415	801-878-1327	ralder@roseman.edu
J. Martin Anderson	U of Washington	206-398-485		jma@uw.edu
Yen Wei Chen	U of Washington	206-353-9563		ywchen@uw.edu

Karen Gardner	UBC	604-822-3566	604-822-3562	kgardner@dentistry.ubc.ca
Mark Fogelman	UBC	604-822-6626		mfog@dentistry.ubc.ca
Ingrid Emanuels	UBC	604-822-6626		emanuels@dentistry.ubc.ca
Nirvana Anossheh	UCSF	408-515-6967		nirvana@comcast.net
Oanh Le	UCSF	650-558-9253		Oanh.le@ucsf.edu
Ron Forde	LLU	909-528-7673		rforde@llu.edu
Phil Buchanan	UOP	408-427-2552		pbuchanan@pacific.com

2013 NATIONAL CODE AGENDA

(Evidence cited where applicable) September 19-20, 2013 Report on the proceedings of CODE Region I
Dr. Ed DeSchepper Code Regional Annual Reports 2013
http://www.unmc.edu/code/

Region I School Abbreviations

UA	**University of Alberta**	**ROSE**	**Roseman University -Utah**
ATSU	**Arizona School of Dentistry**	**UOP**	**University of the Pacific**
MID	**MID University College**	**UCSF**	**University of California-SF**
UBC	**University of British Columbia**	**USC**	**University of Southern Calif**
LLU	**Loma Linda University**	**WUHS**	**Western University**
UNLV	**University of Nevada**	**UW**	**University of Washington**

2013 NATIONAL CODE AGENDA
REGION II
SUMMARY RESPONSES TO NATIONAL AGENDA

(Editor Note: Questions condensed for printing purposes)

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

No Summary Responses Submitted

I. CONSORTIUM OF OPERATIVE DENTISTRY EDUCATORS (C.O.D.E.)

The organization has grown and evolved over time. At present there is no organizational constitution and by-laws. Consideration is warranted.
A. What is the interest, need, value?
B. Are there concerns?
C. Who wishes to participate in the process of formulation of a constitution and by-laws?
Each region is to submit the name of one individual who wishes to participate on an ad-hoc constitution and by-laws committee.

Responses from all schools:

Satisfied with the status quo, don't have faculty with time, funding or interest (too busy with other commitments)

II. MATERIALS/TECHNIQUES AND DEVICES

A. In recent years there have been articles indicating that glass ionomer sealants are just as effective as resin-based composite sealants.
1. What materials (both type and brand name) are used for pit and fissure sealants at your institution?
2. If glass ionomer products are used, are they used routinely or are they used under certain guidelines, **e.g.** partially erupted teeth, difficulty in isolation or in outreach clinics without the aid of suction?
3. What has been your experience with glass ionomer sealants?

UA Ultradent resin pit and fissure sealant is the only product used
Not used. No experience

ATSU We use 3M
Glass ionomer used in cases where it is hard to have good isolation.
usually prefer to wait for the tooth to erupt before we use FS
Our clinic is not the material of choice, it has it place in selected cases

MID We use predominately resin based sealants. However, we do have glass ionomer sealants that have been used sparingly in difficult to isolate areas. We have not kept any data on their effectiveness

UBC Dentsply Delton Light Cure Pit & Fissure Sealant (unfilled resin – opaque)
Glass ionomer sealants are not used; the evidence that they are just as effective is not conclusive
Not being used
Not using GI sealants at the moment.
No experience with GI sealants.

LLU At LLUSD we use UltraDent's UltraSeal XT, a composite sealant.
Not using GI sealants at the moment.
No experience with GI sealants.

UNLV We are currently primarily using resin sealants in the school clinic. We are currently transitioning from Embrace to UltraSeal. There is some variation among instructors with regard to using sealant alone after etching, or placing a bonding agent first.
GI sealants are used in a case by case situation in outreach clinics and on partially erupted teeth. We do not have any controlled follow up on their effectiveness or retention.

ROSE We are using Ultradent's Ultraseal
Presently we are not using GI as a pit and fissure sealant
We have no experience with using GI as a pit and fissure sealant

UOP Flowable composites: Ultraseal or Esthet-X Flow
Not used
Not used

UCSF Clinpro 3M
Not used
Not used

USC For resin based sealants, we use Ultraseal by Ultradent. It is a filled sealant. We also use Glass Ionomer sealants in special circumstances. The Glass Ionomer sealants we use are Fuji Triage Pink or White. Both products are manufactured by GC America.
We do not routinely use glass ionomer sealants. We only use it when we are sealing a partially erupted molar that has to be sealed (immediate sealants is needed because the tooth will be carious when we see the patient back for recare). We also use it to seal molars that are hypoplastic.
They are difficult to handle compared to the resin based sealants. From what I have seen clinically, they retention rate seems to be inferior compared to resin based sealants.

WUHS 3M ESPE, Clinpro Sealant- Resin Based Composite Sealant
n/a
n/a

UW Filtek Flow with All Bond 2

B. Does your institution teach impression techniques using intraoral digital scanning devices?
1. If so, what brand(s) of intraoral impression scanners are being used?
2. How many scanners do you have? How are they funded or provided?
3. Do all students use the scanners for their patients?
4. If scanning access is limited, how do you determine who gains access?
5. What has been your experience with intraoral digital scanning devices?

UA Yes
1. Lava and E4D
2. One Lava donated by manufacturer and three E4D purchased by the university.
3. Limited access
4. Clinical team leaders
5. Limited with one year of very part time experience

ATSU
1. We do have the Digital impression it has not been used widely-Cerec, Itora
2. We will have 10 units through Sirona gifted program. We do have one Itora digital impression
3. No response
4. Faculty will determine if the case can be done as digital impression
5. It is difficult to use because of the powder. Time consuming. Accuracy determined how experience is the operator.

MID We teach from D1 year digital scanning along with traditional impression taking. We use E4D scanners for inlays, onlays, and all ceramic crowns that we fabricate in house using their technology. All students use the scanners in the D2 year, but only a limited amount of students use it in their clinical years. This is based upon the comfort level of the faculty in each section of the clinic. We have two scanners in the clinic and two in the pre-linic areas Until this last upgrade, 3 months, we have not scanned intra-orally. We have taken an impression and scanned the impression or the model from the impression. The last three months have proven to give successful, consistent intraoral digital impressions. The learning curve is steep.

UBC Yes, but in a limited way

1. We demonstrate to students, during the Fixed Prosthodontics Module (not Operative) the 3M Lava COS. Also a CEREC course is offered to 12 third year student in June.
2. We have received gifts-in-kind from the companies: 1 Lava and 1 CEREC. We also have an Itero/Cadent that DMD students are not trained on.
3. Not at all so far
4. For CEREC only trained students will use it this year for the first time. Lava is not used, it's a didactic introduction/demo only.
5. My experience is with CEREC, which requires training and longer practice to become comfortable and proficient. Then it's a satisfying experience and a great service to patients.

LLU Cerec; 10 red cams switching to blue cams soon (donated); faculty needs to be calibrated; default back to PBM without tech-capability; company wants them used; in-house lab is ready
Students still do the traditional impression technique and pour up and trim their master dies. Our Central Lab then scans most of the master dies and mills either a wax pattern (if a FGC or PFM coping) or an all ceramic crown or inlay/onlay.

UNLV We are currently not using any scanners clinically, but digital impression is covered didactically in some of the advanced restorative courses.

ROSE We do not have a device for teaching or making intraoral digital impressions. We are looking into the possibility and have had several demonstrations by different manufacturers.

UOP Yes
E4D, Lava COS, Itero
E4D (1), iTero (2), Lava Cos (12) Donated by 3M
Yes, each student must complete 1 digital scan on a patient as a competency exam. If they not obtain a patient a typodont is used.
N/A
They are working very well, less than 1.5% redo rate

UCSF Yes
CAD/CAM, Cerec
10 School purchased
No
Under calibrated/Certified Supervision instructors
Useful; but time consuming and questionable for one appointment, need more than one appt

USC Yes

CEREC, E4D, Lava COS, iTero

Multiple CEREC and E4D and Lava COS machines. One iTero. Not sure how they are funded. Could not find out.

All students have the opportunity to use them. Depending on the case and the faculty who supervises the case.

Access is usually not limited. If the designated faculty for scanning are absent then students make conventional PVS impressions.

Mixed results. CEREC has been most predictable for us. E4D less predictable. Lava COS and iTero similarly not as predicatable as PVS impression.

WUHS Yes

Cerec Red-cam

10 agreement with Sirona

No, because the powdering process is costly, technique sensitive, and time issues.

All have access.

Rudimentary based on acquired technology. Experiences would be enhanced with updated technology.

UW Yes

1. iTero, 3M COS
2. There are one iTero and one 3M COS, both are provided by the manufacture.
3. No, the facility is currently used for an elective digital dentistry course. They have not been actually used in our pre-doctoral clinic. However, at the clinic of our Graduate Prosthodontic program, the graduate students use the digital impression at an occasional bases.
4. Currently, the facility is responsible by an assigned faculty member. If the students would like to use the scanners, he/she could approach the faculty and gain the access.
5. The first time I used the 3M COS was in 2008. The intraoral digital scanners have been improving dramatically over these years, both in the hardware and software. The size and the weight of the intraoral scanner have been reduced, the speed of the scanning is faster and the software is more use friendly. The quality of the restorations is also improved in terms of the margin fit, contact and contour. However, there is still quite a bit learning curve to get familiar with operating with the scanner. It becomes necessary to have a well-trained professional (either an assistant or a technician) to be in charge of the scanners.

C. COMPOSITE RESIN

1. What are the limitations in your clinic for the placement of Class II composite restoration if any? What is your criterion for a Class II composite restoration placement?

UA Proper moisture control and try to limit use of composite if there is no enamel margin

ATSU 85% of the posterior restorations in the clinic are composite. We teach amalgam in the school our students has been taught about the limitation of using composite and how to address this to their patient and encourage them to use amalgam when

composite cannot be used (e.g. poor isolation)

MID There is no limit given to placing composite restorations in the clinic. Clinical situations must allow for isolation with rubber dam to place composites or they are moved to another type of restoration.

UBC Simlab – not to replace a cusp
If > 1/3rd the interocclusal width
If subgingival
High caries risk

Not with CO stops
Sim - shallow preparation (only going into dentin when caries is present
- <1/3rd interocclusal width
- minimal proximal box (not necessary to break contacts)
- proximal bevels on the box (Hilton and Ferracaine)
- rounded internal line angles
- gingival contact just broken (as dictated by caries)
- walls parallel or slightly divergent
- no centric stops

LLU
1. Must have good moisture control with a rubber dam.
2. Gingival margins that are sub-gingival are candidates for an "open sandwich" with an RMGI base and a composite overlay for the occlusal portion.
3. Limited to minimal - moderate size restorations. Cusp replacements are either done with amalgam or a crown (either gold or PFM).

UNLV Direct Class II composite resin restorations are indicated for conservative Class II lesions, i.e. when an early lesion is just through the DEJ interproximally and when the isthmus is between 1/4 – 1/3 the intercuspal distance.

ROSE Most of the guiding faculty in the clinic are much more inclined to use composite for any and all Cl II direct restorations. Criterion – Whether or not the tooth is restorable with a direct restoration. There are no defined criteria concerning submarginal restorations. We have little clinical experience as yet and the issue of faculty calibration continues to be an issue.

UOP Must be able to isolate the tooth either with a rubber dam or an Isolite

UCSF Must have rubber dam isolation, or Isolite isolation

USC No limitation

UW Limitations: (1)Technique sensitive (isolation, placement, contact) (2) Time consuming (3) Shorter clinical half-life than amalgam (4) History if para-functional or high functional Wear Criteria: (1)Low caries rate, (2)Proper isolation (3)Conservatively-sized restorations (4)Patient requirement for an esthetic

WUHS Size of isthmus, ability for rubber dam/isolation.

Composite Preparation Rubric - rev. 6/20/13
Western University of Health Sciences, College of Dental Medicine

STUDENT NAME/SIM # _____ DATE _____ TOOTH # _____

RUBRIC for Critical Skills Assessment

Categories & Scale	Optimal = 5 pts.	Slight Deviation(s) from Optimal = 4 pts.	Moderate Deviation(s), Clinically Acceptable = 3.5 pts.	Major Deviation(s), Clinically Unacceptable = 2 pts.	Multiple Major, Critical Deviation(s), Unacceptable = 0 pt.	Points (SELF)	Points (Faculty)	Faculty Intitials
Outline & Extensions	Includes: caries, enamel decalcification, fissured grooves, existing restorations, unfinishable tooth structure, and provides optimal access. Optimal proximal and gingival separation of 0.5mm from adjacent teeth unless otherwise dictated by clinical situation. Adjacent teeth are free of damage	Slight Deviation(s) from optimal that do(es) not compromise clinical longevity or esthetics Proximal separation - 0.5 mm to 0.75 mm unless clinical conditions warrant otherwise.	Moderate Deviation(s) from optimal that do(es) not compromise clinical longevity or esthetics Proximal separation - 0.75 mm to 1.00 mm unless clinical conditions warrant otherwise.	Major Deviation(s) from optimal that compromises clinical longevity or esthetics. Proximal separation>1.00 mm unless clinical conditions warrant otherwise.	Multiple Major or Critical Deviation(s) from optimal that compromises ability to restore, affects clinical longevity and/or, esthetics. Gross Proximal separation that compromises restorability.			
Internal	Occlusal wall 1.0 mm tall Axial Depth 1.0 mm for convenience form Internal line angles are rounded and smooth. Axial Wall follows the external curvature of the tooth with even axial depth. Path of insertion is appropriate for clinical situation. Caries, Affected Dentin, and Existing Restorations are appropriately removed.	Shortest occlusal wall greater than 1.00 mm and up to 1.25mm tall. Axial Depth greater than 1.0 mm and up to 1.25 mm for convenience form Slight Deviation(s) from optimal form	Shortest occlusal wall greater than 1.25 mm and up to 1.5mm tall. Axial Depth greater than 1.25 mm and up to 1.5 mm for convenience form Moderate Deviation(s) from optimal form	Shortest occlusal wall greater less than 1.00 mm or greater than 1.5 mm tall. Axial Depth less than 1 mm or greater than 1.5 mm for convenience form Deviation(s) from optimal that directly compromise the clinical longevity of the tooth/restoration.	Gross Deviation(s) from optimal form that would compromise the longevity of the restoration/tooth/esthetics Wall taper greater than 30 degrees.			
Retention & Resistance	Proximal walls parallel to slightly convergent without unsupporting tooth structure. Proximal bevels are 45 degrees, 0.5 mm to provide retention. Occlusal walls are either parallel or slightly convergent occlusally.	Slight Deviation(s) from optimal that do not compromise clinical longevity of tooth/restoration; bevels are +/- 10 degree deviation from 45 degrees or between 0.5-0.75 mm	Moderate Deviation(s) from optimal that do not compromise clinical longevity of tooth/restoration; bevels are +/- 15 degree deviation from 45 degrees or between 0.75-1 mm	Deviation(s) from optimal that directly compromise clinical longevity of tooth/restoration; bevels compromise the longevity of the tooth/restoration	Gross Deviation(s) from optimal that directly compromise clinical longevity of tooth/restoration.			
Cavosurface Margins & Debridement	Axial & Proximal finish lines terminate 90 degrees to the external surface prior to bevel. All finish lines clear, round, smooth, and continuous. No unsupported enamel.	Slight Deviation(s) from optimal that do not compromise clinical longevity of tooth/restoration	Moderate Deviation(s) from optimal that do not compromise clinical longevity of tooth/restoration	Deviation(s) from optimal that compromises clinical longevity of tooth/restoration	Gross Deviation from optimal that compromises clinical longevity of the tooth/restoration			
Total points (sum of above; 20 points max/14 points to pass)								

Any "Unacceptable" in a critical error category or any defect requiring restoration replacement is an automatic failure.

2. What is taught for Class II composite restorations with gingival margins on dentin (apical to the CEJ); use of flowable or RMGI as an "open sandwich?"

UA Teach RMGI open sandwich

ATSU Keep gingival floor flat not beveled, conditioner Fu ji II LC then use the dentin bonding.

MID We teach the open sandwich technique with RMGI if the margin is on dentin. I cannot tell you that all clinical cases are treated this way but that is what is taught.

UBC Sim – RMGI open sandwich

LLU Flowable composite is taught using the "snowplow" technique. RMGI is taught as either An open or closed sandwich depending on the situation: Open sandwich when the margin is sub-gingival and closed sandwich as a base with deep pulpal lesions.

UNLV Didactically, multiple techniques are taught, including using flowable composite and both open and closed "sandwich" techniques. On the clinic floor, the decision is made by the attending faculty.

ROSE Both techniques were taught – use of flowable or GI "sandwich". Students are instructed to make a decision on a patient-to-patient basis taking into account caries risk, occlusion and clinical skills.

UOP No sandwich technique is done. Flowable composite is used just enough to seal the margins.

UCSF Teach "open sandwich" technic

USC We use hybrid composite. No flowable or GI or sandwich.

WUHS both open and closed are presented in pre-clinical and the supervising faculty dictate which technique to perform.

UW No responses

3. Have esthetic inlays and onlays been increasing in frequency in your clinic? Do you see these increasing in the future as esthetic alternatives to large amalgam restorations instead of direct resin composite?

UA Limited to instructor demonstration at this time but will phase in senior students

ATSU Using Onlay has been slightly increased . We teach gold onlays and the students still making them in the clinic.

MID They have been increasing slowly. I would not say there is a large upswing.

UBC Yes – now building a room to process more CEREC restoration on site.

LLU Ceramic inlays and onlays are done infrequently in our clinics. Most esthetic restorations are direct composite restorations and indirect PFM's. Facial porcelain veneers are done when the criteria are met.

UNLV To date, we have been doing few esthetic inlays and onlays. We are in the midst of ongoing plans / negotiations for CAD/CAM systems for both the SimLab and the clinics with the expectation that utilization of these treatment modalities will increase in the future.

ROSE Regarding inlays and onlays, not clinical data available. The most vocal CPT leader desires to institute esthetic inlays and onlays as the "better" alternative for the patients. Whether or not the CODM will move quickly towards that treatment modality is questionable at present.

UOP No, Fewer are done each year. Cost is an issue for our patient base

UCSF No

USC Definitely, already have at USC

WUHS Yes

UW There is slightly increasing in frequency of ceramic inlays and onlays. For the conservative-size of the posterior restorations, direct resin composite is still the choice if esthetic is a concern for the patient. For the large scale of rehabilitation which needs to alter the occlusal surfaces, the use of ceramic onlays might be increasing in the future because of the strength improvement of the ceramics.

4. How many resin composite systems and bonding systems are available in your clinic? What bonding systems are being used? If there are multiple systems, are all systems taught in the pre-clinic courses also?

UA One anterior, one posterior and one bonding system. Bisco All Bond 3 is only system and is used for labs.

ATSU We use Filteck composite (Universal nano composite) Enamel & dentin bonding use opti bond solo plus 5^{th} generation. Also the opt bond 4^{th} generation. We do not use 6^{th} & 7^{th} generation

MID There are two systems of bonding taught both preclinically and clinically. The students are taught the same. One is for a total etch technique in enamel and the other is a self etch technique for preparations in the posterior into dentin. We use excite for enamel bonding or when they are using a total etch technique and Clearfil SE protect for Dentin bonding. We also teach a selective etch with the self etch technique.

UBC 4
3M ESPE Adper Scotchbond Multi-purpose – total etch multi step
Kuaray Clearfil New Bond – total etch one bottle
No – just Adper Scotchbond multi-purpose

LLU We are moving towards using one bonding system (Kuraray's Clearfil SE Protect) and one composite resin system (3M ESPE's Filtek Supreme *Plus*). Students currently are using Kurary's Clearfil SE Bond, UltraDent's Peak Universal Bond system, or 3M's Scotchbond MP. Too many systems get confusing for the students.

UNLV We currently have Premise and Filtek Supreme Plus composite systems and use Optibond Solo Plus with a total etch technique for both systems. These are the same materials used in the SimLab, with the exception that sometimes donated, expired composites are used in the preclinical technique courses.

ROSE Presently one. We have intentionally attempted to keep the pre-clinic systems in the clinic. Some of the clinical faculty wish to have some others bonding systems available, but as yet that has not been approved. We are using Ultradent's Peak LC

UOP Two systems Total etch / Optibond Solo Self-etch / Prelude yes
Class V selected etch, flowable thin surface de-copling and built occlusal

UCSF Restorative Composites: Herculite XRV (Kerr Sybron Dental)
Premise (Kerr Sybron Dental)
Flowable Composites: Aeliteflow (Bisco)
Core build up composite: Compcore and Compcore AF (Premier Dental)
Adhesive Systems:
All bond (2kit) Bisco
D/E Bonding resin Bisco
Primer A Bisco
Primer B
Prebond resin Bisco
Optibond Solo Plus (Kerr Sybron Dental)
Prime and Bond NT (Dentsply Caulk)
Composite Surface Sealants:
Fortify (Bisco)
Optiguard (Kerr Sybron Dental)

Pits and Fissure Sealant:
Clinpro (3M Espe)

USC Herculite XRV and Miris
Optibond FL by KERR.

WUHS Yes
Herculite XRV and Miris
Optibond FL by KERR.

UW Resin composite systems:
Filtek Supreme
Bonding systems:
All-Bond 2 & DE bonding resin

5. What type of matric systems are used for Class II posterior composites? How are these systems dispensed in your clinic?

UA Garrison sectional matrix that students sign out as a kit.

ATSU We use tofflomire with regular bands for amalgam, dead soft for composite. We teach the G rings with sectional matrix.

MID We use sectional matrices most of the time, unless the lesion is too large for that type of system. We use Garrison rings with flexi wedges. These are dispensed to the individual clinical areas from a dispensary after sterilization. The students make a list of procedures they are doing for the day and give to the it to an assistant who sets up the operatory with needed supplies.

UBC Sectional matrix – were using bitine switching to Garrison
Bitine available in the clinic by request not part of the resto kit

LLU We are using Triodent's V3-Ring system. They are dispensed as a kit (in a Tupperware container) with two sizes of matrices, a V3 ring and a Triodent forcep. The kit is returned to sterilization after the restoration is completed.

UNLV The students are introduced to the Garrison Composite Tight sectional matrix and bitine ring system in the DS1 Intro to Operative course and this is the system that is primarily utilized in the clinics. The rings and forceps are placed in autoclavable cassettes and the bands are dispensed individually at the dispensary window. Conventional, thin, dead soft Tofflemire bands are also available for use with or without the Composite Tight rings.

ROSE We use Toffelmire matrix holders with metal bands of different thicknesses and also the dead soft bands. We also have the Palodent system available with sectional matrix bands. The Toffelmire band holder is in the operative/restorative kit. The matrix bands are handed out separately from the dispensary. The Palodent system is handed out, as requested, from the dispensary.

UOP Garrison Composi-tight 3D It is available at the dispensary
Tofflemire sometime if unable to use Garrison

UCSF V3 Triodent (currently in student Kit), and Composite System (will be incorporate in later this year 2013)

USC Garrison mainly, and some Tofflemire
Students check them out from the clinic dispensary as needed.

WUHS Garrison Dental Solutions and Tofflemire Matrix.
Garrison systems are checked out when needed. Tofflemire matrices are in the Operative Cassettes while the Bands are requested when needed.

UW Dixieland band with the Tofflemire holder
Sectional matrixes (Palodent Plus)
Each student has issued their own sets of the matric systems.

6. How do you prevent voids in composite restorations? Are you heating the composite to provide better flow?

UA Use flowable for first increment of posterior restorations and incremental technique. Do not heat composite.

ATSU We teach the student to vibrate the instrument when they are placing their composite.

MID We teach several methods to avoid voids, but cannot on a microscopic scale tell you there are not voids. RMGI as a liner, flowable can follow but not taught as the preferred method. We do not teach heating the composite.

UBC Slow manipulation of the composite to enhance its thixotropic nature
No, it is questionable if this beneficial feature can improve the marginal adaptation in a real clinical scenario as the temperature rapidly drops to the physiological level upon removal from the heating device.
Also, several studies demonstrated that the composite pre-heating does not increase degree of conversion nor alter other mechanical properties (Lohbauer et al., 2009; Froes-Salgado et al., 2011; Deb et al., 2011).

LLU The warm composite technique is mentioned in pre-clinical lectures, but most students do not use this technique. Students are taught the incremental placement technique with careful compression between layers to prevent voids. A larger faced condenser is used to initially compress an incremental layer followed by a microbrush to compress the composite into the line and point angles.

UNLV We have no special secrets to preventing voids in composite restorations other than attention to detail and technique. We are not currently heating composite, although the technique is mentioned in didactic classes.

ROSE Instructing students to be very careful when packing composite that the instrument doesn't enter the material which introduces voids and bubbles and to use flowable in strategic areas such as boxes and retention which might otherwise be difficult to compact filled composites. We do not heat the composites.

UOP Place composite in small increments. Composite is not heated

UCSF Increment layer system (1mm layer)

USC Not heating composite for direct restorations. Incrementally adding the composite. Voids have not been a major problem.

WUHS Through careful incremental, oblique buildup and placement.
when Yes, especially using resin to seat inlays and onlays.

UW For the regular composite restorations, the incremental filling technique is still recommended to prevent the voids.
When we use composite as the material for provisional restorations or esthetic mock-up, we

heat the composite to achieve better flow.

7. If known, what is the secondary caries rate of composite versus amalgam restorations?

UA Do not track secondary caries at this time.

ATSU No responses

MID We do not have statistics for that comparison.

UBC Not known

LLU No responses

UNLV Not tracked at UNLV

ROSE Globally – an article in the 2007 JADA, Vol 138, indicated as slight increase in secondary caries with composite restorations over amalgam. No data from Roseman CODM as yet

UOP Not currently feasible to track in Axium

UCSF We have not done any clinical research; but we do see more recurrent caries due to the lack of homecare from patients as well as poor clinical technique.

USC Not known for sure because we have not collected data and done a study. But clinically have not noticed major differences.

WUHS Unknown

UW N/A

D. Pins in Restorative Dentistry

1. Does your school teach the use of pins in the pre-clinical curriculum?
2. Do your students use pins in the clinic?
3. Which pin system(s) are used?
4. If used, are pins limited to amalgam restorations?

UA

1. Teach and use pins in pre-clinical lab
2. Limited use of pins in clinic
3. TMS
4. Pins used for large amalgams and core buildups

ATSU

1. Yes
2. very rarely by certain faculty
3. Sabilok lock system
4. yes

MID We teach what pins are but do not allow students to place pins except in extraordinary circumstances which are very few.

UBC
1. Yes
2. Yes
3. Coltene Whaledent TMS Minim (.021") & Minikin (.017")Link Single-shear Self-threading Parapulpal Pins
4. No, they can also be used for composite core build-ups. Not used for composite restorations

LLU
1. Yes, as part of teaching the complex amalgam. Pins are taught in conjunction with other retentive features such as boxes, slots, amalgapins, and opposing walls.
2. Yes, when indicated
3. Whaledent's TMS Link system, both mini and regular sized pins.
4. Yes

UNLV
1. Yes, pin retained amalgams are taught in the SimLab in one preclinical exercise.
2. They are available, but rarely used. Much depends on the individual clinical faculty member's preferences.
3. The Filpin system is in the SDM clinic, but the TMS system is available at the extramural sites.
4. No, but again, it depends on clinical faculty preferences.

ROSE
1. We teach the placement of pins in the pre-clinical operative courses – but on a very limited basis. The brand used in the instruction is Filpin
2. I checked with our clinic dispensary, and they don't have pins in the dispensary. Therefore, I presume that to this point pins have not been used.
3. Filpin in the sim courses
4. In the sim courses, pins are placed in amalgam and composite

UOP
1. single exercise The in the pre-clinic will be eliminated this year
2. rarely
3. Whaledent - Coltene
4. yes

UCSF
1. No, but video available for references
2. No, rarely
3. TMS, Max Pins (Coltene-Whaledent)
4. No

USC
1. No
2. No has not been using pins for many years
3. N/A
4. N/A

WUHS
1. No
2. No
3. N/A
4. N/A

UW
1. Yes
2. Yes

3. TMS Pins system
4. No the pins can be used in either composite resin or amalgam restorations

E. Posts in Restorative Dentistry

1. What is utilized in clinics? Prefab, cast, fiber
2. What criteria are used to determine the need for a post?
3. What criteria are used in the selection of post types?
4. Which systems are available at your school?

UA

1. Prefab and cast
2. Amount of remaining tooth
3. Amount of remaining tooth and supervisor preference
   Parapost

ATSU

1. Mostly Prefab, and some cast and fiber post
2. We teach that it is necessary when there is not enough tooth structure left to retain the core.
3. The width of the canal , for wide canals we use cast post.
4. Prefabricated and cast posts.

MID

We use Ceramic posts that are prefabricated by Brasseler(Endosequence). The post is used when the core needs support to be retained. On occasion a custom cast post is still used but this is more uncommon. The endo sequence taught the students finishes with the canal perfectly prepared for the Endosequence post. Stay away stainless steel use more fiberpost slightly taper use endosequence post. Post protocol –No post is best post. If can get 2mm farell is best. Post should extend past half way length of bone structure. Post should not extend more than body of root.

UBC

1. All of these, based on indication.

2. Mostly based on available retention for the core build-up. Also available tooth structure and ferrule are considered in decision making. See table:

TOOTH TYPE	INTACT CLINICAL CROWN (Other than Endo Access)	MOST OF THE TOOTH STRUCTURE REMAINS	TOOTH STRUCTURE REMAINS BUT IS COMPROMISED
MOLAR	Cover Cusps Onlay or Crown	Amalgam or Composite Core retained by pulp chamber Onlay or Crown	Amalgam or Composite Core with Stainless Steel/Titanium/Fiber post Crown

BICUSPID	Cover Cusps Onlay or Crown	Amalgam or Composite Core retained by pulp chamber Onlay or Crown	Amalgam or Composite Core with Stainless Steel/Titanium/Fiber post OR Cast Post & Core Crown
CANINE	Direct Restoration of Endodontic Access	Composite Core with Stainless Steel/Titanium/Fiber post Crown	Cast Post & Core Crown
INCISOR	Direct Restoration of Endodontic Access	Composite Core with Stainless Steel/ Titanium/Fiber post Crown	Cast Post & Core Crown

3. See above, also for anterior teeth a fiber post is used.

4. Stainless steel Parapost XP/ Coltene-Whaledent. 2) D.T. LIGHT-POST/ Bisco

LLU 1. Depending on the situation, all three types of post systems are utilized. A minimum of a 2 mm ferrule of tooth structure is criteria.

2. If insufficient structure for an adequate core structure is available, a post is needed to retain a core buildup.

3. Prefab posts are typically utilized in multi-rooted teeth with amalgam as the core material. Cast posts and fiber posts are utilized in single-rooted teeth needing core buildups.
4. No responses

UNLV 1. All three types of posts are utilized in the clinic. Metal and fiber Paraposts are available, as well as Bisco DT fiberposts. In addition, cast post and cores are also utilized depending on faculty preference experience and clinical situation.
2. The school's philosophy is that posts are placed only if needed to retain a core. Remaining tooth structure is the key determinant, specifically with regard to the ferrule effect and margin placement.
Should look at where students are going after tooth prep down for crown
3. Again, very dependent on faculty preference and remaining tooth structure.
4. Whaledent Paraposts – fiber and titanium concern for dental school environment due to radiopaque looking. Concern of fracture tooth
Bisco DT – fiberposts
Cast post and core w/ noble metal

ROSE 1. We have Whaledent fiber posts in the clinic – tapered and parallel sided. As yet I don't believe they have been used. They have been handed to the CPT leaders for distribution

as needed.
2. Posts are used solely for the retention of the core buildup. The tooth must be restorable with a minimum of 2 mm ferrule on sound tooth.
3. No specific post type is designated when teaching the concept with the exceptions:
   Flexible posts are preferable
   Titanium posts are preferable over nickel chrome
   White posts should be used in the esthetic zone whenever restoration will be ceramic or composite
   Threaded posts are not recommended
   Cast posts may be an option
4. Whaledent donated their fiber posts and that is the only brand and type we have available to us at the present

UOP
1. fiber
2. Insufficient tooth structure to effectively retain buildup material
3. Post flexure similar to tooth flexure, post retention
4. Ultradent UniCore Posts bonded with dual cure self etching Prelude (Danville Engr)

UCSF
1. Mostly prefab, parallel posts
2. Remaining tooth structure (at 1 plus mm dentin)
3. Canal size and length
4. Parapost XH titanium (Coltene-Whaledent
   Parapost Fiber Lux (Coltene-Whaledent)
   Unity Post (Coltene-Whaledent)

USC
1. Prefab fiber post
2. Number and thickness of remaining walls after preparation
3. Almost routinely use fiber post
4. Coltene Para Post Taper Lux

WUHS
1. Prefab, cast, fiber
2. Strength of remaining tooth structure & number of missing/weakened walls for retentive purposes.
3. No responses
4. Coltene Whaledent, Parapost

UW
1. Prefabricated parallel-sided post, Custom cast post-and-core, Fiber post are all used in our clinics.
2. The tooth structure of an endodontically treated tooth has been severely compromised.
3. There is not enough tooth structure to retain the core.
   Prefabricated post is usually the first choice to preserve more tooth structure.
   The prefabricated parallel-sided post is the choice most of the time for the posterior teeth. For the anterior teeth, the fiber post is often chosen because of the esthetic concern, especially combined with all ceramic restorations.
   If there is not too much tooth structure left (one wall or zero wall), it may be an indication for the custom cast post-and-core.
4. ParaPost (Coltene/Whaledent)
5. RelyXFiber Post (3M ESPE)

II. CURRICULUM

A. When is your first clinical experience in Restorative Dentistry scheduled?
   1. Where do the patients come from?

2. Do they stay with the student?
3. What is the staffing ratio?
4. Any problems or recommendations?

UA A. Early D3

1. Immediate surrounding area
2. Most of the time but team leaders will make some switches at their discretion
3. Instructor 1:5 assistants 1:7
4. Would like to increase the number of assistants 1:5

ATSU A. End of D2 year

1. From the local community
2. Yes, the fourth year students have to leave for 4-6 weeks rotation their D3 matinee will take care of the patient
3. No responses
4. No responses

MID A. Summer of the D3 year (beginning). Patients come from the community. There is a D4/D3 pair that retains the patient and the pair will pick up a D2 student in the spring of the D2 year. They will then be the D3 for the patient.

1. From the community
2. Vertical integration
3. We have two assistants for every 5.5 students in the clinical suites and two dispensary assistants for every four suites. And three staff for every all preclinical students. 1:5.5 clinic 1:5
4. No responses

UBC A. Sim – Early September 2nd year handpiece control -> prep trainer -> rubber dam -> matrix ->caries removal/pulp protection -> amalgam restoration -> hand instrumentation
First prep – Occlusal Amalgam December 2nd year
First Patient – mid October 3rd year

1. Greater Vancouver, sometimes from Vancouver Island or the interior of British Columbia
2. For the most part they remain in the student's care for the student's 2 years of clinic but they are shared within their team as the easier work is handed to the more junior student.
3. 1: 8
4. Recruiting Instructors

LLU A. After the student passes a pre-clincial competency exam in the Winter Quarter of their D2 year.

1. From the surrounding community.
2. Yes, the patient becomes that student's responsibility.
3. No responses
4. No responses

UNLV A. As early as the Spring of the DS2 year, depending on approval by the Team Leader.

1. Neighborhood, word of mouth, outreach activities, school screenings. Pair in vertical chain

2. Yes, generally UNLV sticks to a Comprehensive Care model of delivery with a vertical team mentoring component. Sometimes patients are transferred within a vertical team to help a student maintain a balance of procedures for requirements.
3. UNLV generally tries for a 6:1 ratio.
4. We would like a better ratio, but do not presently have enough faculty.

ROSE A. latter part of the D2 year

1. Community after screening – we have not analyzed the demographics of our patient population as yet.
2. Yes – our model is comprehensive care and once the patient is assigned to the student they remain with the student until the student graduates
3. Presently, 1 administrative staff to 2 doctors to 8 teams (2 students per team)
4. Problems – calibration of faculty and consistency across team regarding treatment planning and treatment policies; accepting cases that are too complex for students; lack of clinical protocols

UOP A. Second year fall quarter

1. Patient pool, Emergency clinic, Upperclassmen, Outside referrals In the neighborhood
2. Generally yes unless there are special needs
3. Three faculty in clinical groups of fifteen chairs, eight clinical
4. Not at this time

UCSF A. Third year (prophylaxis and sealants end of Second year and assisting upper classman)

1. Patient pool, transfers from graduated 4th year
2. Mostly
3. In theory 1:8
4. Decrease number of patients, increase complex cases, No money (dental decrease priority)

USC A. 6th trimester, if they have a patient who needs restorative treatment. This is their first trimester in clinic

1. Mostly the neighborhood but many drive from far as well.
2. Most of the time one student does most or all the treatment for their patient. There is some sharing as well.
3. 9 GPDs, one staff per GPD. Each GPD has approximately 16 senior students and 16 junior students.
4. Always in need of more staff or faculty

WUHS A. D1 Summer at CBDE

1. Community Based Clinics/Sites.
2. No.
3. 6:1 or less.
4. No responses

UW A. The end of 2nd year

1. The majority of the patients are from the community.
2. Yes
3. About 1 staff to 8 students.
4. No responses

B. Do you have a clinical course in Operative Dentistry in the Junior or Senior year?

1. How do you assign grades?
2. Do you have Skills Assessments? Are they photographed?
3. Are you evaluating portfolios?
4. Do you have points or procedures requirements?

UA B. Clinical course only in junior year

1. Students receive daily grades in labs and clinics. They are graded on achievement and assessed on professional conduct.
2. Students must pass several competency clinical exams and we are moving toward records of all advanced clinical procedures
3. Yes graded for simulations and clinics
4. We have no requirements and have a competency based

ATSU B. No the students have what we call clinical dentistry for 4 hours a week some of the topics will cover advanced operative dentistry

1. No grades, A, I, U (acceptable, improvable, unacceptable)
2. No response
3. Yes, it is part of graduation requirement. All D4s students should finish their Portfolio before graduation which reflects the 18 competencies required for graduation.
4. There are no requirements, we have essential experience and competencies

MID B. No responses

1. We have an integrated system that assesses all disciplines for D3-D4 years. They have competencies for Class I, II, III preps and restorations along with mock boards for II and III. We have no minimum procedures for the clinical years.
2. 10 group with coordinator to evauate. 2 people above lateral to evaluate not photograph
3. We are beginning to photograph and grade by portfolio this yearporfolio assign for 30% of grad
4. No responses

UBC B. Operative Dentistry – Class V's, Esthetics and Complex

1. Grading are as follow:

Assessment Breakdown	Marks	Module Objectives (from page 2)
Simulation exercises (worksheet reflections) -assessed at the end of the module	50	1,6,7,8,9,10
Instructor Assessment/of application of knowledge, professionalism, and readiness to provide patient care	Excellent/Pass/Fail	1, 6, 7,8,9,10
Final Didactic Examination	50	1,2,3,4,5,6,7
International Peer Review **Or** On-line Community of Inquiry	30	1,2,3,4,5,6,8,9,10,
Project Peer Reviews	20	1,2, 3
Clinical quizzes	50	1, 2, 4, 6,8,9,10,
Total	200	

2. Yes they are being photograph
3. Yes
4. Not in Sim. In patient care we have CPV's

LLU B. Yes

1. No responses
2. No responses
3. No responses
4. Yes, a combination of minimum # of points, the required competencies and assigned blocks.

UNLV B. Not a specific Operative clinical course. All clinical disciplines are included in the DS3 and DS4 clinical courses. (UNLV only has two departments – Biomedical Sciences and Clinical Sciences). Advanced restorative didactic courses are given in the junior and senior year. These courses include lectures in Operative, Crown and Bridge, Removable Prosthodontics and Esthetics.

1. Daily work is graded – divided between a professionalism grade and a clinical skills grade.
2. UNLV has a series of Clinical Competency Assessment Exams, which are graded Acceptable / Clinically Unacceptable. Generally these are not photographed. We do photograph the Mock Board preps and restorations.
3. Portfolio projects are assigned in the DS1 Intro to Operative Dentistry course. Students are asked to photograph some of their preps and restorations and then self assess using the same grading criteria as those that the faculty uses to grade their practical exams. The portfolio concept is not being utilized in other courses or in the clinic.
4. UNLV utilizes a points system combined with a series of Clinical Competency Exams. Clinical grades are determined by a combination point totals and point distribution, mentor evaluations and successful completion of Clinical Competency Exams.

ROSE B. Presently no

1. pass or no pass; competent or not competent
2. Skill assessment – Yes; Photographed – not as a rule
3. Yes – we are looking at the concept and believe that from a student progress and assessment point of view it will be the way to go particularly since we are on a pass/no pass system. The issue is that there are no universal standards at the present time – at least that is one of the arguments for not moving ahead at this time.
4. Presently no points or procedure requirements. The catch word here is "competency" and as yet no procedure requirements have been established which would qualify the student to challenge the competency. The CPT leader makes a judgment call as to whether the student is prepared or not.

UOP B. Yes, Second and Third Year Reconstructive Dentistry (2 quarters each)

1. Test cases coupled with instructor evaluations
2. Yes, Competency exams review case at the 4th year
3. Team Leaders review all cases prior to clearing a student for graduation
4. No

UCSF B. Yes

1. Pass/Fail
2. Yes/Mostly no
3. CAD/CAM portfolios
   Yes-3 operative portfolios and international portfolio
4. Production (money), and number of procedures

USC B. No responses

1. No
2. Clinical exams. Not photographed.
3. No
4. Combination

WUHS B. Yes, in D3. However, operative review is part of the D4 experience.

1. There is a course assigned that has a syllabus, courses, learning objectives, projects, rubrics, etc.
2. Yes, in D3 there are projects for implants, CAD/CAM, & Inlays/Onlays. Are they photographed? Digitally for CAD/CAM. Not currently, but we plan to incorporate this.
3. Yes. We have begun using diastemas.net this year.
4. No.

UW B. Yes, there is Direct Gold Foil elective course and Cast Gold elective course.
1. No responses
2. Yes, no
3. No
4. No

C. How many contact time hours are dedicated to pre-clinical dentistry (lecture, lab, amalgam, composite, single unit restorations)?

UA C. D1 30 hours lectures 90 hours labs 50% amalgam 50% composite resin
D2 30 hours lectures 90 hours labs 25% amalgam 25% composite 25% gold 25% porcelain

ATSU C. 380 hours for operative, 160 for single unit

MID C. We have approximately 1100 hours for all of the disciplines preclinically. For just the one's mentioned hard to say, maybe 40% of that number.

UBC C. This is for the Psychomotor skills/Operative Courses
Lectures – 25 hours
Clinical – 157
Amalgam – 19
Composite – 20
Single Units – all (except for enrichment exercises)

LLU C**.** 84 hours lecture, 200 contact clinic hours

UNLV C. 84 contact hours of lecture are given in the SimLab courses in the DS1 an DS2 years, divided among amalgam, composite and single unit restorations. 252 contact hours are given in SimLab courses in the DS1 and DS2 years. This time is also divided between amalgam, composite and single tooth restorations.

ROSE C. 332 hours (2013-2014, D1 and D2) – includes operative, restorative composite and amalgam, inlays/onlays, single full veneer crowns – metal, metal ceramic and all ceramic

UOP C. 850 Hours-getting away from silo teaching-transition through the family-sealant, amalgam, composite. All instructors has Ipad

UCSF C**.** First Year (PRDS 116) Fall quarter: Lecture: 52 hours
Clinical: 26 hours

(PRDS 117) Winter quarter: Lecture: 52 hours
Clinical: 104 hours

(PRDS 118) Spring quarter: Lecture: 52 hours
Clinical: 52 hours

Second Year (PRDS 126) Fall quarter: Lecture: 26 hours
Clinical: 104 hours

(PRDS 127) Winter quarter: Lecture: 26 hours
Clinical: 156 hours

(PRDS 128) Spring quarter: Lecture: 117 hours
Clinical: 156 hours

USC C**.** 1.5 hours of lecture, 3.5 hours of lab for amalgam class. 1.5-2 hours of lecture to 6-7 hours of lab for direct composite. 1-1.5 hours of lecture and 3-4 hours of lab for CAD/CAM

WUHS **C**. lab 66.5 lecture hours, 321.5 lab hours, 4 amalgam lecture, 48 amalgam lab hours, 12.5 composite lecture, 103.5 composite lab, 12 single unit lecture, 60 single unit.

UW C. No responses

D. Do you have enough faculty? (If not, why)
1. In your pre-clinical lab courses, what is the student/faculty ratio?
2. In your clinics, what is the student/faculty ratio?

UA We have adequate faculty at this time
1. 1:7
2. 1:5

ATSU Yes
1. 7- 8/1
2. 4/1

MID When all faculty are here we have enough faculty but when there are illnesses or vacations, etc. We are short. We are in the process of adding faculty. Ratio 1:5.5 in clinic and 1:5 preclinically.

UBC No, we pay $90.00/session – stiff competition from Dental Assisting and Dental Hygiene private schools – they pay 3 X's as much
Dentists can't afford the time away from their private practice
1. 1:8
2. 1:8

LLU No, problem with retention
1. sim lab 6:1
2. 6:1 day to day 8:1-10:1
Honor program-top students help out

UNLV We minimally have enough faculty, but would like to have more so that our faculty is not stretched so thin. We are a relatively new school in a state with a small population just coming out of a recession, so this definitely impacts our ability to attract and retain part time faculty.

1. Our goal is a 6:1 ratio, but we are often short.
2. Again, our goal is 6:1, but on a day to day basis we generally have an 8:1 ratio

ROSE We have an extreme shortage of faculty – new school and, in my opinion, an extremely cumbersome hiring policies and practices.
1. The goal is 1 faculty bench leader to 8-10 students. Presently we seldom meet that goal and is more like 1 faculty to 20 students. Sometime one faculty for 80 students

2. Supervising faculty to 8 teams (2 students per team) 4:1

UOP Yes
1. One faculty for five students
2. One faculty / five students

UCSF No do not pay enough, new hires 40% NO benefits
1. 1:8 in theory unless someone is ill and away ratio 1:16, 1:12
2. 1:8 in theory unless someone is ill, away, on vacation

USC Need more faculty. Always some people who are out.
1. 8:1
2. 8:1

WUHS No .issues with adjunct faculty status at WU University level.
1.Between 6.5:1 and 13:1 depending on coverage requirements and limitations.
2. 8:1 for regular clinic + specialist coverage for faculty.

UW No
1.N/A
2.N/A

E. Does your school use machine/computer grading in the pre-clinical courses?
1. If so, what software/manufacturer?
2. If so, for what type of restorations?

UA Yes
1. Moodle and Compare by E4D
2. Porcelain

ATSU No responses

MID We only use electronic grading on iPads and it is a proprietary software we developed. We use this for all restorations graded.

UBC No

LLU Computer grading is used for the didactic exams. Practical exams are graded by faculty, with two graders for each preparation and restoration.

UNLV No
1. N/A
2. N/A

ROSE No

UOP No
1. N/A

2. N/A

UCSF No except written tests-Scantron
1. N/A
2. N/A

USC No

WUHS No, but looking to add this
1. N/A
2. N/A

UW No
1. N/A
2. N/A

F. National Boards
1. Do you have formal National Board preparation courses?
2. Review sessions?
3. Are the courses or reviews mandatory or optional?
4. Does your school purchase review materials for students (like Crack the Code or Exam Master)?

UA
1. Yes
2. Yes
3. Optional
4. No

ATSU 1**.** We do have board review and mock board for part 1. We also provide board review for part II
2. Yes
3. We advise and expect the students to attend but we do not take attendance.
4. We include the Dental Decks in their tuition.

MID We do not have a formal course for part I except in the Dental Morphology/Occlusion 12 hours of review We do have a review for part II and for Regional Boards one quarter (20hours) We do not purchase materials for the students.

UBC N/A

LLU 1**.** Yes, for both Part I and Part II exams. Course directors of each discipline are used for these sessions.
2. Yes.
3. Mandatory
4. No.

UNLV 1. No
2. No
3. N/A
4. No

ROSE 1. Yes we have formal National Board preparation courses extensive block for it

2. Review sessions – Yes
3. Mandatory attendance
4. We do not purchase review materials for the students

UOP 1. Yes, course work
2. No
3. N/A
4. No

UCSF 1. No
2. No
3. Neither
4. No, students purchase their own- DECKS CORP.

USC 1. No
2. Yes
3. Mandatory
4. No

WUHS 1.Yes
2. No responses
3. Mandatory
4. Released exams and Study materials are available via electronic resources through our library.

UW 1. No
2. No
3. N/A
4. No

IV. CARIOLOGY

A. Caries Management

1. Does your school have a formal caries management plan as part of the comprehensive treatment plan?
2. How is the caries management plan tracked once it has been implemented?
3. How are reevaluations documented?
4. By treatment note only or by procedure code completion?

UA 1. No
2. No
3. No
4. No

ATSU 1. After Identifying the patient risk put a patient in management plan
2. No responses
3. No responses
4. No responses

MID We have incorporated the CAMBRA suggestions and guides into our AxiUm management system and this is followed for each patient. It is tracked at recare appointments and noted in the treatment notes.

UBC 1. Yes.
2.It is initiated in phase I (Disease and Disorder Management) of treatment planning and usually students can't progress to phase II (Rehabilitation) unless caries management was implemented. Additionally phase III (Maintenance/ Recall) should reflect ongoing caries management.
3. In the chart by case notes, also by refilling a caries risk assessment form.
4. Both, we have a 'phase I completed' axiUm code.

LLU Yes. We follow the CAMBRA protocol.

UNLV 1. Yes, there is a CRA form that is completed for each patient tx plan, and tx is customized for each patient individually. The CRA tx plan includes need for immediate restorative tx (caries control), definitive restorative tx (amalgams, composites, single and multiple tooth cuspal coverage restorations), as well as long term maintenance plans (frequency of recall / maintenance evaluations, frequency of radiographic evaluations, use of adjunctive measures)
2. In Axium, through recall / maintenance mechanism
3. A new CRA form should be filled out at maintenance / recall appointments.
4. Using a new CRA form, as described above (internal procedure code that includes note)

ROSE 1. Not presently
2. No responses
3. No responses
4. any follow up is placed in the treatment note

UOP 1. Yes, CAMBRA is assessed as part of the ODTP proscess
2. Re evaluated at recall appointment unless there is extreme risk ie. Meth mouth
3. The CAMBRA form in Axium is completed
4. Procedure code completion

UCSF 1. Caries Management by risk assessment (CAMBRA) package
Included: one bottle of chlorhexidine, one tube of prevident 5000, fluoride varnish
2. Encourage patients to return for Periodic Oral Exam every 6months for Moderate and High risk (one caries considered as Moderate/high risk)
3. CRA form or note (Caries risk assessment)
4. Indirectly by procedure code

USC 1. CAMBRA
2. Not well tracked yet. Working on it.
3. Not well. Working on it.
4. No responses

WUHS 1. We have a formalized plan used where appropriate based on CRA patient status

2. Through caries risk based recall intervals. Lesions that are undergoing remineralization are monitored for lesion regression.
3. In the axiUm EHR
4. By treatment note only currently. Codes would be ideal in the future.

UW
1. Not in the predoctoral clinic. But there is a formal caries management plan at the graduate prosthodontics clinic.
2. The risk factors which may cause the patients' high caries rate are evaluated based on the caries risk assessment. Once the specific caries risk is determined, the effort is made to help the patients decrease or eliminate the risk factor.
3. After 3-6 months, the caries risk assessment is performed again. The result is used to compare with the baseline established by treatment notes.

5. Does the school dispense remineralization products to patients? If so, how is it dispenses or purchased?
6. Are treatments being planned based on CAMBRA concepts?
7. Are such treatments accomplished as planned?

UA
5. No
6. No
7. No

ATSU
5. No responses
6. No responses
7. No responses

MID We typically do not give away these products but they are dispensed via Rx.

UBC
5. Yes, a 0.2% fluoride mouth rinse sold at cost to patients.
6. We have our own Caries Management Program developed by a group of faculty, implemented a year ago and replacing an older protocol.
7. They usually are but we don't have a formal tracking method in place. There's an ongoing effort to engage faculty and students in the current concepts of Cariology and its clinical application in patient care.

LLU
5. No responses
6. No responses
7. No responses

UNLV
5. MI Paste, Prevident, and Chlorhexidine are available to patients for purchase from the dispensary as CRA adjuncts.
6. Theoretically
7. Sometimes, the protocols listed above are relatively new, and good follow-up is not available yet. Across the board faculty buy-in is difficult, but hopefully getting better with time.

ROSE 5. No responses

6. No responses
7. No responses

UOP 5. Yes, The products are dispensed by the school Purchased and covered by programs: Dentical / CARE
6. Yes
7. An ongoing process with students to achieve follow up

UCSF 5. MIP paste, and Calcium Phospate
6. yes
7. yes

USC 5. We have a CAMBRA kit. Patients pay for the kit, and diet analysis, and fluoride varnish as a package.
6. Yes
7. Yes. All high and extreme high patients are required to participate.

WUHS 5. *Yes.* The pharmacy on the first floor carries remineralization products.
6. Yes
7. D2990 Resin infiltration of Incipient Lesion limiting progression of lesion. New in CDT2014!

UW 5. No
6.Not in the predoctoral clinic. But the treatment is being planned based on CAMBRA concepts in the graduate prosthodontics clinic.
7.Yes

V. OTHER

A. Biomimetics has been defined as "the study of structure and function of biological systems as models for the design and engineering of materials and machines."
1. What is Biomimetic Dentistry?
2. Is this an application of a new term for existing techniques?

UA 1. Attempt to replace dental structure with materials that are close to natural
2.A new term for something that has been used in the past

ATSU 1. No responses
2.No responses

MID We teach Biomimetic dentistry in both preclinic lectures and clinical experiences. This is a new term for what has been practiced for many years by most of us. Some use bonding materials and preparation guides from GV Black. So those practitioners would be doing something new to them.

UBC 1. At UBC we don't teach biomimetics. Based on the "Manual for Posterior Esthetic Restorations / Esthetic and Biomimetic Restorative Dentistry" / USC School of Dentistry, 2006, this is defined as "..mimicking or recovery of the biomechanics of the original tooth by the restoration"
2. N/A

LLU 1. No responses
2.No responses

UNLV 1. Adhesive, minimally invasive dentistry.
2.No responses

ROSE 1. We are not clear on that
2. It appears to be so with some innovative and questionable approaches to total patient care regarding the preservation and restoration of teeth

UOP 1. Biomimetic dentistry utilizes minimally invasive procedures to protect and conserve a patient's teeth. It is a scientifically proven set of techniques and methodologies that focus on preserving teeth and improving bonding and sealing of broken or decayed teeth in ways that mimic natural processes of teeth. (Alleman)
2. Possibly

UCSF 1. Replacement of lost tooth structure or periodontal support with engineered substructure that are biologically tolerated by the mouth and induce new formation of tooth and periodontal tissue.
2. In some cases Yes i.e. such as new bone scaffold, in some cases No such as restorative materials that have similar mineral composition for the tooth, connective tissue, or bone It is an encompassing rubric for the study of form, function, and structure from micro (molecular) to macro aspects of biological systems.

USC 1. No responses
2.No responses

WUHS 1. The design, engineering of materials for use in restorative dentistry that have similar physical properties as tooth structure.
2. No, many dental materials are over-engineered.

UW 1. The new restorative approaches should aim to create not the strongest restoration but rather a restoration that is compatible with the mechanical, biologic, and optical properties of underlying dental tissues.
2.Yes, it merely introduces a concept to restore the tooth structure based on the

VI. REGIONAL CODE AGENDA

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

No Regional Agenda Items Submitted

Consortium of Operative Dentistry Educators

(CODE)

REGION II (MIDWEST) ANNUAL REPORTS

Region II Director:
SIU
Alton, IL

Region II Annual Meeting Host:
Dr. Christa Hopp
SIU
Alton, IL

Region II Annual Report Editor:
Dr. Christa Hopp
SIU
Alton, IL

Chapter 2

CODE REGIONAL MEETING FORM

REGION: II Midwest

LOCATION INFORMATION FOR 2013 REGIONAL MEETING

University:	Southern Illinois University School of Dental Medicine		
Dates:	September 27th and 28th		
Chairperson:	Christa Hopp D.M.D.	Phone #	(618)474-7052
University:	Southern Illinois University	Fax #	(618)474-7141
Address:	2800 College Avenue	E-mail	chopp@siue.edu
	Alton, IL 62002		

List of Attendees: Please complete the CODE Regional Attendees form (See next page)

Suggested Agenda Items for Next Year:

What is the class schedule/curriculum over the course of the 4 years at your school?

What is the philosophy and what is being taught about the different types of curing lights and polymerization at your school?

What is the philosophy and what is being taught about re-mineralization at your school?

LOCATION INFORMATION FOR 2014 REGIONAL MEETING

University:	Creighton University School of Dentistry		
Dates:	September 18th-20th, 2014		
Chairperson:	Dr. Scott Shaddy	Phone #	
University:	Creighton University	Fax #	
Address:	2500 California Plaza	E-mail	shaddyr@creighton.edu
	Omaha, NE 68178-0240		

Please return all completed enclosures to
Dr. Ed DeSchepper, National Director, University of Tennessee, College of Dentistry;
875 Union Avenue, Memphis, TN 38103

Office: 901-448-1313 Fax: 901-448-1625 E-mail: edeschep@uthsc.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 REGIONAL ATTENDEES FORM

REGION: II (Midwest) 2013

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2013 NATIONAL CODE AGENDA
REGION II
SUMMARY RESPONSES TO NATIONAL AGENDA

(Editor Note: Questions condensed for printing purposes)

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

No Summary Responses Submitted

2013 NATIONAL CODE AGENDA
(Evidence cited where applicable)
September 27-28, 2013
Report on the proceedings of CODE Region II
DeSchepper ED (ed.) Code Regional Annual Reports 2012
http://www.unmc.edu/code/

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. CONSORTIUM OF OPERATIVE DENTISTRY EDUCATORS (C.O.D.E.)

The organization has grown and evolved over time. At present there is no organizational constitution and by-laws. Consideration is warranted.

A. What is the interest, need, value?

SIU: SIU has continued interest in supporting the organization and agrees there is a need and value to having a defined foundation.
UMKC: no response
CREG: Not convinced that there is a need.
COLO: no response
IOWA: No response
UNMC: No response
MARQ: No response

B. Are there concerns?

SIU: How will administrative support be supplied and funded.
UMKC: no response
CREG: no response
COLO: no response
IOWA: No response
UNMC: No response
MARQ: No response

C. Who wishes to participate in the process of formulation of a constitution and by-laws?

Each region is to submit the name of one individual who wishes to participate on an Ad-hoc constitution and by-laws committee.
SIU: Currently have no volunteers.
UMKC: no response
CREG: no response
COLO: no response
IOWA: No response
UNMC: No response
MARQ: No response

II. MATERIALS/TECHNIQUES AND DEVICES

A. In recent years there have been articles indicating that glass ionomer sealants are just as effective as resin-based composite sealants.

1. What materials (both type and brand name) are used for pit and fissure sealants at your institution?

SIU: Brand: Delton, Type: resin
UMKC: Delton for pit and fissure, GC America for Glass Ionomer (Triage Fuji) – it was a donation from the company. Only used once by dental hygiene.
CREG: Resin-based composite (RC) sealants, Ultraseal
COLO: Resin-based sealant: UltreaSeal XT plus (Ultradent); Glass ionomer: Fuji Triage (GC America)
IOWA: UltraSeal XT
UNMC: We use UltraSeal® XT plus™
MARQ: Ultradent – Ultraseal XT Plus – Sealant; Coltene Whaledent -– Synergy D6 – Flowable Resin (preferred) ; No fissurotomy for retention as studies show this does not help; Best is to use a prophy jet to clean pits and fissures

2. If glass ionomer products are used, are they used routinely or are they used under certain guidelines, e.g. partially erupted teeth, difficulty in isolation or in outreach clinics without the aid of suction?

SIU: Only use resin in our clinic.
UMKC: Normally not used
CREG: no response
COLO: In Adult clinics glass ionomer products are used under certain guidelines. Pediatric uses are under the direction of the Pediatric Department with pts being seen at a clinic in Children's Hospital.
IOWA: We use them on partially erupted teeth and difficult isolation
UNMC: N/A
MARQ: Not used; Compomer – Dyract (Pediatric clinic only) – rarely used

3. What has been your experience with glass ionomer sealants?

SIU: No experience.
UMKC: Short term ok long term no evidence, that is why we don't use them
CREG: Seen in the literature, not convinced that they are superior to RC sealants
COLO: This procedure occurs infrequently in the adult clinic. We have little experience with it there.
IOWA: Good, long term durability but need to be replaced in 2-3 years (my personal experience)
UNMC: Our only experience is with two in vitro research projects. The projects showed the glass-ionomer penetrated the fissures more completely and with fewer voids.
MARQ: Preference is flowable resin

B. Does your institution teach impression techniques using intraoral digital scanning devices?

SIU: Yes
UMKC: Yes, in lecture only for now
CREG: Yes
COLO: No
IOWA: Yes
UNMC: Yes
MARQ: Yes

1. If so, what brand(s) of intraoral impression scanners are being used?

SIU: CEREC red cam and blue cam, 3M ESPE Lava scanner
UMKC: iTero
CREG: Itero
COLO: N/A
IOWA: Lava COS, 3M True Definition, E4D, CEREC Bluecam and Omnicam, iTero
UNMC: CEREC
MARQ: 3M – Lava COS (chairside oral scanner)

2. How many scanners do you have?

SIU: 5 pre-clinical CEREC red cam, 1 clinical red cam, in process of replacing red cams with blue cams, 1 clinical 3M ESPE Lava scanner
UMKC: **Zero**
CREG: One scanner
COLO: **N/A**
IOWA: 13 Lava COS, 1 3M True Definition, 4 E4D, 2 CEREC redcams, 2 CEREC bluecams, 1 CEREC omnicam, 1 iTero
UNMC: Ten units**.**
MARQ: One

How are they funded or provided?

SIU: Contract purchased by school for CEREC, Lava by laboratory
UMKC: They are not
CREG: obtained through grant money
COLO: N/A
IOWA: Some were provided from corporate Gifting Programs, others purchased through corporate Success Packages, others purchased at academic pricing through dental supply companies. Some funds available from a student technology fee.
UNMC: Funded through a grant from Sirona and approximately $100,000 from our college
MARQ: Donated by dental laboratory

3. Do all students use the scanners for their patients?

SIU: No

UMKC: N/A
CREG: No
COLO: N/A
IOWA: No, however for predoc implant program they are supposed to use the Lava COS for their full arch diagnostic impressions. For D4s its more of an "elective." All students use the scanners in the Simulation clinic – have a D2 digital scanning competency.
UNMC: Currently no, but we are considering making it a requirement to complete one or more prior to graduation.
Marquette: No, we are building it into the curriculum**;** Each student gets simulation laboratory experience

4. If scanning access is limited, how do you determine who gains access?

SIU: Based on being proctored by trained instructor
UMKC: N/A
CREG: The Itero equipment is maintained in the Fixed Pros Dept, and there is one faculty member that monitors and mentors interested students with the equipment.
COLO: N/A
IOWA: Access is not a problem, we have scanners collecting dust…
UNMC: Access is limited only by faculty availability and appropriate cases for student to complete. Currently most of the cases are done by one faculty member.
MARQ: Only after showing competence in traditional impression taking and completing their restorative/fixed requirements are they allowed to use the scanner.

5. What has been your experience with intraoral digital scanning devices?

SIU: Some faculty have positive first-hand experience, some have had negative second-hand experience
UMKC: N/A
CREG: Have used the Itero for a typodont exercise. Have also witnessed CEREC and E4D in use.
COLO: N/A
IOWA: Faculty are resistant to change. Struggle to find time to train faculty. Curriculum is already full, reluctance to remove anything to make room. Students tend to follow path of least resistance which in many cases means they revert to analog techniques when digital would have been more than appropriate. Faculty and students do not take the required time to practice before trying on a patient – results in a bad experience for all involved. Learning curve involved, helps to have technician to maintain, important in future
UNMC: We find they are bulky and somewhat difficult to use intraorally. We generally have our students make a traditional impression and scan the cast with the CEREC, at least with their first case.
MARQ: Mixed

C. Composite Resin

1. What are the limitations in your clinic for the placement of Class II composite restoration if any?

SIU: Criteria are determined by proctoring instructor.
UMKC: Don't replace with resin composite if resin composite has already failed with a deep class II caries restoration; gingival margins in enamel (should be beveled if able) for a class II; poor oral hygiene; high caries rate; keep B-L width narrow in the middle 1/3 of the tooth
CREG: Class 2 CR may be placed if there is enamel on the interproximal gingival seat, if RD can be used, and if the restoration is limited to intracoronal replacement.
COLO: The major limiting factor for placement of Class II composites in the clinic is control of the operating field.
IOWA: D3 Clinic we teach placement only under RD, minimal subgingival margins (use open sandwich technique if present), rarely in high caries risk patientsunless it is more conservative to the tooth structure and rubber dam isolation can be achieved.
UNMC: Limitations would include: inability to isolate the tooth adequately, large preparations (such as cusp replacements), patients with a high caries rate, patients who brux.
MARQ: Rationale:Posterior composite resin materials have improved dramatically Since their introduction in the mid 1960's. The American Dental Association has stated that "when used correctly in the primary and permanent dentition, the expected lifetime of resin based composites can be comparable to that of amalgam in Class I, Class II, and Class V restorations." Furthermore, the ADA indicated the Appropriateness of composites for use as pit and fissure sealants, preventive resin restorations, and Class I and Class II restorations for initial and moderately sized lesions using modified conservative tooth preparations. By using sound clinical techniques and principles, there is no reason not to consider posterior composite resins as a treatment option.

What is your criterion for a Class II composite restoration placement?
SIU: Criteria are determined by proctoring instructor.
UMKC: Enough enamel margins to stem microleakage and recurrent caries; minimal caries not gross caries; occlusion on the tooth; premolars before molars; small OL, Facial pits and grooves; minimally invasive dentistry combined with sealants; when there is a light distance problem; have to have good isolation;
CREG: Class 2 CR may be placed if there is enamel on the interproximal gingival seat, if RD can be used, and if the restoration is limited to intracoronal replacement.
COLO: Students are required to use rubber dam isolation for procedures and isolation must be adequate for the procedure to take place. We teach our students to treat the lesion in the most conservative way possible. They must take into account all factors which could affect the outcome of the procedure. (Hygiene, pt. wishes, isolation, etc.)
IOWA: No specific criteria other than ability to isolate with rubber dam, however, cervical location of decay and width and involvement of width of occlusal tooth structure are factored in**.**
UNMC: Most situations that are not in the above categories can be restored with composite resin.
MARQ: Indications: 1. Small and moderate restorations, preferably with enamel margins. 2. Most premolar or first molar restorations, particularly when esthetics is considered. 3. A restoration that does not have any occlusal contacts. 4. A restoration that can be appropriately isolated during the procedure. 5. Some restorations that may serve as foundations (core buildups) for crowns. 6. Some large restorations that are used to strengthen remaining weakened tooth structure (for economic or interim use reasons).

1. **Select Shade(s) –** use a dentin shade of Synergy D6 up to DEJ (estimate) followed by a more translucent shade for the enamel layer
2. **Isolate** tooth with rubber dam.
3. **Prepare** tooth.
4. **Check Adjacent tooth.** (Class II, III, IV)
5. **Clean Tooth** - Clean uninstrumented enamel with a rubber cup and pumice or a non-fluoride cleaning paste such as Nupro™ Prophylaxis Paste. Wash thoroughly with water spray and air dry. Clean freshly instrumented enamel and dentin with water spray and then air dry.
6. **Pulp Protection** if required.
7. **Place Matrix/Wedge** – Class III, IV as needed.
8. **Etch** uninstrumented enamel for 30 secs and instrumented enamel for 15 secs without agitation with Uni-Etch (32% H3PO4). Rinse thoroughly for 15 secs. Air dry for three seconds. Do not dessicate.
9. **Apply Optibond FL –** Place 1-2 drops of "Prime" primer into a clean plastic well. Replace cap promptly. Using a disposable brush or applicator tip, immediately apply "Prime" primer to thoroughly wet all the tooth surfaces with a light brushing motion for 15 secs. Air dry for 3 secs. Using same applicator, apply "Adhesive" with light brushing motion for 15 secs. Remove excess solvent by gently drying with clean, dry air from a dental syringe for at least 5 secs. **Surface should have a uniform glossy appearance**. If not, repeat application and air dry.
10. **Light Cure** for 20 secs.
11. **Place Synergy D6** in increments no greater than 2mm. For Class I's, follow cuspal inclines. For Class II, III and IV, build dentin layer first.
12. **Light Cure** 20 secs for each increment.
13. **Contour**
14. **Check Contacts** (Class III and IV)
15. **Remove rubber dam**
16. **Adjust Occlusion**
17. **Finish and Polish**

2. What is taught for Class II composite restorations with gingival margins on dentin (apical to the CEJ); use of flowable or RMGI as an "open sandwich?"

SIU: Pre-clinical instruction covers option of sandwich technique.
Clinically criteria is determined by proctoring instructor.
UMKC: Flowable is acceptable if hybrid resin composite can't be placed without tug back or voids by the operator
CREG: We prefer not to place a composite restoration when there is no enamel interproximally. We do not opt for a flowable on the gingival seat, as evidence is inconclusive to its effect (positive or negative)
COLO: We teach "open sandwich", but try to limit if possible.
IOWA: Open sandwich (RMGI)
UNMC: In these situations glass-ionomer placed in the gingival 1 – 2 mm and composite is placed over the glass-ionomer in a sandwich technique.
MARQ: Open Sandwich – Fuji II LC (RMGI) and Microfilled Resin (Renamel) or Nanofilled Resin (Synergy D6)

3. Have esthetic inlays and onlays been increasing in frequency in your clinic?

SIU: Yes
UMKC: Yes; right now we do about 10% in our esthetic dentistry clinic
CREG: There is a small increase; however, if CAD/CAM technology is brought in there would be a large increase over the SA buildups.
COLO: We have not seen an increase in the use of "esthetic inlays and onlays". We are currently moving towards having the ability to place milled restorations.
Iowa: No
UNMC: Yes, we are placing more esthetic onlay restorations because we have CEREC available. We will be placing more in the future
MARQ: No

Do you see these increasing in the future as esthetic alternatives to large amalgam restorations instead of direct resin composite?

SIU: Yes
UMKC: Yes; right now we do about 10% in our esthetic dentistry clinic
CREG: There is a small increase; however, if CAD/CAM technology is brought in there would be a large increase over the SA buildups.
COLO: No response
IOWA: Quite possibly with the increased use of CEREC
UNMC: I do not see them replacing more traditional restorations in the near future.
MARQ: No – primarily due to lack of insurance coverage

4. How many resin composite systems and bonding systems are available in your clinic?

SIU: one
UMKC: TPH3 (hybrid) and PQ1; Esthet-X (microfilm), Venus and Empress Direct (Nanofil), Calibra (Veneers) and (Prime and Bond NT for Paracore system)
CREG: A system that is taught in the pre-clinical will also be used in the clinical setting. Adhesive being used is P & B NT (Dentsply). CR being used includes TPH, TPH Spectra, and Z-250. The department is looking at the effectiveness of Tetric EvoCeram Bulk Fill.
COLO: The main material used for bonding in the student clinics is Optibond Solo Plus. Other systems are available for use with resin cements.
IOWA: Two composite systems are available – Supreme Ultra and Durafill VS
UNMC: We use Amelogen® Plus (Ultradent) with PermaQuick® as the bonding system for the majority of our composite restorations. We also have Esthet-X® (Caulk-Dentsply) with Prime&Bond NT. Only Ameolgen is taught in the preclinic. There has been discussion regarding removing Esthet-X® from our clinics since we do not teach it in the pre-clinic**.**
MARQ: Two – Microfilled Resin (Renamel) or Nanofilled Resin (Synergy D6)

What bonding systems are being used?

SIU: Phosphoric acid etch and Solo Optibond adhesive resin

UMKC: Primarily PQ1
CREG: A system that is taught in the pre-clinical will also be used in the clinical setting. Adhesive being used is P & B NT (Dentsply). CR being used includes TPH, TPH Spectra, and Z-250. The department is looking at the effectiveness of Tetric EvoCeram Bulk Fill.
COLO: The main material used for bonding in the student clinics is Optibond Solo Plus. Other systems are available for use with resin cements.
IOWA: Bonding sytem for direct resin restorations - Optibond FL
Bonding system for indirect restorations, All Bond 3
UNMC: We use Amelogen® Plus (Ultradent) with PermaQuick® as the bonding system for the majority of our composite restorations. We also have Esthet-X® (Caulk-Dentsply) with Prime&Bond NT. Only Ameolgen is taught in the preclinic. There has been discussion regarding removing Esthet-X® from our clinics since we do not teach it in the pre-clinic.
MARQ: Two – Three-step etch and rinse (Optibond FL) or two-step self-etch (Clearfil SE)

If there are multiple systems, are all systems taught in the pre-clinic courses also?

SIU: N/A
UMKC: No, we only teach PQ1 and TPH3 in the preclinic labs
CREG: A system that is taught in the pre-clinical will also be used in the clinical setting. Adhesive being used is P & B NT (Dentsply). CR being used includes TPH, TPH Spectra, and Z-250. The department is looking at the effectiveness of Tetric EvoCeram Bulk Fill.
COLO: No response
IOWA: All systems are taught in preclinic courses with continuity through all clinics.
UNMC: We use Amelogen® Plus (Ultradent) with PermaQuick® as the bonding system for the majority of our composite restorations. We also have Esthet-X® (Caulk-Dentsply) with Prime&Bond NT. Only Ameolgen is taught in the preclinic. There has been discussion regarding removing Esthet-X® from our clinics since we do not teach it in the pre-clinic.
MARQ: no response

5. What type of matric systems are used for Class II posterior composites?

SIU: Sectional matrix with ring (V-ring by Triodent and Dentsply recent similar version)
UMKC: Tofflemeire – but we don't encourage that; Palodent and Palodent Plus
CREG: HO band, Garrison sectional matrix. Beginning to use V-3 ring, need buy in from faculty
COLO: We utilize the Composi-tight sectional matrix. The system is dispensed through the dispensary.
IOWA: Garrison 3D Matrix rings with Palodent Bands
UNMC: We use a sectional matrix system most of the time. We also have Tofflemire matrix bands available and the AutoMatrix® (Dentsply) system. The sectional matrix and AutoMatrix® are dispensed through our central **dispensing**

window in the clinic. The Tofflemire bands are in a baggie along with two wooden wedges.
MARQ: Garrison Dental – Composi-Tight 3D

How are these systems dispensed in your clinic?

SIU: Individually upon request by student from dispensing area
UMKC: no response
CREG: both from central dispensing.
COLO: Upon request, the dispensary staff dispenses rings and matrices.
IOWA: Dispensed individually
UNMC: The baggies are on a cart located outside the dispensing area. The Tofflemire retainer is included in the restorative cassettes.
MARQ: no response

6. How do you prevent voids in composite restorations?

SIU: Flowable base-currently recommending Surfil SDR as thin layer to seal gingival
UMKC: Placement technique or use of a flowable
CREG: Voids are prevented by incremental buildup and cure
COLO: We are not regularly heating composite prior to placement. The students are taught the incremental technique for placement of resins.
IOWA: We teach both heated technique for initial increments as well as the Snowplow Technique (resin pressed into unpolymerized flowable), currently favoring Snowplow more.
UNMC: We do not heat our composite. We teach a careful place of 1 to 1.5mm increments. I am sure that there are some voids in our composites.
MARQ: Warmed composite resin; Incremental layering technique; Ultradent – Wetting Resin – to prevent sticking to instruments

Are you heating the composite to provide better flow?

SIU: No
UMKC: No
CREG: No heating of the material is done.
COLO: No
IOWA: Yes
UNMC: No
MARQ: Yes

7. If known, what is the secondary caries rate of composite versus amalgam restorations?

SIU: Unknown
UMKC: It is the same as amalgam; anterior resin composites have an 8% failure rate and posterior amalgam and composite have a 5% failure rate
CREG: Current research tends to show similar rates of 2° caries between CR and SA. At our school, that data is not tracked at this time.

COLO: We are beginning to investigate this question.
IOWA: Depends upon the clinical trial source, that is, RCTs in academic settings versus general practice settings. Recurrent caries is very low in RCTs relative to private practice settings due to the "diagnosis"of caries based upon marginal discoloration and degradation. See excerpt from Ferracane Dent Mater 2012

> **Clinical studies show increasing evidence for the success-ful long-term performance (10+ years) of dental composite in small to moderate-sized restorations [24–26]. A 17 year study of four UV-cured conventional composites [27] reported excel- lent outcomes, and a 17 year and 22 year study of two visible light-cured hybrid composites [12,28] placed in class I and II cavities under rubber dam showed overall success rates of 75% and 64%, respectively. The main reasons for failure in these studies were wear and secondary caries [27] and frac- ture [28]. An evaluation of clinical outcomes from an extensive insurance database for approximately 200,000 amalgams and 100,000 composites showed survival rates of 94% and 93%, respectively at 7 years [2]. While this difference seemed mini-mal, statistical evaluation for this large dataset showed about a 16% greater chance of failure for composite than amalgam. A nearly double rate of failure for composite compared to amal-gam as a posterior restorative has been reported based on reviews of controlled clinical studies [29–31]. More recently however, Opdam et al. [32] have shown equivalent or even higher success rates for posterior composites vs. amalgam, except perhaps in situations where the patient had a high caries status. Results from cross-sectional studies from private prac- tices vary showing an equivalent failure rate for composite and amalgam over three years [31] to nearly twice the mean longevity for amalgam over 12–14 years [33]. A recent study reporting on the 5-year success of over 700 posterior compos-ites placed by dental students showed a failure rate of 14%, with class II restorations failing at nearly three times the rate of class I restorations [34]. The predominant cause of failure was caries/marginal openings and restoration fracture. Fur- ther evidence for the performance of composites in larger cavities, with many restorations involving cusp replacement, has shown survival rates at 11 years of 73% [35] and 70% [36], with success being better in premolars than in molars. The predominant reason for failure in both studies was fracture of the restoration. Another study of the survival of exten- sive composite restorations (where a crown would have been the first choice), showed a median survival of 7.8 years for composite, which was less than that for amalgam (12.8 years) and metallic crowns (more than 14.6 years), with the primary reason for failure again being composite fracture followed by secondary caries [37].**

UNMC: We have not gathered data regarding the rate of secondary caries around either of these restorative materials. It would be the consensus of our faculty that we see more secondary caries around composite restorations, but that is only anecdotal.
MARQ: Unknown

D. Pins in Restorative Dentistry

1. Does your school teach the use of pins in the pre-clinical curriculum?

SIU: Yes
UMKC: Yes
CREG: Yes
COLO: Yes
IOWA: We do not teach pins in our clinic and have not taught them for the past fifteen years
UNMC: Yes
MARQ: Yes

2. Do your students use pins in the clinic?

SIU: Yes
UMKC: Yes
CREG: Yes

COLO: Yes
IOWA: No
UNMC: Yes
MARQ: Yes, More pots, slots, and grooves

3. Which pin system(s) are used?

SIU: Coltene/Whaledent Max 021 (.021") titanium
UMKC: Whaledent regular, minim and minikin
CREG: Coltène/Whaledent - *TMS LINK PLUS*, Minim and Minikin
COLO: Max titanium alloy pins are taught in the pre-clinic and used in the clinic. (Self-limiting threaded pins)
IOWA: N/A
UNMC: We use TMS Minim, Minikin and Max pins (all Coltene/Whaledent)
MARQ: Coltene Whaledent – Max – self-threading pins with a shoulder stop**;** Coltene Whaledent – TMS (Thread Mate System) Link Plus – self-threading, self-shearing pins

4. If used, are pins limited to amalgam restorations?

SIU: Yes
UMKC: No
CREG: No; however, they are used more frequently with SA.
Colorado: Yes
IOWA: N/A
UNMC: The vast majority of the pins are used with amalgam restorations, however they are occasionally used with composite.
MARQ: Yes

E. Posts in Restorative Dentistry

1. What is utilized in clinics? Prefab, cast, fiber

SIU: Yes, all three
UMKC: All three
CREG: All
COLO: Depending upon the clinical indication, any of these may be used.
IOWA: Most posts are placed in Prosthodontics and we rarely place or teach post placement in the Operative Dentistry clinics. Any posts placed in our clinics are primarily fiber posts for anterior teeth**.**
UNMC: We use predominately prefabricated posts and some cast posts.
MARQ: All

2. What criteria are used to determine the need for a post?

SIU: Lack of sufficient ferrule. All anterior and bicuspid endodontically treated teeth receiving a crown will have a post and core. If sufficient tooth structure remains (only 1 compromised wall) then a resin in the access will suffice. For molars, if two or

more walls will remain after the preparation and a deep chamber exists, then a chamber retained core will be placed.
UMKC: Retention of crown;
CREG: Amount of missing clinic crown
COLO: The amount of remaining tooth structure; ferrule for the crown; crown/root ratio; adequate root length and shape along with occlusal forces are the main determinates for the use of a post.
IOWA: Most posts are placed in Prosthodontics and we rarely place or teach post placement in the Operative Dentistry clinics. Any posts placed in our clinics are primarily fiber posts for anterior teeth.
UNMC: Amount of remaining tooth structure, patient habits (like bruxism), will the tooth be an abutment, etc. Our prosthodontics section recommends posts on all anterior teeth and in some posterior teeth. Their section director would use a cast post in all endodontically treated teeth.
MARQ: Must have a minimum of 1.5-2.0 mm of sound tooth structure apical to the core material to achieve an adequate ferrule effect or the post and the core will fail. The post should also have more than 1.0 mm of tooth structure circumferentially around the post to prevent perforation and to provide fracture resistance. Retention of the last 4-5 mm of filling material at the apex is the minimum requirement for an endodontic seal.

a.) Anterior Teeth:

1) Receives predominantly shearing forces.
2) When a complete coverage is not required for esthetic or functional reasons (i.e. to serve as an abutment for a fixed or removable partial denture), a post is not indicated.
3) If there is a significant amount of coronal tooth structure remaining, the crown preparation should be accomplished before the decision regarding post placement is made.
4) If there is doubt regarding the adequacy of the resistance form othe coronal portion of the tooth, then a post is indicated.

b.) Posterior Teeth:

5) Receives predominantly vertical forces.
6) Indicated when other more conservative retention and resistance features cannot be used for the core. Indicated when the tooth is to serve as an abutment for a removable partial denture (non-physiologic forces on tooth that may require coronal reinforcement)

3. What criteria are used in the selection of post types?

SIU: Shape of canal, esthetic concerns, number of canals. The majority of anterior teeth receive a cast post and cores unless abundant tooth structure exists but with more than 1 compromised wall. In this case the preparation for the CPC will remove excessive tooth structure and therefor a prefabricated post and core is selected. Any all-ceramic crown preparation will receive a prefabricated post (Fiberlux with a tooth coloured composite core.
UMKC: Maxillary anteriors – no post or core if tooth has small or it is unrestored; if abutment is for an FPD – use post and core; try not to use them on molars – use amalgam instead in pulp chamber and canals, unless it is necessary to retain the

crown or core; we don't use any active posts only passive ones; For cores we use amalgam or composite
CREG: Mostly professor preference
COLO: Amount of remaining tooth structure is the main criteria.
IOWA: Most posts are placed in Prosthodontics and we rarely place or teach post placement in the Operative Dentistry clinics. Any posts placed in our clinics are primarily fiber posts for anterior teeth.
UNMC: All of the above criteria plus esthetics**.**
MARQ: Prefabricated**:** Type of Crown, Desire to retain radicular tooth structure
Cast Post and Core:

1) When a small tooth, such as a mandibular incisor, needs a post and core. There is minimal space around the post for core material, so a cast post is a better choice.
2) When the angle of the core in relation to the root must be altered. Prefabricated posts should not be bent.
3) When minimal tooth structure remains. A cast post and core prevents dislodgement of the core and the crown from the root.

4. Which systems are available at your school?

SIU: Parapost system
UMKC: Metal – Parapost and Vlock
Fiber – Parapost
Fiber resin post is used for anteriors and premolars; Pre-Fab – Parapost straight
CREG: Para Posts, Ultradent Unicore, cast gold post & core
COLO: Parapost for pre-fab posts
IOWA: **No response**
UNMC: Parapost (Whaledent) is the most used system**.**
MARQ: Coltene Whaledent – Parapost XH – prefabricated titanium post**;** Coltene Whaledent – Parapost FiberLux – prefabricated fiber reinforced composite post**;** Coltene Whaledent – Parapost XP – cast post and core

III. CURRICULUM

A. When is your first clinical experience in Restorative Dentistry scheduled?

SIU: Year 1, semester 1, first 9 weeks in Cariology, Community and Preventive Dentistry
UMKC: 2nd year Fall semester
CREG: D-2 Spring
COLO: Spring of their 2nd year.
IOWA: Sophomore year is the first year for patients – two half days a week for year. Students pair up and one assists and one operates**.**
UNMC: D-2 year, second semester.
MARQ: Early spring semester – D2 year

1. Where do the patients come from?

SIU: Community sealant program, fellow students

UMKC: 4th year supply them and assist them and get rewarded with 5 time units
CREG: D-4s
COLO: Comprehensive dental clinics or through screening.
IOWA: Patients are screened for minor operative procedures such as Class I, II, III, and V amalgam and composite restorations. Work in this clinic is free to the patients
UNMC: Patients come from the general patient population. The patient is assigned to the student by the student's advocate.
MARQ: Local Milwaukee community

2. Do they stay with the student?

SIU: No
UMKC: Yes, the 4th year not the 2nd yr
CREG: Yes, pts. remain in students family, and D-4s stay through the procedure as assistants to the D-2s
COLO: Yes and no. If they are new patients, they may stay with the student. If they have been obtained from an upperclassman, they may or may not stay with the DSII.
IOWA: Can be reappointed, but do not stay permanently with student
UNMC: In general, yes
MARQ: Yes

3. What is the staffing ratio?

SIU: 6 students to 1 faculty
UMKC: 8 students to 1 faculty
CREG: 8 students:1 faculty
COLO: The faculty ratio in transition clinic is 3-4 to each covering faculty.
IOWA: 4 or 5:1 student teacher ratio
UNMC: Our target ratio is 1 faculty to 6 students**.**
MARQ: 1:5 to 1:6

4. Any problems or recommendations?

SIU: No
UMKC: No problems; been doing it for years; we do it during the 2nd year Operative Lab time
Creighton: No
COLO: There have been some issues with locating "simple" operative patients. We are operating comprehensive care clinics where students get their first restorative experience based on their patient pool.
IOWA: Clinic is graded pass fail with competencies which seems to work well. Even with no-fee dentistry patient supply is problem.
UNMC: Our system seems to work well.
MARQ: Quality of patient has been declining

B. Do you have a clinical course in Operative Dentistry in the Junior or Senior year?

SIU: Yes, year 3, semester 1, second 9 weeks, Advanced Dental Materials and

Operative Dentistry

UMKC: Yes, one in each year

CREG: Yes

COLO: Yes

IOWA: Yes

UNMC: Yes

MARQ: Didactic – Summer between D2 and D3 year – DEGD 7310 – Clinical Restorative Procedures I**;** Clinical – Fall D3 – DECS 7314 – Comprehensive Patient Care Practicum I**;** Clinical – Spring D3 – DECS 7324 – Comprehensive Patient Care Practicum II**;** Clinical – Summer D3 – DCES 7334 – Comprehensive Patient Care Practicum III

1. How do you assign grades?

SIU: Based on quiz scores and evaluation of presentation by multiple faculty

UMKC: Credit/No Credit

CREG: Prep, Restoration, Independent Thinking are graded for each procedure (Quality); Numbers of Procedures (Quantity), Jr and Sr Mock Boards

COLO: Junior year: Fall/Spring semesters are evaluated as Pass/Fail culminating with the summer course where a letter grade is earned.
Senior year: Fall/Spring semesters are evaluated as Pass/Fail culminating with the summer course where a letter grade is earned.
Grades are assigned utilizing the following criteria: Fifty percent of the final grade is based on the clinical competency examinations for that semester; 30% of the grade is based on the clinical operative dentistry productivity during each semester; the final 20% of the grade is based on subjective evaluation input from comprehensive care and other clinic faculty.

IOWA:

1. 15% Pre-test exam
2. 25% final written exam
3. 50% based on the daily feedback from clinic
4. 5% based on faculty evaluation of a student's professionalism, motivation, attendance and completion of the course evaluation before the end of the rotation.
5. 5% Off Site Community Outreach Program (Project Sealed)

Grading will be on a curve for half the junior class in a given semester. Based upon the highest grade representing 100% the following grading scale will apply:

92-100	A	(A+ to A-)
83-91	B	(B+ to B-)
70-82	C	(C+ to C-)
<70	F	(Fail)

UNMC: Students are evaluated according to criteria that are in the Operative clinical manual.

MARQ: Satisfactory/Unsatisfactory

2. Do you have Skills Assessments?

SIU: Yes, competency exams

UMKC: Yes

CREG: Mock Boards
COLO: We do have 7 skill assessments
IOWA: We have three competencies which they have to pass or they fail the course
UNMC : We have competency exams in the D-3 year and Mock Boards in the D-4 year.
MARQ: Yes

Are they photographed?

SIU: No
UMKC: No
CREG: Only if really good or really bad
COLO: No
IOWA: We don't take photographs
UNMC: They are not photographed**.**
MARQ: Only the Fixed Bridge and Manikin Mock Boards

3. Are you evaluating portfolios?

SIU: No
UMKC: No; hope we never do that
CREG: No
COLO: Not currently
IOWA: Not in D3 but they are looking into it at the D4 level
UNMC: No, but the college administration is considering it.
MARQ: We are currently using portfolio's**;** Now in fourth year

4. Do you have points or procedures requirements?

SIU: Yes
UMKC: Yes – they have to work with operative faculty, 3rd year: Yes; Typodont requirements, Patient Clinical Experiences – have to work with an operative faculty 4th year: Patient Competencies – four of them, multi-surface amalgam, anterior composite, posterior composite and caries removal
CREG: Yes, both
COLO: We do not utilize points or procedure requirements. However, students must complete the following: 7 competency examinations, of which, 4 are required procedures: Class II Amalgam, Class II Composite and two Class III composites.
IOWA: We don't have daily requirements, but we have three competencies
UNMC: Yes we have minimal clinical essential experiences: D-3 year – 16 Class II restorations, 6 Class III/IV restorations, and 20 additional restorations of any kind. In addition they need to do 4 indirect restorations. D-4 year – 22 Class II restorations, 10 Class III/IV restorations, and 25 additional restorations. In addition they must due 6 indirect restorations.
MARQ: We are a comprehensive care based programs not procedurally based; We do have multiple manikin and patient based skills examinations that could be considered procedural in nature

C. How many contact time hours are dedicated to pre-clinical dentistry (lecture, lab, amalgam, composite, single unit restorations)?

SIU: Operative I (25 lecture hours, 54 lab hours), Operative II (15 lecture hours, 52 lab hours), single unit/full coverage restoration taught in fixed section

UMKC: Lecture 48 hours + 12 more for Biomaterials = 60 total;
Lab – 96 hours; Amalgam - 8 hrs lecture (48 total hours) Composite - 8 hrs lecture (48 total hours);
Single unit restorations – are done in the fixed section of the department

CREG: D-1 = 64 hrs, D-2 = 120, Total = 184

COLO: Operative Didactic in Spring semester 1st year: 24 clock hours.
Operative Simulation Clinic in Spring semester 1st year: 45 clock hours
Operative Didactic Summer Semester 1st year: 10 hours
Operative Simulation Clinic Summer Semester 1st year: 20 hours

IOWA: Eight hours per week from November to June**.**

UNMC: D-1 preclinical course: Lecture – 32 hours, Lab. – 96 hours of lab. D-2 preclinical course is the same, but all lab. sessions are in the simulation clinic

MARQ: Every Monday for 8 hrs D1 fall, spring, and summer

D. Do you have enough faculty? (If not, why)

SIU: No, currently seeking to fill open positions

UMKC: No, just lost some and they are not being replaced due to budget cutbacks

CREG: The University thinks we have enough faculty. The faculty thinks we need more.

COLO: At times we have issues with faculty coverage as our faculty has grown at a slower pace than our classes.

IOWA: We have adequate faculty as assigned, but would like to reduce the faculty contact time and more faculty would help

UNMC: Does anyone? We lost an operative faculty line a few years ago due to budgetary constraints. With the help of some part-time faculty in the clinic we are able to function well. However if someone is out for some reason, it can be difficult for the remaining faculty to cover classes and clinics.

MARQ: No response

1. In your pre-clinical lab courses, what is the student/faculty ratio?

SIU: Approximately 10:1

UMKC: 8 or 10:1; we use teaching assistants that are 4th year in labs

CREG: 8 students:1 faculty

COLO: 1:6

IOWA: 12:1 student teacher ratio

UNMC: Approximately 12 students per faculty

MARQ: 1:10

2. In your clinics, what is the student/faculty ratio?

SIU: Approximately 6:1

UMKC: 7 or 6:1

CREG: 8 students:1 faculty

COLO: 1:6
IOWA: Student/ faculty ratio in D2 is 4 or 5:1, D3 is: 5 or 6/1
UNMC: We try to have 6 students per faculty, but it can range up to 9 per faculty member
MARQ: 1:5 to 1:6

E. Does your school use machine/computer grading in the pre-clinical courses?

SIU: Not currently, but in the process of purchasing evaluation tool to consider use in grading or just add to available feedback
UMKC: No
CREG: No
COLO: No
IOWA: Yes
UNMC: No
MARQ: We have a Scanmark ES 2260 and an ImageFormula DR 4010C; We have switched to tablet grading beginning this semester

1. If so, what software/manufacturer?

SIU: CEREC Prep check
UMKC: N/A
CREG: N/A
COLO: N/A
IOWA: Didactic – Mastery exams computer based; Manikin – E4D Compare, Cerec PrepCheck
UNMC: N/A
MARQ: We have a Scanmark ES 2260 and an ImageFormula DR 4010C; We have switched to tablet grading beginning this semester

2. If so, for what type of restorations?

SIU: Uncertain
UMKC: N/A
CREG: N/A
COLO: N/A
IOWA: Used for crowns and dental anatomy wax-ups primarily for feedback not evaluation yet**.**
UNMC: N/A
MARQ: All preparations/restorations/removable

F. National Boards
1. Do you have formal National Board preparation courses?

SIU: No
UMKC: Yes
CREG: No
COLO: No

IOWA: No
UNMC: No
MARQ: No

2. Review sessions?

SIU: No
UMKC: No, used to, they are all online now
CREG: Yes
COLO: Yes
IOWA: No
UNMC: Yes. They are set up by the D-1 and D-4 class presidents. The presidents set up a time that the class and faculty can get together**.**
MARQ: Yes

3. Are the courses or reviews mandatory or optional?

SIU: N/A
UMKC: Optional
CREG: Mandatory
COLO: Optional
IOWA: N/A
UNMC: Optional
MARQ: Mandatory

4. Does your school purchase review materials for students (like Crack the Code or Exam Master)?

SIU: No
UMKC: No, we have our own UMKC Board Review course on line**.**
http://www.cewebinar.com/
CREG: No
COLO: ?
IOWA: No
UNMC: No. Students are encouraged to buy them. A few years ago the Dental Dex was purchased by the Alumni Board for our students. The Dexs have been passed down to the current students by those classes ahead of them.
MARQ: No, Most students purchase Dental Decks

IV. CARIOLOGY

A. Caries Management
1. Does your school have a formal caries management plan as part of the comprehensive treatment plan?

SIU: No formal plan
UMKC: Yes; All clinical charting has to access the caries risk of every patient; management plan includes - Prevident 5000, Diet Analysis chew sugar free gum to

increase salivation and mouth clearance; Give Risk assessment form to patient with caries information
CREG: No, Caries Assessment and counseling
COLO: Yes
IOWA: Yes, we based our treatment plan and conservative approach on caries risk assessment. We follow a combination of protocols from CAMBRA and ADA and we added a more detailed part on diet screening and counseling/monitoring If they want to see more details the CRDTS statement from 2011 shows our philosophy
UNMC: Yes and no. I do not think our treatment planning faculty creates a caries management plan for each patient. Our students do have a clinical cariology requirement where they must evaluate the caries situation for the patient, evaluate diet and create a management plan.
MARQ: Yes, Just modified

2. How is the caries management plan tracked once it has been implemented?

SIU: N/A
UMKC: It can be, but we don't unless we want to; we can track how many patients got the Caries form, Prevident 5000 and what each patients caries risk is high **or** low.
CREG: No response
COLO: Documented on CRA form. Our form has 4 tabs: Assessment, Laboratory Tests, Reassessment, Risk Control Rpt.
IOWA: We implemented in didactic seminars in D1 and during the few students clinical experiences during the D1 following a form to help them with their thought process on how to connect risk factors with risk lever and then with interventions. Then during the D2 we continue using this form in Preventive and Oper clinic and provide guidance to help their patients and during the D2 Oper we ask them to integrate caries management by risk assessment in every patient and every encounter so they can apply it to diagnosis, treatment plan and prognosis. They also have to show they are competent at the end of the D3 rotation. D4 they supposed to continue with the same concepts but not sure how much follow up they have.
UNMC: There is a mandatory follow-up after 3 to 6 months**.**
MARQ: Axium

3. How are reevaluations documented?

SIU: N/A
UMKC: In the Treatment notes
CREG: Plaque index
COLO: On CRA form
IOWA: Clinical evaluations and clinical recording
UNMC: In the past on paper forms that were collected and viewed by the cariology course director. Currently it is documented in our clinic information system
MARQ: Axium

4. By treatment note only or by procedure code completion?

SIU: N/A

UMKC: Treatment notes
CREG: Treatment note
COLO: Procedure code: D0194
IOWA: We usually document caries management in the patient's note and we suppose to use the codes but most people do not use the, With the NEW ADA approved codes we are hoping people use them more often**.**
UNMC: There is a procedure code that must be completed and it is documented in the patient's progress notes.
MARQ: both

5. Does the school dispense re-mineralization products to patients? If so, how is it dispenses or purchased?

SIU: N/A
UMKC: No CaPO4 does not work according to the ADA, By Prescription and patient buys it at a Pharmacy
CREG: Yes, it is purchased by the patient
COLO: Yes. After prescription, patient will pay and student takes the product form Dispensary.
IOWA: We dispense Fluoride varnish, other topical FL in pedo and Cervitec Plus for adult root caries, sometimes MI paste but not often. We RX Prevident and chlorhexidine (few times) and they can purchase in our pharmacy
UNMC: Yes, it is for sale
MARQ: Yes, Patient purchases through our dental store

6. Are treatments being planned based on CAMBRA concepts?

SIU: Not formally
UMKC: Yes
CREG: Yes
COLO: Yes
IOWA: Not in OD but when the patients come to Oper /Preventive clinics we do planned based on CaMBRA concepts. Fortunately we are the ones implementing the TX plan so we can control that part too**.**
UNMC: I am not certain that our treatment planning faculty base the treatment plans on CAMBRA, so no, but those of us on the clinic floor do use the concepts.
MARQ: Yes

7. Are such treatments accomplished as planned?

SIU: N/A
UMKC: Yes; Indirect pulp caps; stepwise excavation and caries control
CREG: Yes
COLO: Yes
IOWA: They are not planned but they are accomplished…kind of back guards but probably better for the patient in a long term.
UNMC: In general, yes. Plans are sometimes changed in the operative clinic if the faculty member feels it is warranted.

MARQ: Yes

V. OTHER

A. Biomimetics has been defined as "the study of structure and function of biological systems as models for the design and engineering of materials and machines."

1. What is Biomimetic Dentistry?

SIU: The study of the structures within the masticatory system and the application of man-made materials to restore structure and function of the system
UMKC: Biomimetics shows how biology and biological processes are manifested in diverse aspects of chemistry, physics and engineering. Quantitative analysis through computer design. Starts with the analysis of the substrate and then chemically build therapies with engineers and chemists and biologists.
CREG: Minimally invasive dentistry
COLO: No response
IOWA: This is the new "buzz terminology" or word smithing for placement of restorations in a manner to restore the tooth to as close to original strength and function with maximum conservation. Nothing new as far as currently practiced and taught bonding and conservative dentistry techniques**.**
UNMC: According to the Academy of Biomimetic Dentistry, biomimetic dentistry, a type of tooth-conserving dentistry, treats weak, fractured, and decayed teeth in a way that keeps them strong and seals them from bacterial invasion. In dental practices around the world, Biomimetic Dentistry has practically eliminated cutting teeth down for crowns and destructive root canal treatment. Patients are happier and often spend less compared to conventional treatment.
MARQ: Human made devices that imitate nature

2. Is this an application of a new term for existing techniques?

SIU: Yes
UMKC: Yes
CREG: Yes and no. It is minimally invasive, and in the restorative phase biomimetric dentistry attempts to restore not only the appearance of the natural tooth but also the distribution of forces that occur between the enamel, dentin, cementum, and pulp.
Colorado: No response
IOWA: This is the new "buzz terminology" or word smithing for placement of restorations in a manner to restore the tooth to as close to original strength and function with maximum conservation. Nothing new as far as currently practiced and taught bonding and conservative dentistry techniques.
UNMC: It seems like minimally invasive, composite resin dentistry which isn't new.
MARQ: It could be argued that dentistry has always done this. Restorations, prosthetics, implants, etc…

VI. REGIONAL CODE AGENDA

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

No Regional Agenda Items Submitted

Consortium of Operative Dentistry Educators

(CODE)

REGION III (SOUTH MIDWEST) ANNUAL REPORTS

Region III Director:
Dr. Scott Phillips
Mississippi School of Dentistry
Jackson, MS

Region III Annual Meeting Host:
Dr. Gary Frey
University of Texas – Houston
Houston, TX

Region III Annual Report Editor:
Dr. Shalizeh A. Patel
University of Texas – Houston
Houston, TX

CODE REGIONAL MEETING FORM

REGION: III SOUTH MIDWEST

LOCATION INFORMATION FOR 2013 REGIONAL MEETING

University:	University of Texas-Houston, Houston, Texas		
Dates:	November 13-14, 2013		
Chairperson:	Dr. Gary Frey	Phone #	713-486-4286
University:	University of Texas HSC at Houston	Fax #	713-486-4108
Address:	7500 Cambridge Street, #5350	E-mail	GARY.N.FREY@ UTH.TMC.EDU
	Houston, Texas 77054		

List of Attendees: Please complete the CODE Regional Attendees form (See next page)

Suggested Agenda Items for Next Year:

(1.) How to incorporate critical thinking exercises into operative teaching.

(2.) Discuss any benefits of integrating e-learning in pre-clinical syllabus.

(3.) Propose methods in introducing Evidence-Based-Dentistry into operative courses.

LOCATION INFORMATION FOR 2014 REGIONAL MEETING

University:	University of Oklahoma College of Dentistry		
Dates:	tbd		
Chairperson:	Dr. Terry Fruits	Phone #	405-271-5735
University:	University of Oklahoma	Fax #	
Address:	1100 N. Lindsay, DSCB 556 Oklahoma City, OK 73104	E-mail	Terry-fruits@ouhsc.edu

Please return all completed enclosures to
Dr. Ed DeSchepper, National Director, University of Tennessee, College of Dentistry; 875 Union Avenue, Memphis, TN 38103

Office: 901-448-1313 Fax: 901-448-1625 E-mail: edeschep@uthsc.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 REGIONAL ATTENDEES FORM

REGION: III SOUTH MIDWEST

NAME	UNIVERSITY	PHONE #	FAX #	E-mail
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2013 NATIONAL CODE AGENDA
REGION III
SUMMARY RESPONSES TO NATIONAL AGENDA

(Editor Note: Questions condensed for printing purposes)

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

No Summary Responses Submitted

2013 NATIONAL CODE AGENDA
(Evidence cited where applicable)
September 27-28, 2013
Report on the proceedings of CODE Region III
DeSchepper ED (ed.) Code Regional Annual Reports 2013
http://www.unmc.edu/code/

Region III School Abbreviations

BAY	Baylor University	OKLA	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

2013 NATIONAL CODE AGENDA

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

I. CONSORTIUM OF OPERATIVE DENTISTRY EDUCATORS (C.O.D.E.)
The organization has grown and evolved over time. At present there is no organizational constitution and by-laws. Consideration is warranted.

A. WHAT IS THE INTEREST, NEED, VALUE?

The University of Oklahoma

We are not sure what the value would be to develop such an organizational structure. This organization in the past has always been a grass roots group of individuals who actually teach daily in operative courses and clinics. That is the strength of the group. As long as these individuals maintain an interest in the meetings, it will remain a sound organization. To maintain this interest, we need to make sure that the content/agenda for these meetings are developed and directed by these individuals who actually teach in operative/restorative courses. The more we allow outside groups or organizations to influence the direction of interests for the group, the less applicable will be the results of the discussions. We would also like to suggest that CODE be careful that it does not become a venue for individuals or groups who wish to use our forum as an easy method to collect data for their own personal research surveys. Some of these have not lead to stimulating discussion at our meetings. We are certainly interested in hearing others' thoughts in regard to the benefits of a more formal structure for our organization.

LSU Dental School

I assume the question is targeting the "interest, need, value" of having an organizational constitution and by-laws. Most organizations the size of C.O.D.E. usually have such documents proposed, debated, and affirmed by vote of the organizing members. Since it appears there are none of these documents, this should be part of this Regions agenda.

University of Mississippi

No interest from our perspective. What is the need.

The University of Texas School of Dentistry at Houston

The interest is strong from our institution. The need and value relate to the exchange of ideas and calibration of teaching.

B. ARE THERE CONCERNS?

The University of Oklahoma

See "A" above

LSU Dental School

If we all get along, then no concerns. If we don't, then an organizational constitution and By-laws could be of value.

University of Mississippi

None we are aware. What are the problems with our current situation?

The University of Texas School of Dentistry at Houston

What sort of impact does CODE have at the national/international level? Does information gather in the yearly agenda have any impact on policy affecting the practice of operative dentistry?

C. WHO WISHES TO PARTICIPATE IN THE PROCESS OF FORMULATION OF A CONSTITUTION AND BY-LAWS? EACH REGION IS TO SUBMIT THE NAME OF ONE INDIVIDUAL WHO WISHES TO PARTICIPATE ON AN AD-HOC CONSTITUTION AND BY-LAWS COMMITTEE.

LSU Dental School

No suggestion

University of Mississippi
No volunteers here at this time

The University of Texas School of Dentistry at Houston
N/A

II. MATERIALS/TECHNIQUES AND DEVICES

A. IN RECENT YEARS THERE HAVE BEEN ARTICLES INDICATING THAT GLASS IONOMER SEALANTS ARE JUST AS EFFECTIVE AS RESIN-BASED COMPOSITE SEALANTS.

1. What materials (both type and brand name) are used for pit and fissure sealants at your institution?

The University of Oklahoma
Ultraseal XT resin-based pit and fissure sealant

LSU Dental School
Clinpro (Pedo), Ultraseal (Operative, Comprehensive)

Baylor College of Dentistry
UltraSeal XT. No GI sealants used at Baylor

University of Mississippi
Resin based, Ultraseal by Ultradent Inc

University of Tennessee
Resin based sealants used in Pediatric Dentistry clinic: Clinpro, Fluoroshield
Resin based sealant used in Operative Dentistry clinic: Helioseal
Glass ionomer sealants used in Pediatric Dentistry clinic: Fuji IX

University of Texas – San Antonio
Ultraseal XT Plus from Ultradent is the only pit and fissure sealant that we use. It is a VLC, BPA free, 58% filled product using the inspiral tip.

The University of Texas School of Dentistry at Houston
Resin-based composite sealants. UltraSeal XT (Ultradent)

2. If glass ionomer products are used, are they used routinely or are they used under certain guidelines, e.g. partially erupted teeth, difficulty in isolation or in outreach clinics without the aid of suction?

The University of Oklahoma
Not Applicable

LSU Dental School
Glass ionomer sealants are not used at LSU. Fuji Triage used on partially erupted teeth as part of a two-step procedure. Final restoration will be resin sealant/resin restoration (Pedo).

Baylor College of Dentistry
N/A

University of Mississippi
Glass ionomer sealants have been used in past in outreach situations such as GKAS when these materials were donated for that purpose.

University of Tennessee
Certain guidelines - partially erupted teeth, difficult isolation, and transitional sealant for high caries risk child.
Not used in outreach clinics at this time

The University of Texas School of Dentistry at Houston
In the past our students have had off-site rotations through City clinics; the primary material used those clinics for pediatric sealants were glass ionomer.

3. What has been your experience with glass ionomer sealants?

The University of Oklahoma
None

LSU Dental School
None in Operative Dentistry Department. From our Pedo Department: " my research study showed they don't last long but probably fail in such a way that they would be preferred over resin sealants."

Baylor College of Dentistry
N/A

University of Mississippi
Retention rate is less. This could be due to operator error since our students are primarily taught with resin based systems.

University of Tennessee
Using high viscosity glass ionomer increases retention (ie. Fuji IX vs. Fuji Triage)
Transitional GI sealant usually suffices for partially erupted teeth but often debonds (usually the tooth has completed eruption by this time), once it debonds, a resin based sealant is placed - GI sealant works nicely for this situation but increases the overall cost of the sealant procedure (however, this would be less than the cost of a restoration).
GI sealant also is sufficient for children who have limited cooperation but high caries - the GI sealant usually remains long enough for the child to become more cooperative and if the GI sealant debonds, the child is usually older and more capable of cooperating for a resin based sealant

University of Texas – San Antonio
None

The University of Texas School of Dentistry at Houston

Generally, GI sealants are best used as a temporary sealant in partially erupted teeth. Once the tooth is fully erupted, a resin-based sealant can replace the GI if dislodged. Fluoride release of the GI sealant may relate to minimizing recurrent caries.

B. DOES YOUR INSTITUTION TEACH IMPRESSION TECHNIQUES USING INTRAORAL DIGITAL SCANNING DEVICES?

The University of Oklahoma
We have limited use of some digital scanning devices at this time. We had a more active program involving this in the recent past, but due to problems with quality of work received from the proprietary labs that we were forced to use, we have decreased their use at this time. At that time we were using a scanner provided by the company, and we had to utilize their lab facilities. We hope to be able to purchase our own unit in the near future, and either fabricate the restorations in our own lab or send them to the lab of our choice. We had been using an iTero unit from Cadent. At this time the iTero unit is not being used on patients in our pre-doctoral clinics.

LSU Dental School
Yes

Baylor College of Dentistry
Yes

University of Mississippi
Yes

University of Tennessee
Yes

The University of Texas School of Dentistry at Houston
Although digital impression devices are sometimes available for undergraduates, it has not been widely taught in practice – the anticipation is that this will change. Very recently new units have been purchased for future use in the 4th year DDS curriculum. Lectures are currently presented in Operative II (DDS 2nd year) and Virual Patients (DDS 4th year). Faculty practice, as well as graduate programs, have had experience utilizing various devices.

1. If so, what brand(s) of intraoral impression scanners are being used?

The University of Oklahoma
iTero from Cadent

LSU Dental School
Lava and CEREC

Baylor College of Dentistry
E4D, CEREC, iTero

University of Mississippi
iTero, CEREC OmniCam and CEREC RedCameras

University of Tennessee

In the undergraduate clinic, CEREC by Sirona. Oral Surgery has a 3Shape scanner and Graduate Prosthodontics has an iTero Unit.

University of Texas – San Antonio
We have 10 Sirona Cerec Omni cam scanners currently in the clinic but are planning their replacement with Bluecams. We have on loan a 3M True Definition camera. We do about half of our imaging in the mouth and the other half on casts.

The University of Texas School of Dentistry at Houston
iTero (Cadent) is used in faculty practice. E4D (D4D) implementation at the undergraduate level is in development.

2. How many scanners do you have? How are they funded or provided?

The University of Oklahoma
One scanner provided by company.

LSU Dental School
5 CEREC AC with red cams that were part of a donation from Sirona after Hurricane Kitrina. 3 CEREC AC with blue cams that were purchased. 8 LAVA scanners (acquired by a grant to the Department of Prosthodontics).

Baylor College of Dentistry
1 E4D, 1 CEREC, 1 iTero
Provided

University of Mississippi
2 iTero, 1 OmniCam and 10 Red Cameras. Plans are to upgrade RedCams to 10 BlueCams by January 2014
School purchased. The 10 CEREC Red Cameras were part of the Success Package offered by Sirona.

University of Tennessee
In 2001 the Dean purchased one RedCam unit and a Compact milling unit. In 2010 the Dean purchased an additional 10 units and milling units. In 2013 the Dean agreed to upgrade 10 RedCam units to BlueCam units. He also agreed to purchase one Omnicam and an MCXL milling unit. The new equipment should be in place by early 2014. The school purchased the 3Shape scanner for Oral Surgery.

University of Texas – San Antonio
We have purchased the equipment at a discounted price from the manufacturers.

The University of Texas School of Dentistry at Houston
iTero (1 currently in use; 4 additional units recently purchased). E4D (4). School funding.

3. Do all students use the scanners for their patients?

The University of Oklahoma

All pre-doc students go through a rotation during which they are trained on the iTero scanner. The use of the scanners is based on a case by case basis.

LSU Dental School
CEREC System: In 2012 a CEREC Continuum was begun in the Operative Division that started lectures and pre-clinical exercises in the Freshman and Sophomore years with opportunity to utilize the CEREC AC system (red and/or blue cam) in the Junior and Senior clinics with patients. LAVA System: The Prosthodontic Department presents lectures for the utilization of the LAVA acquisition system in the Junior and Senior clinics.

Baylor College of Dentistry
No. Only 4th year General Dentistry students use them. All 4th year students must attend training programs at both CEREC and E4D during the summer between 3rd and 4th years.

University of Mississippi
They are available but students are not required to use with patients.

University of Tennessee
There is currently no "requirement" for a CEREC restoration; therefore not every student will take advantage of the opportunity to use the scanner and milling unit in the clinic. When they do treatment plant for a CEREC restoration, the students scan models of their patients to construct a restoration. Once the Omnicam is available in the clinic, students may have more access to scanning of the actual patient instead of a model of the patient's teeth. We still feel like it is our responsibility to make sure the student can make and evaluate an impression.

University of Texas – San Antonio
There is currently no requirement to use the scanners but we have an imaging clinic with two faculty assigned two half days per week. DS4s have full access and DS3s have access with prior arrangement with the approval of prosthodontics.

The University of Texas School of Dentistry at Houston
No.

4. If scanning access is limited, how do you determine who gains access?

The University of Oklahoma
Students arranges with a faculty member to work with them on a case.

LSU Dental School
The only limitation for the use of either the CEREC or LAVA System is approval by faculty as treatment planned.

Baylor College of Dentistry
First come but there are not many waiting problems.

University of Mississippi
Not limited

University of Tennessee
Patient availability and case selection determines who uses the technology in clinic. There are three CEREC units in the clinic and students can use them any time to scan models.

All the students scan and construct a crown and an onlay in the preclinical laboratory.

University of Texas – San Antonio
As above.

The University of Texas School of Dentistry at Houston
Case by case basis (discretion of clinical attending faculty).

5. What has been your experience with intraoral digital scanning devices?

The University of Oklahoma
Our faculty's experience with digital impressions has been very positive. Just as with any impression one has to do it correctly, and carefully examine their "impression" before sending it off. The resulting models are outstanding. They are fabricated from a nearly unbreakable and abrasion resistant material and the dies have tremendous rigidity and the soft tissue contours are in place so it really creates a great model for anterior cases. The models seem to be very accurate, and because they are abrasion resistant there is very little potential for the dies to be damaged during lab procedures. One nice thing about iTero is that if you note a void or defect as you examine an impression, you just go back and snap another picture and it stitches it in the other existing scanned images. Therefore, you never have to try to "make an impression work", and you never have to totally remake an impression. If it's not ideal, just shoot another image. Also, when doing multiple units, you shoot them one at a time so there is no time pressure. For instance you lift the cord on a tooth, and take an image. When you and the patient are ready, you lift the cord on the next tooth and take an image. You can repeat this for one tooth or fourteen, with everyone being relaxed.
Our restorative faculty members feel that within 5 years, the lion's share of impression material usage is going to go away, and we will be doing practically everything with digital impressions. This is the reason that we are very concerned that we are not better able to incorporate this technology into our preclinical curriculum at this time. We are in the process of developing a dedicated clinic where students will be able to rotate through and use this technology on their patients.

LSU Dental School
1) They are very expensive to acquire and upgrade relative to other traditional impression methods.
2) Accuracy depends on proper patient selection/student/faculty mentor.
3) Student interest is increasing rapidly.

Baylor College of Dentistry
E4D - mostly scan for burnout blocks
CEREC – mostly for IPS e.max. Some softwear problems.
iTero – great, very few adjustments. In pre-doc clinic, these are used only in the 4th year General Dentistry program. Very few intra-oral scanning done. Most scans are taken from poured models.

University of Mississippi
Operator dependent, devices are only a replacement for impression material. Other factors cannot be overlooked, (e.g. retraction and properly prepared margins). Faculty willingness to use is also drawback currently

University of Tennessee

We are not using them as purely a digital scanner. We do not send any scanned impressions to the laboratory. That may change when the new equipment is available. We use the CEREC units to fabricate the restoration. The primary issue is getting the student enough experience to know how to use the scanner intra-orally and then be familiar enough with the software to fabricate the restoration in a single appointment without a lot of help. Some students have taken a great interest and learned the technique. Most have not taken the time. Some of the issues will be solved with the Omnicam since it is much easier to use and we are adding the fabrication of more restorations to the pre-clinic and testing the student on the fabrication. Our experience with the final restoration has been excellent.

University of Texas – San Antonio
Dr's Teixeira, Zimmerman and Seitz are the responsible faculty instructors. Last year 137 fixed units were done with 61 custom implant abutment and crowns fabricated.

The University of Texas School of Dentistry at Houston
iTero is widely embraced in the faculty practice. E4D status TBD.

C. COMPOSITE RESIN

1. What are the limitations in your clinic for the placement of Class II composite restoration if any? What is your criterion for a Class II composite restoration placement?

The University of Oklahoma
Our "preferred parameters" for the use of resin composite for a Class II restoration include:
-Occlusal portion of outline no wider than 1/3-1/2 of the occlusal table
-Must be able to adequately isolate the tooth to be restored
-Avoid use in patients with heavy para-functional occlusion (Bruxing, Clinching)
-Prefer enamel in all areas of cavosurface margins of the preparation.

LSU Dental School
Class II composites are allowed unless isolation is really not possible, otherwise, no written guidelines limiting placement of Class II composite restorations. Occlusion and Caries risk assessment are also analyzed when a treatment planning any Composite resin restoration. Interproximal decay/defective restoration, only replace cusps in esthetic zone or as core build-up. Need effective isolation at gingival box (Rubber dam).

Baylor College of Dentistry
Must be able to isolate with RD. Do not replace cusps with composite.
Esthetics should be a prime consideration. The facio-lingual width of the cavity preparation should be restricted to one third the intercuspal distance. The gingival margin on ClassII restorations should be located on enamel. Centric occlusal stops should be located primarily on tooth structure. There should be no signs of excessive wear from clenching or grinding. It should be possible to isolate the tooth with a rubber dam. Good OH. No allergies or sensitivities to components.

University of Mississippi
Limitations include if student is doing procedure for board or competency that requires amalgam, or if isolation is an issue (subgingival).
Isolation, pulpal protection, patient is given information of pros and cons as opposed to amalgam.

University of Tennessee
For any posterior composite to be placed the student must be able to get a rubber dam in place. The final restoration should be "medium sized" or smaller and for molars should not involve more than 2 surfaces replaced and no cusp replacement. The gingival margin should remain occlusal to the CEJ. If the restoration is considered a buildup with a crown to be the final restoration, then the composite may be larger with cusp replacement and the crown margin must cover all the composite placed with no exposed composite left on cementum margins.

University of Texas – San Antonio
Proper isolation is required for class II composite restorations. Rubber dam isolation is first choice. We also have Isolites for use in the clinic and a few of the students have purchased Kona isolation devices for use with the Isolite mouthpieces. A caries free periphery must be achieved.

The University of Texas School of Dentistry at Houston
With regard to treatment planning of interproximal caries lesions, radiographic lesion needs to minimally progress to outer 1/3 dentin and/or visible clinical cavitation. With regard to material selection (versus amalgam), capacity to properly isolate is the primary consideration. Caries risk level and occlusion are also considerations.

2. What is taught for Class II composite restorations with gingival margins on dentin (apical to the CEJ); use of flowable or RMGI as an "open sandwich?"

The University of Oklahoma
-If located in a non-esthetic area, restoration with amalgam would be preferable.
-If restored with resin composite, utilize RMGI (Fuji II LC) for the initial 1-2 mm on the gingival wall of the proximal box. Restore the remainder with a microhybrid resin composite. We do not utilize a flowable resin as a liner for Class II resin composite restorations.

LSU Dental School
We use RMGI or GI as an open sandwich in gingival areas.

Baylor College of Dentistry
We attempt to place composite restorative material (carefully) in these areas. The "open sandwich" technique is taught in lectures but not practiced in clinic.

University of Mississippi
Faculty choice: some faculty request that flowable composite be used in boxes prior to packable composite, some want flowable but only on interior walls not cavosurface margins, some faculty do use RMGI in box especially if caries or isolation was difficult.

University of Tennessee
We don't advocate placing the gingival margins on dentin. We do not use flowable as an "open sandwich" however this technique using RMGI is mentioned in the pre-clinical Aesthetic course* and a ppt on its use is given to the D4 students in Advanced Operative.
We are considering using Surefil SDR Flow after some summer research project results. RMGI 'open sandwich' is taught in the Glass Ionomer lecture in RESD203* as follows:
'In the 'open-sandwich technique', glass ionomer restorative material is applied as a thick base on the cervical wall and axial wall or pulpal floor, and is extended to the gingival margin. Then composite is placed on top of the glass ionomer to restore the rest of the cavity. The illustration is a class II, but this technique can also be done in Class III, IV, or V. This technique has the advantage of fluoride release from GI protecting the gingival margin from recurrent caries. In

addition, GI is less sensitive to moisture than composite, which may be better at the gingival margin area where isolation is compromised for successful composite restorations. The sandwich technique also provides the advantage of good adhesion properties of glass ionomers. A clinical study showed that Class II sandwich restorations had more gap free margins at the cervical dentin than composite restorations (81% vs 56%). It should be noted that glass ionomers dissolve easily and have low mechanical properties, which limit the longevity of the restorations.'
This technique is again presented in a full lecture in the 4th year Advanced Operative course.

University of Texas – San Antonio
We do have Flow It flowable composite but do not teach the placement of flowable composite on deep gingival floors of Class II composites because the resin component requires more light to cure and shrinks more than more filled composites. We do teach GI (Fuji IX) or RMGI (Fuji II LC) as an open sandwich technique if warranted by the clinical situation. We do use Flowables in the repair of composite based provisional restorations (Integrity).

The University of Texas School of Dentistry at Houston
Although not an official standard at our institution, this technique is used at times per clinical judgment.

3. Have esthetic inlays and onlays been increasing in frequency in your clinic? Do you see these increasing in the future as esthetic alternatives to large amalgam restorations instead of direct resin composite?

The University of Oklahoma
- Yes, we have been seeing some increase in the usage of esthetic alternatives in the clinic. Our restorative faculty members who work with this are very interested in some of the new materials such as Ultimate from 3M ESPE and Enamic from Vident. These are materials that are sort of a hybrid of resin and ceramics. Both of these are currently CAD/CAM only. They also have a continuing concern that all of these esthetic alternatives (just like direct posterior composite resins) require a great deal of attention to detail, and they are not sure that is always happening.

LSU Dental School
To answer both questions: Yes … slowly.

Baylor College of Dentistry
No. Very few are done and only in the 4th year General Dentistry Program. Hard to tell.

University of Mississippi
Due to economics, inlays are not increasing since composite is an esthetic and lower cost alternative, but esthetic onlays are being treatment planned as definitive restorations. These are becoming an alternative to full coverage crowns when existing older amalgams fracture or as an alternative to large amalgam buildups. They offer longevity for cusp replacement as an alternative to direct resin composite.

University of Tennessee
Yes. We do a lot of CEREC inlays and onlays in order to conserve tooth structure and when more than 2 surfaces must be replaced in a molar and the patient refuses to have amalgam placed. A majority of the 139 CEREC restorations done last year in the clinic were onalys and inlays.

University of Texas – San Antonio

Only a few indirect esthetic inlays or onlays have been fabricated at the school in lithium disillicate (Emax). None in feldspathic porcelain, Ziconia, or composite.

The University of Texas School of Dentistry at Houston
Due to cost dynamics, esthetic resin inlays/onlays are the primary source of student clinical experience in inlays/onlays (versus metallic). The use of indirect esthetic alternatives to amalgam, rather than direct resin composite, may increase at our institution – especially with the more regular use of the E4D system in the undergraduate program.

4. How many resin composite systems and bonding systems are available in your clinic? What bonding systems are being used? If there are multiple systems, are all systems taught in the pre-clinic courses also?

The University of Oklahoma
- For our third year students, we use one microhybrid resin composite system (EsthetX HD), and we have two adhesive bonding systems available (OneStep Plus and Optibond Solo)
- We utilize only one of the two in preclinic lab course. However, the procedure for application for these two products is identical. Both materials are two-step etch and rinse systems, one is acetone based and the other is alcohol based.

LSU Dental School
Composite: Z-100 for posterior restorations, Filtek Supreme Plus for anterior restorations/esthetics.
Bonding: Scotchbond Multipurpose in 2nd, 3rd & 4th year clinics. Students received lecture on self-etch bonding systems.

Baylor College of Dentistry
Currently there are 4 composite systems in use. Z-100, Esthet-X, Heliomolar (these 3 will be discontinued shortly. Herculite XRV will remain and Esthet-X Plus will be added. Dyract (compomer) will be discontinued and Esthet-X Flow will be added.
Currently, OptiBond Solo Plus and All-Bond II are being used but will be discontinued and OptiBond FL and All-Bond III will be added.
OptiBond Solo Plus is being taught in the lecture portion but only All-Bond II is being used in the pre-clinical lab.

University of Mississippi
Esthet-x, Miris by Coltene Whaledent, Herculite, TPH, Esthetx Flow and NDurance Dimer flow Optibond solo, prime and bond, All bond. Pediatric dentistry uses Ultradent's PQ1. Optibond and Prime & Bond.

University of Tennessee
Esthet X and Optibond Plus are used in clinic and in preclinic. We are looking at the new universal systems.

University of Texas – San Antonio
Z 100, Heliomolar, Renamel, and Vitalessence. Scotchbond MP Plus

The University of Texas School of Dentistry at Houston
Resin composite systems: Filtek Z250 (3M ESPE) and Micerium (Micerium SPA)
Bonding systems: Optibond Solo Plus (Kerr) and Adper Scotchbond Multipurpose (3M ESPE).
All are taught in pre-clinic courses

5. What type of matrix systems are used for Class II posterior composites? How are these systems dispensed in your clinic?

The University of Texas School of Dentistry at Houston
Tofflemire, Auto-Matrix, Omni-matrix (Ultradent), and Composi-Tight (Garrison).
Dispensed self-serve (except for Composi-Tight)

The University of Oklahoma
-We prefer to use the sectional matrix band with the bitine ring (Garrison 3D)
-We also have available, contoured matrix bands (Dixieland Band) and ultrathin dead soft bands (HO Band) for use with the Tofflemire retainer.
-The students purchase a kit of the Garrison 3D rings as part of their first year operative preclinic course kit. This includes two 3D Rings and one Compositite ring. They are expected to bring these sterilized for use in the patient clinic over their career at the school. We also have Compositite rings available for the students to borrow if they forgot their own set. The matrix bands for the Tofflemire retainer and sectional matrix bands for the bitine rings are available for the students to use in the clinics.

LSU Dental School
Compositight in clinics, Triodent V3 student kits purchased by students

Baylor College of Dentistry
The Composi-Tight System is used. The original Garrison rings and the Garrison 3-D rings are available on a limited basis. However more of the 3-D rings will be added. Three sizes of matrix bands are available. Use of the Tofflemire system is HIGHLY discouraged.
The rings are dispensed from the dispensary in sterile packages and the bands are dispensed in cups.

University of Mississippi
Omni matrix by Ultradent Inc, Sectional matrix such as Palodent Plus, or Automatrix Omni matrix and Automatrix are requested at the dispensary and sectional matrices are self-serve in the operative clinic.

University of Tennessee
Currently we use the Triodent System but are switching to the Palodent Plus system. The students purchase the kit during their second year and must turn in their rings and applicators for individual sterilization. They own their own bands for this system. Students do still use the Tofflemire system but seem to have a problem with open contacts. They use this system because it is readily available in their rental operative cassettes that are mass sterilized. In addition the bands are freely available in materials cabinets in the clinic.

University of Texas – San Antonio
We recently added the Palodent Plus from Dentsply (Triodent V3 ring marketed by Ultradent) Contact and countour problems have been significantly decreased. We use the Composi-tight 3D ring from Garrison Dental and have the Garrison sectional matrices and the V3 Tab Matrix system from Triodent/ Ultradent Denstply available.

The University of Texas School of Dentistry at Houston

Tofflemire, Auto-Matrix, Omni-matrix (Ultradent), and Composi-Tight (Garrison).
Dispensed self-serve (except for Composi-Tight)

6. How do you prevent voids in composite restorations? Are you heating the composite to provide better flow?

The University of Oklahoma
We attempt to teach our students to carefully adapt the resin composite to the walls and cavosurface margins of the cavity preparation. We do not heat the resin composite or use a less viscous resin liner.

LSU Dental School
Use placement technique shown in 1st year Operative. No

Baylor College of Dentistry
Attempt to prevent voids is done by careful incremental condensing of the composite. If voids are suspected, a bite wing radiograph can be ordered for evaluation.
No

University of Mississippi
No overlapping of composite upon placement, no introducing bonding agent as a lubricant. No

University of Tennessee
We teach layering. No

University of Texas – San Antonio
We do not routinely recommend heating or teach it in the preclinical lab course although it is described in Dr Summitt's textbook and may be emphasized by faculty members on the clinic floor.

The University of Texas School of Dentistry at Houston
Primary method is careful, incremental placement of composite on no more than 2-3 walls at a time. Bulk placement of composite is discouraged. Heating of composite is not practiced.

7. If known, what is the secondary caries rate of composite versus amalgam restorations?

The University of Oklahoma
We have no formal method available to us to accurately track these outcomes in our student clinics.

LSU Dental School
Not known, however, at re-examination appointments there appears to be many more replacements of composites recently placed in the student clinic due to caries/marginal leakage.

Baylor College of Dentistry
This is not known for restorations placed in our clinic. Studies in general seen to be equivocal.

University of Mississippi
No data available

University of Tennessee

Unknown

University of Texas – San Antonio
Dr Overton conducted a restrospective study of restorations replaced in the predoctoral clinic. Bonding failure or bulk fracture was the most common cause of failure in approximately 250 composite restorations replaced after one year. Composite failure was 10 times the number of amalgam failures and Caries was considered insignificant in this group. We have upgraded our curing lights with the Valo units by Ultradent to eliminate curing light problems that may have been a cause of failures. were the most common causes for replacement. Caries was not a significant cause of failure. We see caries under both composite and amalgam restorations. Several studies show that composites promote growth of odontopathic microorganisms. Khalichi P, Cvitkovitch DG, Santerre JP.**Effect of composite resin biodegradation products on oral streptococcal growth.** Biomaterials. 2004 Nov;25(24):5467-72.

The University of Texas School of Dentistry at Houston
Not known. Currently at our institution, the electronic health record (EHR) requires input of a diagnostic code for each treatment code. Our observation in clinic is that "secondary caries" is likely the most commonly input diagnostic code to accompany the replacement of a filling, amalgam or composite. The more difficult question, but perhaps the more important one, is: what percentage of the diagnoses of "secondary caries" truly is secondary caries?

D. PINS IN RESTORATIVE DENTISTRY

1. Does your school teach the use of pins in the pre-clinical curriculum?

The University of Oklahoma
-Yes, we teach the placement of pins in both a natural tooth exercise and a typodont exercise during our preclinical courses.

LSU Dental School
Yes

Baylor College of Dentistry
Yes

University of Mississippi
Yes, winter of D2 year

University of Tennessee
Yes, we teach the use of pins for amalgam restorations in the pre-clinical curriculum, though only 1 or 2 projects include pins

University of Texas – San Antonio
We place horizontal and vertical pins in Kilgore teeth and in natural teeth in the sophomore labs.

The University of Texas School of Dentistry at Houston
Yes.

2. Do your students use pins in the clinic?

The University of Oklahoma

Yes our students utilize pin retention in clinic. Especially in cases with large core restorations.

LSU Dental School
Yes

Baylor College of Dentistry
Yes

University of Mississippi
Yes

University of Tennessee
Pins are utilized in the clinics when clinical situations require it, though last semester only 2 pins were checked out of the dispensary--so very few are used clinically
CODE: 2150 core build-up including any pins
CODE: 2151 pin placement per tooth

University of Texas – San Antonio
Yes, under supervision.

The University of Texas School of Dentistry at Houston
Very rarely

3. Which pin system(s) are used?

The University of Oklahoma
We use the Coltene Whaledent TMS and TMS Link Plus systems. (We also have the MAX Pins system available upon request)

LSU Dental School
TMS Link pins & Max pins (preferred), Amalgapin/slot technique also taught

Baylor College of Dentistry
Max Restorative Pins .017 and .021

University of Mississippi
TMS- Thread mate system

University of Tennessee
Stabilok dentin pins by Fairfax Dental Inc.

University of Texas – San Antonio
TMS Plus by Whaledent

The University of Texas School of Dentistry at Houston
TMS Link Minikin/Minim (Coltene/Whaledent)

4. If used, are pins limited to amalgam restorations?

The University of Oklahoma

Yes. We would rarely place a pin in a resin composite restoration.

LSU Dental School
Most used for Amalgam but on rare occasions used for composite.

Baylor College of Dentistry
No. Amalgams and Ti-Core buildups.

University of Mississippi
Mostly, but this is faculty guided.

University of Tennessee
Yes, pins are limited to amalgam restorations

University of Texas – San Antonio
A few each year are placed on composite core restorations or as anti-rotation devices in composite cores.

The University of Texas School of Dentistry at Houston
In practice, yes.

E. POSTS IN RESTORATIVE DENTISTRY

1. What is utilized in clinics? Prefab, cast, fiber

The University of Oklahoma
Prefabricated metal dowels are used in endo-treated molars with amalgam, and in endo-treated premolars with a resin such as Fluorocore.
Custom cast dowel-cores are used in anterior teeth and some single-rooted premolars in third year block fixed prosthodontic clinic.
Pre-fabricated fiber dowels are used occasionally in anterior teeth and some single rooted premolars in the fourth year "comprehensive-care" clinic.

LSU Dental School
Prefab metal, cast, fiber

Baylor College of Dentistry
All 3 types are used.

University of Mississippi
Prefab, cast, fiber

University of Tennessee
There is a lecture on post systems where cast post and other systems are mentioned in preclinc; however, they are not used in the clinic. Currently only the Brasseler fiber post is used (see below); however there is some movement back to Bisco's DT Light Post system in the group leader clinics.

University of Texas – San Antonio
All (see below)

The University of Texas School of Dentistry at Houston
All are available.

2. What criteria are used to determine the need for a post?

The University of Oklahoma
Response for both questions 2 and 3
In general:
- In anterior teeth, a custom cast dowel-core is used to retain a cast restoration. It is used to offer sufficient strength under function in cases where there is insufficient remaining coronal tooth structure after endo access and restoration preparation.
- In premolars, a prefab metal post offers more strength to resist lateral forces - whether the core is resin or amalgam. A resin core around a prefab post in premolars offers more flexural strength than offered by the same thickness of amalgam.
- In molars, a prefab metal post and amalgam core is used when there is insufficient retention afforded by any remaining tooth structure such as cusp, pulp chamber or slight canal penetration.
Specific concerns of the Fixed Prosthodontics Department include:
-Have occasionally seen a prefab metal post with resin core "work-harden" and break in the anterior area.
-The "uniblock" created by the fiber dowel and resin core in the anterior, while espousing the matched flexure of tooth and dowel-core, allows enough flexure to allow opening and breakdown at the bonded interfaces.

LSU Dental School
When a core build-up requires additional retention where there was moderate to severe loss of tooth structure and therefore not enough tooth structure remaining to support the core. (ex:Endodontic Treatment or multi-surface caries). Chamber retention favored for molars without a post.

Baylor College of Dentistry
The need for the retention of the core material.

University of Mississippi
Amount of tooth structure remaining, amount of retention of prosthesis

University of Tennessee
If the number of remaining walls of tooth structure after all caries removal and endo is completed is 2 or fewer, then a post is considered. It is necessary however to be able to get a complete circumferential ferral margin for the tooth to be deemed restorable. We have been doing some CEREC crowns where the pulp chamber is used to help retain the crown. It is done as one piece on molars. This has worked very well.

University of Texas – San Antonio
Remaining dentin. Opposing dentition. Strategic plan for tooth.

The University of Texas School of Dentistry at Houston
In practice, it is clinical attending faculty preference.

3. What criteria are used in the selection of post types?

The University of Oklahoma
See answer above

LSU Dental School
Fiber posts are used in most cases especially in anterior teeth. Metal ParaPosts are also available.

Baylor College of Dentistry
Instructor preference.

University of Mississippi
Faculty preference and amount of tooth structure remaining.

University of Tennessee
We had been using the DT Light posts from Bisco for 11 years. Endo wanted to switch to the EndoSequence Fiber Post system from Brasseler because it is calibrated to the way endo is taught. The Endo dept has found that there have been about half the number of root perforations as with use of the prior systems.

University of Texas – San Antonio
Remaining dentin, length of the root, planned esthetic restoration

The University of Texas School of Dentistry at Houston
In practice, it is clinical attending faculty preference. In general, cast posts are most often (perhaps exclusively) selected by some of the prosthodontics faculty. General dentists are much more likely to select pre-fab or fiber.

4. Which systems are available at your school?

The University of Oklahoma
In an effort to simplify, the fixed and endo departments have agreed to use the Tri-R system by Union Broach (and only two sizes thereof in the third year block fixed prosthodontics clinic). The use of any fiber dowels in fourth year "comprehensive care"clinics occurs mainly based on the preferences of the student's Group Director. The fiber dowel pins used are 3M's RelyX Fiber Post or Brasseler's Fiber Posts; Cemented with RelyX UniCem.

LSU Dental School
Coltene/Whaledent Fiber Lux and metal Para-Post.

Baylor College of Dentistry
Prefab posts systems include Parapost System and Brassler Active and Passive System. The Graduate endodontic Program will place the Endo Sequence Fiber Posts for our undergrad students. The Axis Achromat-HP Esthetic Fiber Post System has been requested to be added for 4th year General Dentistry Program.

University of Mississippi
Parapost, cast gold

University of Tennessee
Only the Brasseler system is available in the undergraduate clinic.

University of Texas – San Antonio
Para post plus (parallel sided, prefabricated) Flexi post, (active) cast endowels, (tapered prefabricated), DT Lightpost, (tapered fiber post) cast post.

The University of Texas School of Dentistry at Houston
Para Post System (Coltene/Whaledent) prefab
Taper Lux (Coltene/Whaledent) fiber

III. CURRICULUM

A. WHEN IS YOUR FIRST CLINICAL EXPERIENCE IN RESTORATIVE DENTISTRY SCHEDULED?

LSU Dental School
September of Sophomore Year.

Baylor College of Dentistry
Students begin seeing Removable Prosthodontic patients in the spring semester of the D2 year. Our students begin treating patients in the other clinical disciplines in the summer of the D3 year.

University of Mississippi
A student's first clinical experience in restorative dentistry occurs throughout their first and second year curriculum. Clinical correlations with students partnering with each other are incorporated for initial examination and charting, diagnostic impressions, and local anesthesia delivery. Students are on Clinical Problem Solving (CPS) teams consisting of a first, second, third and fourth year team leader. First and second year students assist their third and fourth year students each tuesday morning. Once a course has been completed they can make diagnostic impressions, radiographs, photography, deliver anesthesia, or complete preparation or restoration of operative procedures at the discretion of the supervising faculty, patients willingness and under the third or fourth years supervision. Cavity preparation and restoration procedures typically a senior student working with their second year team member. Second year students admit their first patient in the spring of their second year and summer session of the third year students begin management of their patient family.

University of Tennessee
In the D1 year students assist D4 s in the clinic 2 half days/week the last 6 weeks of the spring sememster. Then in the spring of the D2 year they assist 2 half days/week for the whole semester and are allowed to give LA, place the rubber dam and restore Class I amalgams and composites. Finally the students begin treating their own patients in the their D-3 year beginning in July around the 2^{nd} - 3^{rd} week

University of Texas – San Antonio
The first clinical experience in Restorative Dentistry is during the sealant clinic in the DS 2 year. Otherwise students start Restorative Dentistry when they enter the DS3 year.

The University of Texas School of Dentistry at Houston

Historically during the Spring of the 2nd year (when students enter clinic). However, our current 2nd year students are the inaugural class to enter clinic in the Fall of the 2nd year; there has been discussion of the possibility that basic operative procedures may be performed.

1. Where do the patients come from?

The University of Oklahoma
-The patients are assigned to the second year students in the beginning of their second year (Our Summer Session). The patients are used to teach the students the essentials of diagnosis and treatment planning in their Oral Diagnosis course. These patients are generally simple cases with little periodontal or restorative work needed.

LSU Dental School
Through a faculty screening process, then a comprehensive Oral Diagnosis and Treatment planning by a Junior or Senior Dental Student.

Baylor College of Dentistry
The patients come mostly from the community at large through oral diagnosis screening at our school. After a patient is screened and routed to the appropriate program (D3 or D4 undergraduate or one of the graduate programs) students are assigned patients from the patient pool according to the students' needs for essential experiences in various clinical disciplines. Students may also bring in friends and family members (call patients) to screen them for suitability for our programs.

University of Mississippi
Efforts are made to keep patients within the same CPS family. So, a graduating senior passes their patients to their third and second year team members. The admission patient from the end of the second year is carried into the summer as the students patient. New patients are received through the normal screening process.

University of Tennessee
It varies; patients are family members, friends, church members, etc. The University of Tennessee College of Dentistry faculty and students provide dental services to patients who are selected from a screening process that determines whether the patient is a teaching case for students. Patients must either call into the school or fill out an application on the internet to request an orientation appointment where there is a cursor screening. Students then call the patient in for further assessment and taking of records, radiographs etc. Treatment planning may begin in the OD clinic or in the clinic with the student's group leader.

University of Texas – San Antonio
The patients may come from senior students, recall of existing patients of record or through screening conducted within the groups

The University of Texas School of Dentistry at Houston
Assessment Clinic at our institution.

2. Do they stay with the student?

The University of Oklahoma
-Yes, the second year student completes all treatment that they are capable of at that time. Restorative work beyond the second year student's capabilities at this time is referred to a fourth

year student of completion of that specific procedure, and then the patient is returned to the second year student for completion of the case.

LSU Dental School
Possibly. Through a mini-clinic system that includes one Sophomore, Junior, and Senior Student responsible for the comprehensive care of approximately 85 patients.

Baylor College of Dentistry
Yes, generally the patients stay with the students to whom they are assigned until their treatment is complete. There are a few exceptions as the patient may be reassigned to a graduate program for some aspect of their treatment (i.e. graduate endodontics or graduate periodontics for example). Additionally, a patient requiring endodontic treatment on multiple teeth which may be treated by an undergraduate student may be treated by more than one student if that is acceptable to the patient in order for more students to have the opportunity to perform endodontic treatment. A patient with carious lesions meeting our parameters for operative progress exams may also be treated by more than one student if the patient is amenable in order for another student to have an opportunity to take an operative progress exam when that experience is not planned in his/her patient family.

University of Mississippi
Yes, if possible, efforts are made to keep patients on their CPS teams.

University of Tennessee
New patients who are examined in the Screening Clinic are classified as to dental needs and suitability for the teaching program. If a particular student calls a patient in for screening, then that student can keep that patient. They also may keep family and friends. If a generic screening occurs, then patients that are teaching cases are accepted and placed in the patient pool for group leaders to assign to their students. When a patient becomes available that matches the student's needs, the patient is assigned to a student for comprehensive dental care. Patients stay with the student based on the patients' needs/complexity of proposed treatment plan, and students' clinical level. Patients can be reassigned to another student within the same group in certain situations by Group Leaders. They may also be moved to the graduate clinics, and or can be discharged based on patient compliance.

University of Texas – San Antonio
For the most part patients remain with the student that initially treatment planned them. However some patients are assigned to incoming juniors from a senior's patient family. There is also some sharing of patients if it is approved by the group leader.

The University of Texas School of Dentistry at Houston
By general rule and philosophy of comprehensive care, yes. However, some concurrent care does occur.

3. What is the staffing ratio?

The University of Oklahoma
-For our initial second year operative clinic sessions, we try to limit the ration to three-four students per one instructor.

LSU Dental School

Unsure of question. In the Sophomore and Junior year, one faculty member for 6 students. For the Senior Year, one faculty member for 8-10 students that involves Operative Restorative procedures in a comprehensive care model.

Baylor College of Dentistry
The staffing ratio varies from day to day depending on faculty outages for health reasons, vacations or CE courses. Usually, in the D3 operative clinic we try to limit the coverage of a faculty member to six or fewer dental students, particularly in the summer and fall sessions. In the spring semester, that ratio can increase to seven or eight students per faculty member.

University of Mississippi
In the Operative clinic the student:staff ratio is 5:1 or 8:2

University of Tennessee
There are 2 group leaders for 24-26 students to include D3s and D4s; on a clinic day there may also be 2 or 3 faculty from each department to augment clinical coverage. All these faculty cover a total of 129 chairs.

University of Texas – San Antonio
Staffing for seniors can run as high as 14 students to 1 faculty. Junior staffing is closer to 5 to 1.

The University of Texas School of Dentistry at Houston
Each class consists of 100 students. These classes are distributed amongst 5 practice groups. Each practice group is led by: 1 General Practice Director (clinical faculty), 1 First Attending (clinical faculty), and 1 Patient Care Coordinator (administrative staff). On the clinic floor, faculty:student averages 1:6.

4. Any problems or recommendations?

The University of Oklahoma
-Main problem occurs when second year students are assigned patients that are too difficult for them. An accurate screening process for the proper patient assignments based on the student's needs is essential.

LSU Dental School
Availability of patients for a multitude of reasons.

Baylor College of Dentistry
None

University of Mississippi
Our system has remained stable over the past few years. Finding more time late in the second years curriculum for clinical time is the biggest obstacle for increase earlier clinical exposure. Second year students also have patient experiences in the periodontic clinic.

University of Tennessee
We are only in the beginning of the 2nd year of our group leader clinical system and are continuing to work student assignments in the clinics

University of Texas – San Antonio
Hire more faculty. Reexamine the business process.

The University of Texas School of Dentistry at Houston
With regard to first clinical experience in restorative dentistry, none at this time.

B. DO YOU HAVE A CLINICAL COURSE IN OPERATIVE DENTISTRY IN THE JUNIOR OR SENIOR YEAR?

The University of Oklahoma
Yes, we have a year-long course with the third year students.

Baylor College of Dentistry
There is a clinical course in Operative Dentistry in the D3 or junior year. In the D4 or senior year, the students have a Restorative Dentistry course which includes Operative Dentistry.

University of Mississippi
Yes, there are third and fourth year operative dentistry courses.

University of Tennessee
Yes, in both

University of Texas – San Antonio
Yes, in the Junior year. We also have operative skills assessments in the Senior year.

1. How do you assign grades?

The University of Oklahoma
- Our clinical course is based on a letter grade system. The grading system is based on a combination of the difficulty of the procedure and the quality of the student's completed procedure.
-The more difficult the procedure, the higher number of procedure points are awarded to the student.
-The numerical grade for the procedure is multiplied by the number of points designated for that specific type of procedure, and that final number is recorded in the grade book for that procedure.
-At the end of the course the sum of all of those final numbers recorded for the student is divided by the total number of procedure points awarded during the course to arrive at a final grade for the course.

LSU Dental School
In preclinical lab exercises and clinical restorations, grades are judged by attending faculty as Superior (3 points), Above Average/Very good and acceptable (2 points), Unaccepatable/Correctable (1 point), Unacceptable/Irreversable (0 points). These are then averaged and converted to an A, B, C, or F depending on the course syllabus. The 2nd and 3rd Year clinical courses have the same Clinical Grade Form to record the grade received and provide feedback to the student. The student receives a copy of the Form and the grades are also entered into AxiUm.

Baylor College of Dentistry

In D3 Clinical Operative Dentistry, the course grade is determined by the average of the clinical progress exam grades. Points are then deducted from this average if the student has shortages in the number of essential experiences.

University of Mississippi
Grades are based on clinical competency examinations

University of Tennessee
By gpa of all procedures completed in the clinic and by # of required procedural points met. There is also a system of grade reductions from actual gpa dependent on student meeting deadline for acquiring the minimum # of points

University of Texas – San Antonio
Grades are assigned based on a combination of graded Progress Assessments and Clinical experiences.

The University of Texas School of Dentistry at Houston
Combination of competency exam scores, patient care unit goals achieved, and professionalism

2. Do you have Skills Assessments? Are they photographed?

The University of Oklahoma
Yes, we have two required Skills Assessments during the student's third year clinic.
-Students are required to complete two out of the three following skills assessments:
*Class II resin composite
*Class II amalgam
*Class III resin composite
-No, we do not photograph and archive all of the procedures completed on Skills Assessments.

LSU Dental School
Yes, through a competency model in the Sophomore and Junior years, and, several SimLab restorative preparations and restoration placements in the Freshman pre-clinical Course. Not at this time, but, we have discussed it.

Baylor College of Dentistry
Yes, we have a Cl II amalgam, Cl II composite and Cl III composite progress exam in the D3 year. In the D4 year, there is a Cl II composite and Cl III composite progress exam as well as a mock board exam. None of the progress exams are photographed at this time.

University of Mississippi
Clinical competencies involving various preparation and restorations are attempted by the student during their third and fourth years.

University of Tennessee
They are P/F and occur in the D4 year. No

University of Texas – San Antonio
Yes, Yes

The University of Texas School of Dentistry at Houston

Competency exams, not photographed. The Mock Board exam is administered to DDS 4th years, with photographs taken.

3. Are you evaluating portfolios?

The University of Oklahoma
No

LSU Dental School
No, but Administration is discussing it.

Baylor College of Dentistry
No, not at this time.

University of Mississippi
No

University of Tennessee
No

University of Texas – San Antonio
Not formally. Students are evaluated monthly by their core faculty using input from daily grading sheets and feedback from their core faculty.

The University of Texas School of Dentistry at Houston
Yes. In third year of piloting portfolios in the pre-clinical Operative II.

4. Do you have points or procedures requirements?

The University of Oklahoma
Yes. We require the students to complete a specific number of operative procedures (for which they receive points) and pass their Skills Assessments before they are allowed to continue into the fourth year comprehensive care clinics. There is also a specific number of points in operative procedures that they must achieve in comprehensive care clinics before they will be eligible to graduate.

LSU Dental School
Both procedures and points are necessary to pass the Sophomore and Junior Year Clinical courses.

Baylor College of Dentistry
In the D3 year, we have essential experiences for the students to complete. In the D4 year, the students are given RV (Relative Value) points for the procedures they complete and they have an RV point goal that they must achieve. Each student has a target number of direct and indirect restorations that he/she must complete based on the needs of their patients in their family of patients.

University of Mississippi
We require a minimum number of experiences needed for approval to take a competency. The numbers are relatively low, depending on the competency, 4-8 experiences are needed before a student is eligible to take their competency. Most third year students are eligible to begin taking

competencies winter of their third year, and many students have completed competencies by Christmas of their senior year.

University of Tennessee
Points (see above) though there is a minimum # of required specific procedures before a competency can be challenged

University of Texas – San Antonio
Yes, we do not have requirements for the number of amalgams or composites but students have to be prepared for competency exams in those procedures.

The University of Texas School of Dentistry at Houston
Students have minimum clinical experience expectations.

C. HOW MANY CONTACT TIME HOURS ARE DEDICATED TO PRE-CLINICAL DENTISTRY (LECTURE, LAB, AMALGAM, COMPOSITE, SINGLE UNIT RESTORATIONS)?

The University of Oklahoma
Our first Preclinic Operative course is in the Spring semester of the first year
-128 hours of student contact time
-Covers basics-Diagnosis, Tx. Planning, Preventive Options, Resin Composites, Amalgam, Resin Modified Glass Ionomer
Our second Preclinic Operative course is in the summer and fall of the second year
-64 hours of student contact time
-Transition course between basics and clinic: Includes Caries Removal, Pulp Protection, Pin Retention, Bonded Amalgam, Tooth Whitening, Patient Simulations.
All indirect restorations are taught in the Fixed Prosthodontics preclinic courses beginning in Summer of the second year.

LSU Dental School
Lecture: 42 hours
Lab: 120 hours
Examination hours: 38 hours
Amalgam: 32 hours
Composite: 45 Hours
Single unit restoration: 9 hours

Baylor College of Dentistry
31 lecture hours and 204 laboratory hours are dedicated to pre-clinical operative dentistry. An equal number of hours are dedicated to pre-clinical fixed prosthodontics and to pre-clinical removable prosthodontics.
With respect to didactic operative dentistry, ten lectures concentrate on amalgam preparations and restorations, nine lectures concentrate on composite preparations and restorations and four lectures focus on gold inlay and onlay preparations and restorations. Five additional lectures focus on instrumentation, rubber dam, cariology and pulp capping, and review.
With respect to pre-clinical operative lab, 93 hours are dedicated to amalgam, 63 hours are dedicated to composite and 27 hours are dedicated to gold inlays and onlays. Additional hours are focused on preparation and restoration design for virtual patients requiring direct restorations.

University of Mississippi

300 hours are scheduled over 4 courses in operative dentistry. Caries I -Amalgam and Composite Introduction 128 hours, Esthetics Problems 70 hours, Caries III Indirect Restorations 76 hours, and Indirect Esthetic Restorations and Digital Imaging 40 hours

University of Texas – San Antonio

DATA from 2009 -2010

DS 2 Fixed Pros 37 Lecture, 148 Lab
DS 2 Removable Pros 12 Lecture, 48 Lab
DS2 Complete Pros 18 Lecture, 72 Lab
DS 2 Implants 12 Lecture, 48 Lab
DS 2 Operative 38 Lecture, 152 Lab
DS 2 Endo 13 Lecture, 52 Lab

The University of Texas School of Dentistry at Houston

1614 Operative I: 128 hours (16 weeks x 2 afternoons per week)
2614 Operative II: 128 hours (16 weeks x 2 afternoons per week)
2912 Single Unit: 128 hours (16 weeks x 2 mornings per week)
3651 Esthetics: 64 hours (16 weeks x 1 afternoon per week)

D. DO YOU HAVE ENOUGH FACULTY? (IF NOT, WHY)

The University of Oklahoma

No. We do not have enough full-time faculty. We have been reduced from a department of six full-time faculty members down to three full-time faculty members.

Baylor College of Dentistry

We have enough faculty scheduled for pre-clinical and clinical sessions, but we can be shorthanded due to faculty absence due to illness, vacation or CE courses.

University of Mississippi

Yes, more would always be better.

University of Texas – San Antonio

Preclinic yes, Clinic is variable (If not, why) Hiring freeze and budgetary constraints.

The University of Texas School of Dentistry at Houston

A difficult question to answer in general terms.

1. In your pre-clinical lab courses, what is the student/faculty ratio?

The University of Oklahoma

We attempt to have eight students per instructor in the preclinic lab courses. We accomplish this in our Spring course by utilizing selected fourth year dental students to help teach in the preclinic lab. (Some departments at our school that have at times been reduced to working with 2-3 instructors for 56 students in their preclinical labs)

LSU Dental School

1 to 10.

Baylor College of Dentistry
Each faculty member oversees about twelve students in pre-clinical operative. If one or more faculty members are out for any session, the remaining faculty work with more students.

University of Mississippi
9:1 is a typical ratio. 36 students with 4 faculty.

University of Tennessee
Usually about 13 to 1

University of Texas – San Antonio
1 to 7

The University of Texas School of Dentistry at Houston
1:12-13

2. In your clinics, what is the student/faculty ratio?

The University of Oklahoma
For second year students the ratio is 3 students / 1 instructor.
For third year students, the ratio is 4 students/ 1 instructor in their first (summer) semester, and 5-6 students / 1 instructor in the fall and spring semesters.

LSU Dental School
In the Sophomore and Junior year, one faculty member for 6 students. For the Senior Year, one faculty member for 8-10 students that involves Operative Restorative procedures in a comprehensive care model.

Baylor College of Dentistry
In the D3 year, each faculty member supervises six students on average during a clinical session. In the D4 year, each faculty member oversees patient treatment performed by twelve students on average during a clinical session.

University of Mississippi
5:1 or 8:2 when two faculty are paired it is usually a full-time and a part-time faculty.

University of Tennessee
Anywhere from 6 to 1 for the department to 10 to 1 for group leaders

University of Texas – San Antonio
Junior is about 1 to 5, Senior can be as high as 1 to 14

The University of Texas School of Dentistry at Houston
1:6

E. DOES YOUR SCHOOL USE MACHINE/COMPUTER GRADING IN THE PRE-CLINICAL COURSES?

The University of Oklahoma
No. However, there has been some interest in looking at the E4D digital prep evaluation system.

LSU Dental School
No

Baylor College of Dentistry
No

University of Mississippi
No.

University of Tennessee
DentSims only in the 1st 3 months of the D1 year

University of Texas – San Antonio
No

The University of Texas School of Dentistry at Houston
None used to grade pre-clinical labwork (ie. preparations). Increasing use of ExamSoft for online didactic exams.

1. If so, what software/manufacturer?

The University of Oklahoma
N/A

LSU Dental School
N/A

Baylor College of Dentistry
N/A

University of Mississippi
A teaching database was created identical to our electronic dental record with the intent to grade in the teaching database like we grade in our live patient database, but time limitations and student unfamiliarity with the operation of the database has limited its use. We do grade all preclinical procedures based on rubrics provided prior to the exercise, but on paper.

University of Texas – San Antonio
N/A

The University of Texas School of Dentistry at Houston
N/A

2. If so, for what type of restorations?

The University of Oklahoma
N/A

LSU Dental School
N/A

Baylor College of Dentistry
N/A

University of Mississippi
N/A

University of Tennessee
Amalgams

University of Texas – San Antonio
N/A

The University of Texas School of Dentistry at Houston
N/A

F. NATIONAL BOARDS

1. Do you have formal National Board preparation courses?

The University of Oklahoma
No, we once offered a semester-long Part I review course, but the students complained that independent study time would be a better use of their time. Hence, we have built into the schedule more time for independent study. Discontinuing the review course after 2008 has seemingly had no impact on pass/failure rates.

LSU Dental School
No

Baylor College of Dentistry
No

University of Mississippi
Students are given scheduled time off to prepare for part I and part II of the boards. In the summer session of their senior year a course, Advanced Clinical Dentistry, meets the first hour of on certain days and is dedicated to a review of a specific topic as a board review. The course is fourteen hours and last about a month. Operative, fixed, removable, radiology, implantology, pediatrics, oral surgery, periodontics, periodontal surgery, esthetic dentistry, pathology, and material science are topics reviewed for board preparation.

University of Texas – San Antonio
Yes

The University of Texas School of Dentistry at Houston
Yes

2. Review sessions?

The University of Oklahoma
We authorize a Kaplan representative to conduct a two-session seminar each fall for the sophomores who are interested. During the first session students take a full NBDE Part I practice exam. In the second session students receive their test results and go over some NBDE Part 1 & Part 2 Strategies.

LSU Dental School
No

Baylor College of Dentistry
Yes

University of Mississippi
Extra review sessions can be arranged with individual faculty or department based on a class's request. Dental Morpholory and Occlusion for second year students is an example.

University of Tennessee
Review courses in the D4 year

University of Texas – San Antonio
There is a National Board review selective that rising DS3 students may sign up to take.

The University of Texas School of Dentistry at Houston
None outside of preparation courses.

3. Are the courses or reviews mandatory or optional?

The University of Oklahoma
Review is optional.

LSU Dental School
N/A

Baylor College of Dentistry
The review sessions are mandatory for review sessions for both Part I and Part II of the National Board examination.

University of Mississippi
The Advanced Clinical Dentistry course the senior year is required class. All other reviews and time off for seniors is optional. Second year students have a week scheduled off that no classes occur.

University of Tennessee
Mandatory

University of Texas – San Antonio
Optional

The University of Texas School of Dentistry at Houston

Mandatory (online courses now)

4. Does your school purchase review materials for students (like Crack the Code or Exam Master)?

The University of Oklahoma
No. The Dean's office does have a repository of old board exams that they make available for loan. They also have Dental Decks available for check out. Very few students utilize either resource from that office.

LSU Dental School
Dental Decks

Baylor College of Dentistry
No, the school does not purchase review materials for students in preparation for the National Board exams.

University of Mississippi
No
University of Tennessee
No

University of Texas – San Antonio
No

The University of Texas School of Dentistry at Houston
No

IV. CARIOLOGY

A. CARIES MANAGEMENT

1. Does your school have a formal caries management plan as part of the comprehensive treatment plan?

The University of Oklahoma
We have a caries risk assessment and a required preventive care treatment plan. We do not really have an effective system at this time for tracking this beyond the completion of the initial treatment phase.

LSU Dental School
No

Baylor College of Dentistry
Yes, we use the Oral Disease Risk Assessment (ODRA) management plan as outlined below. The students are instructed on the use of the caries management models which are also included below:

Caries Management Models
(see attached page 43-46)

University of Mississippi

We have a caries risk assessment protocol we teach in preclinical courses and is part of the electronic dental record (EDR). It is used in the treatment planning process for all patients.

University of Tennessee
Yes, the caries risk assessment is put into the axium system under "forms" in O.D. in the treatment history of the patient

University of Texas – San Antonio
Students fill out a caries risk assessment on each patient that leads them to choices on preventive measures to add to the treatment plan based on caries risk.

The University of Texas School of Dentistry at Houston
There are established guidelines for caries risk assessment (and resulting preventive protocols), occlusal caries management, and interproximal caries management.

2. How is the caries management plan tracked once it has been implemented?

The University of Oklahoma
We have just completed changing to a new clinic management software system. This is not being effectively tracked as of yet.

LSU Dental School
N/A

Baylor College of Dentistry
It is up to the individual faculty members to track the caries management plan.

University of Mississippi
Preventative services are managed through our periodontal department.

University of Tennessee
It is entered into the students photen note under each appointment that the patient has and can be followed on axium

University of Texas – San Antonio
The treatment plan is checked by faculty and Axium codes are entered for preventive services. Chart reviews and chart audits are performed several times a year.

The University of Texas School of Dentistry at Houston
No formal tracking of implementation; caries risk assessment forms are updated on regular basis per previous risk level.

3. How are reevaluations documented?

The University of Oklahoma
We have just completed changing to a new clinic management software system. This is not being effectively documented as of yet.

LSU Dental School
N/A

Baylor College of Dentistry
The caries management plan is formally reviewed annually. When students begin the D4 year, each patient's chart is reviewed, the patient's oral condition is re-evaluated and treatment needs are updated. At this time, the caries management plan is reviewed and amended as necessary.

University of Mississippi
Reevaluation is done at preventive recall visits and documented in the EDR

University of Tennessee
Faculty (Group Leaders) evaluate caries management before the student can receive a case completion for that particular patient

University of Texas – San Antonio
Once treatment is complete the patient is put in recall status. At that appointment, the patient is re-evaluated and the quality of the work that has been done is examined. Any new treatment needs that are found are added to the treatment plan; otherwise, that is the patient's final appointment.

The University of Texas School of Dentistry at Houston
Overall periodic oral examinations (D0120) are performed every 6 months on all patients. Caries risk assessment forms are updated on regular basis per previous risk level.

4. By treatment note only or by procedure code completion?

The University of Oklahoma
NA

LSU Dental School
N/A

Baylor College of Dentistry
Evaluations and reevaluations of caries management plans are documented by both treatment note and by procedural code completion.

University of Mississippi
We divide our treatment in two phases. Caries management is in phase I of treatment management. Patients must appear for a Phase I evaluation complete prior to approval of their phase II treatment. We have a code in the EDR to designate Phase I complete. Phase II treatment includes fixed prosthodontics and removable prosthodontics. Patient without phase II needs receive a similar exam noting treatment complete before assigning to hygiene recall only status. This separate clinical is in the EDR and there is a treatment complete code in the EDR.

University of Tennessee
By case completion code D0199

University of Texas – San Antonio
Routinely by procedure code completion

The University of Texas School of Dentistry at Houston

See above. Treatment notes are also to account for these reevaluations.

5. Does the school dispense remineralization products to patients? If so, how is it dispenses or purchased?

The University of Oklahoma
Yes, we prescribe products such as Prevident in our clinic. They are dispensed and charged out that day

LSU Dental School
Yes. We have MI Paste which is dispensed and purchased from the school in the senior clinic. This is done with approval of the student's Team Leader.

Baylor College of Dentistry
Texas A&M HSC Baylor College of Dentistry provides prescriptions to patients requiring remineralization products for use at home.

University of Mississippi
No, prescriptions are provided for patients needing these materials. Fluoride varnishes and similar materials are applied chairside and charged to patient.

University of Tennessee
Yes, we routinely give ProNamel samples and especially Rx Prevident 5000 with 3 refills

University of Texas – San Antonio
The school has Prescription toothpastes that the patients my purchase. Varnishes etc, are applied in the clinic and not dispensed to patients.

The University of Texas School of Dentistry at Houston
MI Paste is available for purchase at the school store. Prevident 5000 Plus prescription is part of the treatment protocol for all caries High Risk patients, and many Moderate Risk patients.

6. Are treatments being planned based on CAMBRA concepts?

The University of Oklahoma
We teach the basic principles of the CAMBRA system to our students in the preclinical course work. We do attempt to plan our patients' treatment using the basic concepts of this system. We are not providing bacterial counts for our patients at this time. In our second and third year block care clinics, we emphasize consideration of the Caries Risk Assessment and the visual detection of caries based on the ICDAS guidelines on the diagnosis and treatment planning of our patients. We also try to emphasize the development a non-restorative preventive care treatment plan along with a conservative restorative treatment plan. We have considerably less control over what methods are used to create treatment plans for patients in the 4th year "comprehensive care" clinics.

LSU Dental School
Yes, but not through a formal plan or system.

Baylor College of Dentistry
Yes.

University of Mississippi
CAMBRA is discussed in the periodontics department.

University of Tennessee
Yes, treatments are planned based on CAMBRA

University of Texas – San Antonio
Yes in that preventive aspects of the treatment plan are tailored to the patient's individual caries risk and needs.

The University of Texas School of Dentistry at Houston
Caries risk assessment is modeled after CaMBRA concepts; acute treatment of occlusal and interproximal lesions modeled after ICDAS/CaMBRA concepts.

7. Are such treatments accomplished as planned?

The University of Oklahoma
Generally, yes. We are still weak on consistently following up on our preventive care treatment plans.

LSU Dental School
N/A

Baylor College of Dentistry
Treatment plans change depending on change of the patient's condition and needs and the faculty member supervising the treatment of the patient during any given appointment. Each faculty member brings his or her professional judgment to bear during patient treatment and has discretion in changing the treatment planned.

University of Mississippi
We follow our established caries risk assessment plan

University of Tennessee
Yes, treatments are accomplished as planned and we have a specific clinic area and faculty member assigned to treat high risk patients with students on a one to one basis at a reduced cost. This only occurs if, of course, the patient returns to the clinic for treatment. Many times these patients only return for 1 or 2 appointments.

University of Texas – San Antonio
For the most part the student provides the preventive therapies to the patients and attempts to educate them as to their responsibilities to maintain their health. The success varies by patient.

The University of Texas School of Dentistry at Houston
Slow, but visible progress is observable as far as clinical calibration in these concepts.

V. OTHER

A. BIOMIMETICS HAS BEEN DEFINED AS "THE STUDY OF STRUCTURE AND FUNCTION OF BIOLOGICAL SYSTEMS AS MODELS FOR THE DESIGN AND ENGINEERING OF MATERIALS AND MACHINES."

1. What is Biomimetic Dentistry?

The University of Oklahoma

According to the "Academy" of Biomimetic Dentistry, "Biomimetic dentistry, a type of tooth-conserving dentistry, treats weak, fractured, and decayed teeth in a way that keeps them strong and seals them from bacterial invasion. In dental practices around the world, Biomimetic Dentistry has practically eliminated cutting teeth down for crowns and destructive root canal treatment. Patients are happier and often spend less compared to conventional treatment."

I am not sure that this Academy is the official representative of "Biomimetic" dental practitioners, but according to their website, "Unlike other parts of our bodies, our teeth do not mend on their own. It is therefore important to conserve as much natural tooth structure as possible. With Biomimetic Dentistry, we strive to do this by offering no prep and minimal prep veneers and Inlay/Onlays rather than full crowns. This means no excessive tooth removal... no cumbersome temporaries. Modern adhesives and bonding techniques are the driving force behind biomimetic dentistry. With traditional dentistry, healthy tooth structure is destroyed and/or removed in order to retain a new restoration. By using advanced adhesive techniques and properly fashioned inlays and onlays, dentists can help save their patients' teeth, time and money. We can say that preservation and conservation lie at the heart of biomimetic dentistry. It's a win-win situation for everyone. Simply put, traditional dentistry is unaware of the current science and techniques which conserve tooth structure and more closely mimic natural oral anatomy. Traditional dentistry is sometimes called amputational dentistry since it allows for sacrificing so much healthy tooth anatomy in order to accommodate the restoration."

LSU Dental School

From the Academy of Biomimetic Dentistry: " Biomimetic dentistry- a type of tooth-conserving dentistry which treats weak, fractured, and decayed teeth in a way that keeps them strong and seals them from bacterial invasion. In dental practices around the world, Biomimetic Dentistry has practically eliminated cutting teeth down for crowns and destructive root canal treatment. Patients are happier and often spend less compared to conventional treatment. "Another definition on the web is "Biomimetics in dentistry is the principle of preserving and restoring teeth to mimic nature as close as science and technology will allow. The biomimetic approach utilizes intact natural teeth as a guide for designing and constructing dental restorations which mimic nature in both form and function. Our goal with biomimetic dentistry is to carry out minimally invasive dentistry and maintain your natural tooth as form and function by preserving the maximum amount of tooth structure possible. In traditional dentistry, healthy tooth structure is often removed in order to retain restorations. With minimally invasive dentistry the use of properly bonded porcelain and composite restorations allow us to reduce the need for posts and full crowns. Biomimetic principles allow our doctors to help you preserve your natural teeth for as long as possible."

Baylor College of Dentistry

The Academy of Biomimetic Dentistry states that biomimetic means to copy or mimic nature and defines biomimetic dentistry as a type of tooth-conserving dentistry in which weak, fractured and decayed teeth are treated in a way that keeps them strong and seals them from bacterial invasion. The academy further claims that the practice of Biomimetic Dentistry around the world has practically eliminated the preparation of teeth for crowns and destructive root canal treatment. Modern adhesives and bonding techniques are the driving force of biomimetic dentistry. The group's philosophy is "less dentistry is the best dentistry" or "there is no dentistry like no dentistry".

University of Mississippi

The above definition + Dentistry?

University of Tennessee

The term of 'Biomimetic Dentistry' has been used to indicate a focus on conservative dentistry that has the goal of minimizing the loss of dental structure while matching restorative material properties to the original lost tissue properties. This means that replacement materials are not over-engineered (such as stronger or harder than the original) and that the original biomechanical responses are restored (such as tooth stiffness). Biomimetic dentistry claims to reduce or even eliminate failures such as fractures or root canals.
It is debatable if the term 'biomimetics' is used correctly. The original definition of biomimetics implies discovering new solutions for the design of synthetic materials and processes by studying natural structures or models. Biomimetics is thus not simply matching or restoring original properties as promoted by Biomimetic Dentistry. Moreover, not all natural properties are desirable, for example natural tooth structure is subject to dental caries. Also, biomimetics may sometimes be nothing more than a fashionable term to advertise a dental office. Biomimetics appears often confused with esthetics as well, in the sense that teeth are treated to look natural.
Nevertheless, the biomimetics concept expresses the importance of understanding the original biomechanical functions for any successful restoration or prosthesis, something that may sometimes get lost in the effort to master the technical aspects of dental procedures.

The University of Texas School of Dentistry at Houston
It logically follows that biomimetic dentistry employs the structure/function of biological systems (ie. natural oral structures/tissue) to research, develop, and implement treatment materials and techniques in the oral environment.

2. Is this an application of a new term for existing techniques?

The University of Oklahoma
There does not seem to be anyone well versed on "Biomimetic Dentistry" at our college. Based on what the "Biomimetic Dentistry Academy's" website presents, it would seem that the many of their techniques are similar to the techniques used by any dentist who promotes conservative dentistry.

LSU Dental School
For both existing and future restorative techniques if conservative restoration preparation is achieved that allows for maximizing sound tooth structure that will retain a restoration that mimics the properties of natural tooth structure.

Baylor College of Dentistry
For the most part, Biomimetic Dentistry seems to be a new term for existing techniques although as research is done and evidence comes to light, innovations are made to improve on existing systems, materials and techniques. New biologically compatible coatings have been developed for implants to ensure their longevity; improvements have been made to bonding agents to increase the service life of bonded restorations.

University of Mississippi
Minimally invasive dentistry and adhesive dentistry are very similar practices, adding the word biomimetic "mimic nature" should be the goal for any procedure. A quick Google it appears to be a marketing tool for practices. No root canals or crowns adhesive dentistry for all. The basic principles of minimally invasive dentistry apply, but when ozone pulpal therapy and holistic dentistry start being mentioned I question the sources. Definitely not an alloy supporting group.

University of Tennessee

The elements promoted in Biomimetic Dentistry appear to be part of conservative, minimally invasive, adhesive, esthetic, and preventive dentistry already. The differences seem to be a more exclusive focus on extra conservative preparations (for example using new technology such as lasers for precise tissue removal) and on matching original tissue properties without "over-engineering".

So for example in our operative courses, the term 'Biomimetic' is used in the Minimally Invasive Dentistry lecture. One slide is about the review article from FDI "When needed, the surgical procedures should be carried out with the most conservative removal of natural tooth tissues, follow by restoration with biomimetic materials." Another slide is about glass ionomer "Glass ionomer is probably the only currently available material that is biomimetic ('imitation of nature'). Glass ionomer is biocompatible, able to adhere to tooth structures, and is anticariogenic due to fluoride release. The limitation is that the longevity of the GI restoration is compromised by its modest physical properties."

The techniques and procedures used in Biomimetic Dentistry are most likely already covered in the current dental curriculum (see above). Learning the natural biomechanical function and properties of the dentition and restorative materials should also be covered already. However, a more 'biomimetics' approach (if defined as matching natural properties) would put higher emphasis on the effects of restorative treatments on the natural biomechanical balance.

The University of Texas School of Dentistry at Houston

Practically speaking, it seems to be simply a new term for what has always been a primary goal of restorative dentistry: to restore form and function to damaged, diseased, or missing structures. It does bring a particular focus, however, to research efforts – ranging from esthetic dental materials to tissue engineering.

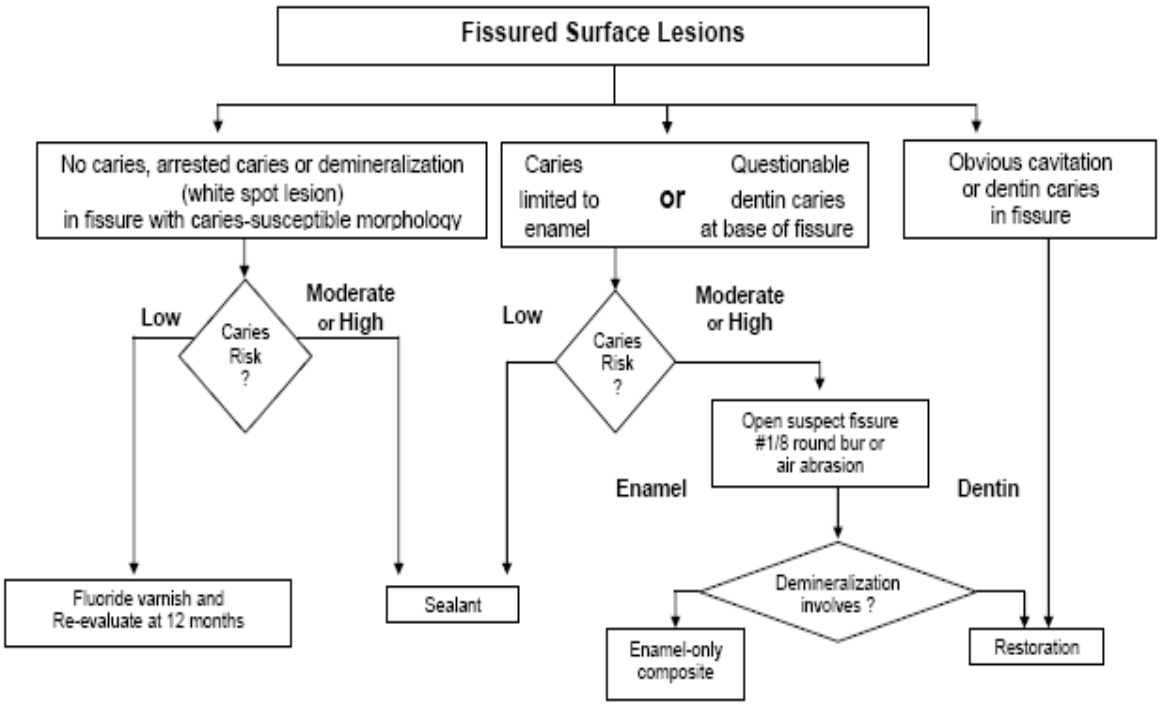
VI. REGIONAL CODE AGENDA

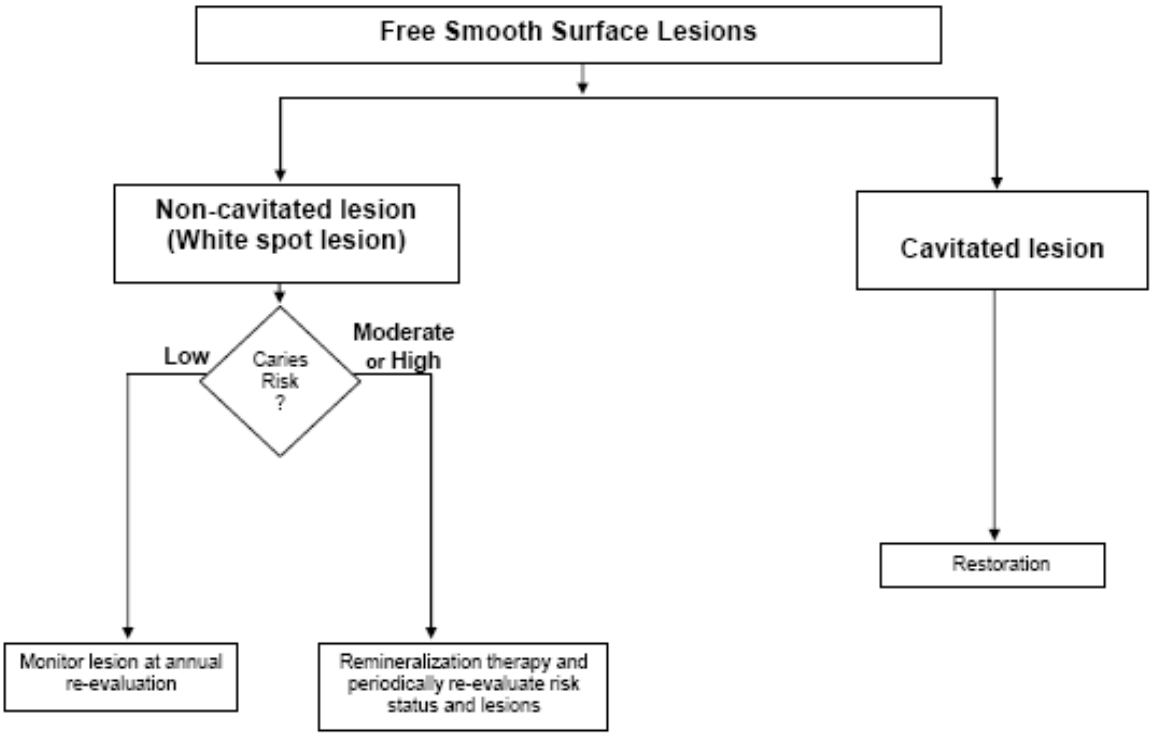
To be established by the respective Region and Regional Director. Please also report on responses to the Regional Agenda by all participants.

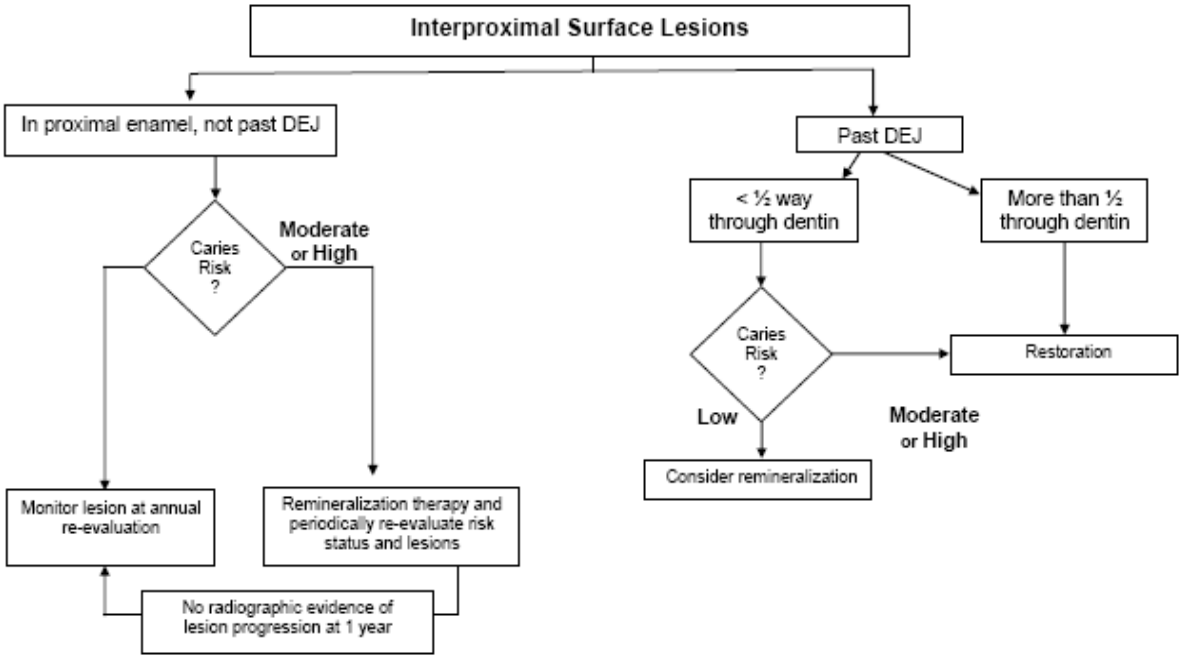
No Items Submitted

Oral Disease Risk Assessment for Adults (ODRA)

Risk Category	Existing Conditions		Treatment Considerations	Code
Caries Risk	*Please use a check mark to indicate caries risk*	√		
Low	No carious lesions in last 3 years Adequately restored surfaces Adequate oral hygiene Regular dental visits Diet History: Consumes food/beverages < five times daily Chews sugar-free gum Avoids sweetened beverages between meals Avoids refined sugars and/or fermentable carbohydrates between meals Drinks milk or eats cheese every day		Review oral hygiene instructions Review dietary factors Recommend fluoride dentifrice One year recall (repeat ODRA)	1330 1310 0170
Moderate	One carious lesion in last 3 years Exposed roots Fair oral hygiene Presence of white spot lesions (not fluorosis) Presence of interproximal radiolucencies (not into dentin) Irregular dental visits Orthodontic treatment (planned or in progress) Diet History: Eats food or drinks beverages five or more times daily Chews regular (non-sugar-free) gum Drinks sweetened beverages between meals Eats refined sugars and/or fermentable carbohydrates between meals Does not drink milk or eat cheese every day		**Pit and Fissure Caries:** Oral hygiene instructions Nutritional counseling Sealants Preventive resins **Smooth Surface, Recurrent and Root Caries:** Oral hygiene instructions Nutritional counseling Professionally applied topical fluoride Recommend fluoride dentifrice Rx for self-applied fluoride Six month recall (Repeat ODRA)	 1330 1310 1351 2391 1330 1310 1360 1340 0170
High	Two carious lesions in previous three years Previous root caries or numerous exposed roots Deep pits and fissures Poor oral hygiene Frequent sugar intake Inadequate use of topical fluoride Irregular dental visits Inadequate saliva flow Orthodontic treatment (planned or in progress) Diet History: (As described in moderate caries risk above)		**Pit and Fissure Caries:** Oral hygiene instructions Nutritional counseling Sealants Preventive resins **Smooth Surface, Root and Recurrent Caries:** Oral hygiene instructions Nutritional counseling Professionally applied topical fluoride Recommend fluoride dentifrice Rx for self-applied fluoride 3-6 month recall (repeat ODRA) Antimicrobial agents	 1330 1310 1351 2391 1330 1310 1360 1340 0170 4381
Other Risks	*Please use Y (yes) or N (no) to indicate risk.*	*Y/N*		
Xerostomia	Patient's mouth dry when eating a meal Difficulty in swallowing food Liquid needed to aid swallowing "Too little" saliva in mouth most of the time Medications with potential to cause xerostomia Head & neck radiation therapy		Evaluate for stimulated and unstimulated flow reduction Evaluate contributing factors Fluoride therapy (see above) Oral hygiene instructions (special products) Select appropriate restorative materials Nutritional and hydration counseling Referral for salivary dysfunction evaluation (unless medication-induced)	 0415
Regressive Alterations or Injury	Evidence of tooth erosion/abrasion Evidence of tooth attrition/bruxism Evidence of maladaptive oral habits Risk of oral injury (contact sport, no seatbelt use, physical abuse)		Oral hygiene instructions Occlusal guard Athletic mouthguard	1330 9940
Periodontal Risks	History of periodontitis Soft tissue disease Diabetes Genetics Tobacco or marijuana use		Follow periodontal treatment protocol Advise patient of potential risks	
Cancer Risk	HX of oral cancer Tobacco user past or present Heavy alcohol use Sunlight exposure/fair-skinned patient		Schedule intraoral/extraoral examination annually Teach patient oral self-examination Tobacco counseling to control/prevent oral disease: (5A program, Rx nicotine cessation, refer as appropriate)	0120 1301 1320


Fissured Surface Lesions
No caries, arrested caries or demineralization (white spot lesion) in fissure with caries-susceptible morphology
Caries limited to enamel
or
Questionable dentin caries at base of fissure
Obvious cavitation or dentin caries in fissure
Low
Caries Risk ?
Moderate or High
Low
Caries Risk ?
Moderate or High
Open suspect fissure #1/8 round bur or air abrasion
Enamel
Dentin
Demineralization involves ?
Fluoride varnish and Re-evaluate at 12 months
Sealant
Enamel-only composite
Restoration


Free Smooth Surface Lesions
Non-cavitated lesion (White spot lesion)
Cavitated lesion
Low
Caries Risk ?
Moderate or High
Restoration
Monitor lesion at annual re-evaluation
Remineralization therapy and periodically re-evaluate risk status and lesions


Interproximal Surface Lesions
In proximal enamel, not past DEJ
Caries Risk ?
Moderate or High
Monitor lesion at annual re-evaluation
Remineralization therapy and periodically re-evaluate risk status and lesions
No radiographic evidence of lesion progression at 1 year
Past DEJ
< ½ way through dentin
More than ½ through dentin
Caries Risk ?
Restoration
Low
Moderate or High
Consider remineralization

Consortium of Operative Dentistry Educators

(CODE)

REGION IV (MIDWEST) ANNUAL REPORTS

Region IV Director:
Dr. Marsha Babka
MID University
Downers Grove, IL

Region IV Annual Meeting Host:
Dr. Mike Bagby
WVU University
Morgantown, WV

Region IV Annual Report Editor:
Dr. Marsha Babka
MID University
Downers Grove, IL

CODE REGIONAL MEETING FORM

REGION: IV Great Lakes

LOCATION INFORMATION FOR 2013 REGIONAL MEETING

University:	West Virginia University School of Dentistry Morgantown, West Virginia		
Dates:	October 4 & 5, 2013		
Chairperson:	Marsha Babka DDS	Phone #	630 – 515 - 7476
University:	Midwestern University, College of Dental Medicine Illinois	Fax #	
Address:	515 31st St	E-mail	mbabka@midwestern.edu
	Downers Grove IL 60515		

List of Attendees: Please complete the CODE Regional Attendees form (See next page)

Suggested Agenda Items for Next Year:

What types of methods, programs, apps are used to make more interactive and engaging learning sessions

What is being taught and used for direct and indirect pulp capping

What are the guidelines for using desensitizers

Are there patient shortages? What screening programs are being used? Are patient incentives being used? Are there shortages of patients for board exams

What is supplied to students as far as instruments and supplies? What do students purchase ?

What are remediation programs, courses or projects for students who fail performance examinations (competency examinations) or whole courses?

LOCATION INFORMATION FOR 2014 REGIONAL MEETING

University:	Midwestern University, College of Dental Medicine Illinois		
Dates:	tbd		
Chairperson:	Marsha Babka DDS	Phone #	630 – 515 - 7476
University:	Midwestern University	Fax #	
Address:	515 31st St Downers Grove, IL 60515	E-mail	mbabka@midwestern.edu

Please return all completed enclosures to
Dr. Ed DeSchepper, National Director, University of Tennessee, College of Dentistry;
875 Union Avenue, Memphis, TN 38103

Office: 901-448-1313 Fax: 901-448-1625 E-mail: edeschep@uthsc.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 REGIONAL ATTENDEES FORM

REGION IV Great Lakes

NAME	UNIVERSITY	PHONE #	FAX #	E-mail
Camila Sabatini	University of Buffalo School of Dental Medicine	716-829-6343	716-829-2440	cs252@buffalo.edu
Priscilla Chang	UIC College of Dentistry	312-255-0552	312-996-3535	pchang7@uic.edu
Courtney Lamb	UIC College of Dentistry	312-413-2836	312-996-3535	clamb@uic.edu
Sean Noonan	University of Pittsburgh School of Dental Medicine	412-648-7609	412-383-7796	Sen24@pitt.edu
Michael Bagby	West Virginia University School of Dentistry	304-293-3	304-293-2859	mbagby@hsc.wvu.edu
Lora Graves	West Virginia University School of Dentistry	304-293-3370370	304-293-2859	lgraves@hsc.wvu.edu
Paul Reifeis	Indiana University School of Dentistry	317-278-1858	317-278-2818	pereifei@iu.edu
Brooke Adams	Indiana University School of Dentistry	317-278-1270	317-278-2818	bnadams2@iu.edu
Michelle Kirkup	Indiana University School of Dentistry	317-278-3398	317-278-2818	
Marsha Babka	Midwestern University College of Dental Medicine	630-515-7476	630-515-7290	mbabka@midwestern.edu

2013 NATIONAL CODE AGENDA
REGION II
SUMMARY RESPONSES TO NATIONAL AGENDA

(Editor Note: Questions condensed for printing purposes)

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

Region IV - Great Lakes

I. CONSORTIUM OF OPERATIVE DENTISTRY EDUCATORS (C.O.D.E.)

Most schools thought that the organization CODE was of great value institutionally and personally. It is a venue for finding common ground and new ideas. It was thought that having a formal constitution or bylaws would be a good move for the organization as CODE evolves and moves forward. Concerns may relate to election / appointment of officers and committee members.

II. MATERIALS/TECHNIQUES AND DEVICES

A. Glass ionomer as a pit and fissure sealant

Schools used a variety of brands of pit and fissure sealants. Glass ionomer as a pit and fissure sealant was not routinely used by any of the schools. Therefore, there has not been much experience with glass ionomer sealants to compare or report.

B. Impressions using intraoral digital scanning

Some of the schools are using digital scanning for impressions. Sirona's CEREC was the most common manufacturer, but E4D is used by one school. The schools not currently using scanning for impressions

are in the planning stage of doing so. Schools reported that all students do not use the digital scanners. The limitation is case selection and faculty availability.

C. Composite resin

The factors that limited the placement of Class II composite restorations were the ability to control moisture and location of margins on enamel. Where gingival margins are on dentin and not enamel, most schools taught an open sandwich technique using RMGI.

There has not been a significant increase in the placement of esthetic inlays and onlays.

Most schools used one or two composite and bonding systems and used the same material in both pre clinic and the clinic. Both the tofflemire and sectional matrix systems are used. No schools are heating the composite. And incremental placement of composite is the primary method recommended to avoid voids in the restoration. No school had information regarding secondary caries rate of composite restorations vs amalgam restorations.

D. Pins

Pin placement is taught in all of the schools that responded. However, pins are used infrequently in a clinical setting. Whaledent was the most common pin system. Most schools limited pin placement to amalgam restorations.

E. Posts

All schools teach the use of posts when there is extensive loss of tooth structure in an endodontically treated tooth and the core requires a post for retention. All schools teach the use of pre fab posts. Cast posts and fiber posts are used as some of the schools, but not all. Post selection is determined by amount of tooth remaining and the final restoration. Parapost is the commonly used post system.

III. CURRICULUM

A. First Clinical Experiences

The first clinical experiences ranged from first to third year, with sometime in the second year the most Common. The patients for the first experiences are new patients with simple needs, recall patients or transfer patients from third or fourth year students. The patient assignment varied between the schools. In some schools, the patient stayed with the student unless the patient was assigned to another student for more complicate procedures. In other programs, the patient didn't stay with the student. The student to faculty ratio in most schools was 6 – 8. But at one school the student to faculty ratio was as high as 10:1. The most common problems were finding patients, the appropriate types of patients and equalizing patient experiences between students.

B. Clinical Course in Operative Dentistry

Operative dentistry is taught as a clinical discipline at most of the schools. Some schools had a separate Course, but others taught topics as part of a more general clinical course. Grades for clinical courses had methods that varied between the schools. However, grades were usually related to clinical experiences and faculty interactions of some sort. Clinical skills assessments (performance exams) were used at most schools. Most of the schools using a clinical skills assessment were not photographing the procedure. Two of the schools are using portfolios. About half of the schools reporting used some kind of point or requirement system, the others did not.

C. Contact Hours in Operative Dentistry

This question is too difficult to summarize since schools are reporting in various ways and including topics in operative dentistry that other programs may not consider inclusive in operative dentistry (example: waxing, fixed pros).

D. Faculty

Most schools reported not having enough faculty (one school reported that they have enough). The reason for lack of faculty is retirement by faculty, little ongoing hiring and not enough qualified faculty applicants. In the pre clinics the student to faculty ratio ranged from 12:1 to 8:1. In the clinics the ratio was 6 or 8 students to one faculty for most schools, but one school reported a ratio of 10:1 in the clinic.

E. Machine or Computer Grading

Most schools did not use computer or machine grading.

F. National Boards

Most reporting schools did not have a formal course for board review. One school had a formal course and another had board reviews as part of a formal course. However, most have review sessions. Some schools had mandatory attendance for the review sessions, about half of the schools had review sessions that were optional. The purchase of board review materials for students ranged widely from no purchase at all to dental decks to having review books and practice test programs. Exam Master and Crack the Code was available at one of the schools for students to use.

IV. CARIOLOGY

All reporting schools have a formal caries management plan as part of comprehensive treatment. Tracking of the caries management plan was accomplished by a procedure code at some schools, and by treatment note at other schools. Reevaluations are completed by a variety of methods that include: leaving the management plan in process until a 3 month reevaluation, tracking a POE code where the caries management plan was assessed, updating a risk assessment form.

Most schools dispense fluoride varnish chairside topical fluoride. Other remineralization products are usually prescribed and purchased by the patient at a pharmacy. One school did have the availability for

patients to purchase products at a reduced cost.

Most schools used CAMBRA guidelines. The implementation of the plans often depend upon the supervising faculty.

V. OTHER - Biomimetics

Biomimetics has been defined as "the study of structure and function of biological systems as models for the design and engineering of materials and machines."

Biomimetics is a conservative approach to treatment that mimics nature. Future research and evidence to support biomimetics will determine how this trend will move forward.

2013 NATIONAL CODE AGENDA

Region IV School Abbreviations

CWRU	**CWRU Reserve University**	**OSU**	**OSU University**
UDM	**University of UDM**	**PITT**	**University of PITT**
UIC	**University of Illinois - Chicago**	**SUNY**	**State University of NY - SUNY**

IND	**IND University**	**WVU**	**WVU University**
MICH	**University of MICH**	**UWO**	**University of UWO**
MID	**MID University**		

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

I. CONSORTIUM OF OPERATIVE DENTISTRY EDUCATORS (C.O.D.E.)

The organization has grown and evolved over time. At present there is no organizational constitution and by-laws. Consideration is warranted.

A. What is the interest, need, value?
B. Are there concerns?
C. Who wishes to participate in the process of formulation of a constitution and by-laws? Each region is to submit the name of one individual who wishes to participate on an ad-hoc constitution and by-laws committee.

SUNY: As a growing organization, there is need for constitution and by-laws by which the organization will operate.
Concerns may relate to the appointment of committee officers who may represent the different regions at the annual meeting

IND:
CODE should have at least some basic rules and regulations by which to operate.
Do we currently have a Federal Tax ID Number? Some organizations such as OKU have run into some problems with the IRS.

MID:
The interest and value is in finding common ground so that one's own program can be assessed in comparison to other programs. There is a potential for finding solutions or best practices for issues, course content delivery.

PITT: It remains the only opportunity (for me) to discuss pertinent issues with dental educators from different schools. If the C.O.D.E organization has grown and evolved over time, a need exists to evaluate the present and future of the organization and to consider a move toward a constitution and by-laws.

UIC:
UIC values the regional and national CODE meeting every year. We look forward to learning from our peers who teach operative dentistry at other schools and bringing back valuable pearls to own school. If an organization constitution and by-laws document was created to improve attendance and participation at both regional and national meetings, we think this would be a valuable to the CODE organization.
We have no major concerns with the idea of creating a constitution and by-laws for the organization.

WVU, CWRU, UDM, MICH, OSU, UWO: no response

II. MATERIALS/TECHNIQUES AND DEVICES

A. In recent years there have been articles indicating that glass ionomer sealants are just as effective as resin-based composite sealants.
    1. What materials (both type and brand name) are used for pit and fissure sealants at your institution?
    2. If glass ionomer products are used, are they used routinely or are they used under certain guidelines, e.g. partially erupted teeth, difficulty in isolation or in outreach clinics without the aid of suction?
    3. What has been your experience with glass ionomer sealants?

SUNY:
1.Tetric Evo Flow
2.GC Fuji Triage
3. GI - Not routinely used; only under special circumstances such as partially erupted teeth, difficulty in isolation.
4.Even though they are used much less than resin sealants, we see less failures (with GI)

IND:
1.Delton Opaque
2. GI sealants are not used
3. No experience with the material at the undergrad level. IUSD feels that a glass ionomer could be used under extenuating circumstances when proper isolation cannot be achieved. However, no guidelines currently exist.

MID:
1.Ultradent Pit and Fissure Sealant.
2.Glass Ionomer sealants are not currently used at MWU

PITT:
1.Ultradent UltraSeal XT+ resin based sealant
2.The Pitt University Dental School's Pediatric Department does not use glass ionomer sealants under any circumstances. Based on evidence, they teach the students to etch, prime/bond, then seal.
3.It is the Pediatric Department's position that glass ionomer sealants do not have as good of a retention as does the resin base sealants.

UIC:
1.We use resin based pit and fissure sealants as our first choice of material. We use Ultradent, Ultraseal XT plus. "Resin-based sealants are more effective in caries reduction at 24 to 44 months after placement than are glass ionomer cements in permanent teeth of children and adolescents" (ADA guidelines, Beauchamp 2008). We do not advocate any type of mechanical preparation either with burs or air abrasion.
2.We do not use Glass Ionomer based sealants in clinics, but we discuss indications, advantages and disadvantages through reading assignments including ADA guidelines and recommendations. The evidence suggests that glass ionomer sealants may be used as an "interim preventive agent" when moisture control is compromised. (Beauchamp et al, JADA, March 2008)
3.Our experience with glass ionomer sealants is very limited. We are aware of the clinical recommendations published by ADA as well as supporting evidence. There may be a potential advantage for using this material in pediatric patients when moisture control is not possible.

WVU:
1. Delton resin PFS

CWRU UDM, MICH, OSU, UWO: no response

B. Does your institution teach impression techniques using intraoral digital scanning devices?
   1. If so, what brand(s) of intraoral impression scanners are being used?
   2. How many scanners do you have? How are they funded or provided?
   3. Do all students use the scanners for their patients?
   4. If scanning access is limited, how do you determine who gains access?
   5. What has been your experience with intraoral digital scanning devices?

SUNY:
1.Yes, very limited basis.
2. We have a couple of Cerec machines and the Procera Scanner for implant abutments.
3.Only a handful of pre-doc students have exposure on their patients. PG Pros and AEGD have some experience as well, but not all residents look for opportunities to use it.

IND: 1. E4D by D4D
Four intraoral scanner/design stations and three laboratory scanners/design stations.
2 No all students do not use scanners
3.Access is gained by permission of one of a group of five faculty who are trained and have control of the units. The students are first trained on the equipment by scanning a poured impression. Then some 4th year students are permitted to scan intraorally with faculty assistance. Not all 4th years will have the opportunity to scan intraorally.
5.We find intraorally scanning with E4D to be very accurate. Recent surveys of clinical faculty rated marginal integrity of milled ceramic units using either intraoral scanning or scanning of a poured cast to be as accurate as cast units.

MID
1. Digital scanning is taught in the preclinic and is used in the clinic
2.Sirona's CEREC is used – currently the red cam but blue cam is going to be delivered by November 2-13
6 scanners in pre clinic, 2 in the clinic
Provided by Sirona with the provision that a maintenance contract was purchased. Scanning cameras are upgraded at no charge
3. Scanners are available for all students, the decision as to what cases will be scanned vs traditional impression is up to the supervising faculty
4. There has been no conflict up to this point. Most likely the faculty would work out the access issue
5.Good results in pre clinic. There has been too few clinical cases to give a final report of results

PITT:
1.The brand of intraoral impression scanners is CEREC from Sirona.
2. 10 machines gifted from Sirona, but a separated package that is included is purchased by the school.
3. The residents have done a few select cases and it is hoped that by this coming Spring of 2014 the 3rd year dental students will be able to use the machines in the undergraduate clinic**.**

4. There are only a few faculty able to oversee these procedures. Most likely, gaining access will be on a first come first serve basis after a proper tooth has been selected to restore with the CEREC machine. The prosthodontic faculty member that is overseeing the program has had 5 days of training offered by Sirona at Pitt Dental School. He accumulated 2 additional training days at Sirona last fall and has overseen or performed the 7 to 8 procedures completed to date**.**

UIC:
1. No, we use lab-based scanners only. We will soon be incorporating this technology in an Advanced D-4 Clinical Program as well as into the appropriate pre-clinical courses. The plan is to integrate a whole range of technology in the advanced clinic rotation.

WVU:
1**.**Not yet. We are in the process of securing units from Sirona
We currently have one red cam that was given to the prosthodontic residents on loan.
There are two faculty who have digital scanning experience through the Air Force
CWRU UDM, MICH, OSU, UWO: no response

C. Composite Resin
   1. What are the limitations in your clinic for the placement of Class II composite restoration if any? What is your criterion for a Class II composite restoration placement?
   2. What is taught for Class II composite restorations with gingival margins on dentin (apical to the CEJ); use of flowable or RMGI as an "open sandwich?"
   3. Have esthetic inlays and onlays been increasing in frequency in your clinic? Do you see these increasing in the future as esthetic alternatives to large amalgam restorations instead of direct resin composite?
   4. How many resin composite systems and bonding systems are available in your clinic? What bonding systems are being used? If there are multiple systems, are all systems taught in the pre-clinic courses also?
   5. What type of matrix systems are used for Class II posterior composites? How are these systems dispensed in your clinic?
   6. How do you prevent voids in composite restorations? Are you heating the composite to provide better flow?
   7. If known, what is the secondary caries rate of composite versus amalgam restorations?

SUNY:
1.Resin composite is not used in wide preparations involving more than half the occusal surface or below the CEJ
2. For Class II composite restorations with gingival margins on dentin, we typically use an "open sandwich" technique with RMGI.
3. The frequency with which inlays/onlays are being made has not increased. Large amalgams are still being used. Maybe this will increase in the future.
4. Two resin composite systems, Tetric EvoCeram for posterior and Empress Direct for anterior. The only bonding system in use both in clinic and pre-clinic is Optibond Solo Plus.
5. Currently the ring systems we have in use are Palodent (Dentsply) and Garrison. These systems are kept in the dispensary.
6. Pre-heating systems are not used in our clinics. Flowable composite is used under deep preparations to improve adaptation of first increment.
7. Unknown

IND:

1. Officially, the limitation is only the ability to keep a controlled field. However, practically on a daily basis, the limitation is the opinion of the attending faculty. The criteria for a Class II composite placement are rubber dam isolation, quality enamel on all margins and no centric contacts on the resin restoration.
2. When the clinical faculty approve the use of resin and there are gingival margins that do not have enamel, we recommend a glass ionomer or a RMGI (Vitrebond, Photal-Fil) on the dentin margins and resin composite placed over as a sandwich.
3. Esthetic inlays and onlays have not been increasing in frequency. They may increase in usage but still experimenting with indirect usage through the E4D units.
4. Only one resin composite system and bonding system is available in our undergrad clinic. [Composite: Kerr Premise Unidose; Bonding System: Kerr Optibond Solo Plus]. We always try to use the same materials as are used in the undergrad clinics. Grad Operative has other bonding systems and composites available.
5. Type of Matrix Systems: Cure-Thru (Premier) wedges and bands and Super Mat (Garrison Dental Solutions) Blue Cure Through and Metal Dead Soft. Also have Contact Matrix System to assist in contour control. The materials are dispensed by the assistants.
6. Voids in composite resins are reduced by not using a bulk placement method but in small increments. We are not heating the composite.
7. IUSD does not know its secondary caries rate of composite versus amalgam restorations. However, we feel that there are more resin failures, especially in molars.

MID:

1. The recommendation is that composites are not placed where margins have no enamel, apical to the CEJ or where moisture control is not possible
2. RMGI is taught as an open sandwich – Fuji II LC
3. Can't determine since the clinic is only 4 months old
4. One bonding system is taught for direct resin composite – total etch Excite F
Same is in the clinic and pre clinic
The composite system is Ivoclar Evo Ceram for posterior, and Ivoclar Empress for anterior, SDI flowable is also available
5. Both tofflemire and Garrison sectional are used for posterior composites. The Garrison ring is in the isolation cassette, the bands are available from a dispensary. The tofflemire is in the operative cassette, the bands are available from a dispensary.
6. No answer, careful condensation. Heating has not been promoted

PITT:

1. The main limitation/criterion for a Class II composite in clinic is isolation**.** In most instances, the student must use a rubber damn and must be able to achieve proper isolation.
2. If the gingival margin on a class II is apical to the CEJ, it is taught to use RMGI as an open sandwich.
3. No increase and very little use of esthetic inlays or onlays in clinic. The Graduate Prosthodonic Program has implemented and is using the CEREC from Sirona. It is planned for the undergraduate students to also be trained with CEREC, so it is a future possibility for inlays and onlays to increase as an esthetic alternative to large amalgam restorations instead of composite.

4. There is one resin composite/bonding system available in clinic. We use Dentsply TPH3 composite or on rare occasions Dentsply Quixx packable posterior composites, Dentsply Total Etch Prime and Bond NT, and Dentsply Dyractflow or Esthet Xflow flowable composite. All of the above mentioned materials are introduced in the pre-clinic courses**.**
5. The matrix systems used for Class II posterior composites are either Dentsply Paladent System or the Tofflemire Retainer. The systems are dispensed at the clinic floor at the dispensary window. For the 2013 – 2014 academic calendar, the Department of Restorative Dentistry plans to purchase and train students using the Garrison Sectional Matrix System. We further expect the student to first attempt to use the sectional matrix over the tofflemire retainer so to hopefully achieve better interproximal contact and contours as a final restoration.
6. To prevent voids we teach the student to layer the composite instead of placing too much at one time. We are not heating the composite.
7. No information regarding secondary caries rate of composite vs amalgam restorations. Personally, my own clinical observation is that secondary caries is more prevalent in composite vs amalgam restorations and it appears to be more aggressive.

UIC:
1. The UIC College of Dentistry Department of Restorative dentistry created a document that outlines our departmental philosophy regarding indications for various restorative procedures and the use of various materials. This document, The UIC Restorative Department Philosophy, was created by those responsible for the educational content for each of the restorative components of the curriculum. It is periodically reviewed and revised to insure that it can be supported by current evidence. The document is posted on course Blackboard sites, the College of Dentistry Intranet, and is required reading for all Restorative Department faculty. The document is also referenced in our learning objectives document that helps to guide our curriculum.

Recently the philosophy document was reviewed and revised to insure that it accurately stated our beliefs regarding the clinical use of resin composite materials to restore posterior teeth. The review was initially provoked by a production report demonstrating a significant shift in the ratio of posterior resin composite restorations vs. amalgam in our pre-doctoral clinics. We wanted to insure that our guidelines clearly reflected our beliefs regarding indications for each material.

UIC Guidelines and Rationale for Posterior Resin Composite Restorations:
The primary indications for use of resin composite materials for direct posterior restorations are to conserve healthy tooth structure and achieve an esthetic result. Resin composite should not be viewed as an amalgam substitute. Resin composite has clear indications that determine the most appropriate application in posterior teeth based on the best available evidence and an understanding of the physical and mechanical limitations. These include:

1. Restoration of primary 1, 2, or 3 surface lesions requiring conservative cavity preparations when the margins will be located in enamel
2. Esthetically important premolars and molars

<u>Treatment Guidelines:</u>
1. Rubber dam isolation is mandatory.
2. The faciolingual width of the cavity preparation should be no greater than one half of the intercuspal dimension.
3. Gingival cavosurface margins MUST be located on intact enamel.
4. Centric occlusal stops must be located primarily on tooth structure.

5. Resin composite is NOT acceptable for final restorations requiring cuspal replacement.
6. Resin composite restorations are not indicated for patients who exhibit excessive wear from clenching or bruxing.
7. Resin composite is contraindicated for patients who report allergy or sensitivity to resin-based material
8. Resin composite is not to be used to restore portions of teeth that will incorporate occlusal rests for removable partial dentures
9. For class II lesions extending to cementum, an open sandwich technique or material other than resin composite must be considered.

Amalgam is the preferred restorative material for clinical situations that exceed those identified for posterior composites. When esthetic outcome is a significant concern for the patient, and the guidelines for posterior composite cannot be met, partial coverage cast metal or all-ceramic restorations are viable options.
2. In our courses we discuss the use of flowable composite and resin modified glass ionomer materials. We do not advocate a first increment of flowable material in this situation but we do suggest that an open sandwich technique may be indicated
3. The graduating class of 2013 was able to accomplish the following numbers of procedures:
-Indirect (ceramic inlays/onlays)- 1 completed by the pre-doctoral class of 2013, 2 by the pre-doctoral class of 2014.
-Ceramic laminate veneers-40 done by the pre-doctoral class of 2013.
Our belief is that all ceramic restorations may be an acceptable alternative to resin composite restorations under certain circumstances.

4. UIC pre-doctoral clinics use Cosmedent Renamel Nano as well as 3M ESPE Filtek Supreme for nano-filled resin composites. We use Cosmedent Renamel Microfill for micro-filled resin composite and SDI Wave for flowable resin composite. The bonding system we use is 3M ESPE Adper Single Bond 2 Adhesive, a total etch agent. All are used in pre-clinical courses.
5. The most popular matrix system we use is the traditional toffelmier system with Young HO dead-soft band (.001inch thickness). We also currently have available the Palodent Sectional Matrix System. Our dental materials committee is currently considering the Garrison Matrix system after comparing to Palodent Plus and Triodent V3.
6. We currently encourage proper matrix band placement, contoured wedges, placement and adaptation of resin composite. We are not heating the material for better flow.

WVU:
1. Students are limited to supragingival restorations unless complete isolation can be obtained.
They are required to use dental dam unless extreme conditions dictate otherwise. Same for criteria.

2. From what I am able to ascertain, a gingival notch is placed in the dentin to provide retention. Different clinical instructors teach anything from no additional retention to the open sandwich.
3. Again, not yet. We are anticipating an increase once our cadcam units arrive.
I would hope these would be used before large composites once we have the technology. Perhaps this is my own bias, but I prefer amalgam over composites, and I feel that ceramics are the wave of the future.

4. Only TPH and EsthtiX in our student clinic, but the Instruments and Materials Committee is working very hard to make a change in the near future. ?Scotchbond MP
5. Use of other systems is being taught preclinically in one of our composite courses.

Triodent matrix system
Our students own these and are dispensed in their dental dam kits.
Students are currently being taught to use flowable in conjunction with the filled resins.
6. No, but Sonicfill is available for use on a limited basis
7.Unknown.

CWRU UDM, MICH, OSU, UWO: no response

D. Pins in Restorative Dentistry
   1. Does your school teach the use of pins in the pre-clinical curriculum?
   2. Do your students use pins in the clinic?
   3. Which pin system(s) are used?
   4. If used, are pins limited to amalgam restorations?

SUNY:
1. Does your school teach the use of pins in the pre-clinical curriculum? Yes
2. Do your students use pins in the clinic? Yes
3. PIN KIT, TMS system (Whaledent)
4. Normally yes. Sometimes it is still used under composites

IND:
1. Teaching pin placement: Yes
2. Use of pins in the clinic: Yes
3. Whaledent TMS pins in undergrad. In grad operative the Max pin is also available.
4. Pins are not limited to amalgam restoration. Used as attending faculty feel is necessary for additional retention of restorative including resin.

MID:
1. Pins are described in lecture – not placed in a preclinical project
2. Do your students use pins in the clinic? No
3. Which pin system(s) are used? NA

PITT:
1. Yes, during the spring semester of their 1st year.
2. Pin placement in the clinic: On occasion, but not too often
3. Whaledent – Thread Mate System
4. Pins are limited to amalgam restorations only

UIC:
1. Does your school teach the use of pins in the pre-clinical curriculum? Yes
2. Pins in the clinic? Yes - but not frequently (rarely)
3. We prefer Whaledent TMS Link system. We use a less expensive alternative during dentech exercises in pre-patient care clinics. If used, are pins limited to amalgam restorations?
4. Pins are only advocated for amalgam restorations.

WVU:
1. Does your school teach the use of pins in the pre-clinical curriculum? yes
2. Do your students use pins in the clinic? On a limited basis when needed.
3. Max 021 titanium
4. If used, are pins limited to amalgam restorations? Yes, often with Amalgambond Plus

CWRU UDM, MICH, OSU, UWO: no response

E. Posts in Restorative Dentistry
   1. What is utilized in clinics? Prefab, cast, fiber
   2. What criteria are used to determine the need for a post?
   3. What criteria are used in the selection of post types?
   4. Which systems are available at your school?

SUNY:
1.What is utilized in clinics? Prefab, cast, fiber
Prefabricated post. Fiber posts are used in the graduate clinics but introducing them in the pre-doc clinic has not been very successful. Cast posts are
2.What criteria are used to determine the need for a post?
Extensive loss of tooth structure
3.What criteria are used in the selection of post types?
A cast post is used for extensive loss of tooth structure, and prefabricated post for cases with more remaining tooth structure available.
4.Which systems are available at your school? Parapost Coltene

IND:
1. We use Prefab [ParaPost] and cast post and cores. No fiber posts are used in our clinics.
2. Need for a post is determined by the amount of remaining tooth structure, need for core retention and the treatment plan involving the tooth. If the tooth is an abutment for a bridge, a cast post and core is often required. However, if core retention can be obtained without a post and if it will preserve tooth structure, a direct amalgam or resin into a large pulp chamber is considered.
3. If it is determined a post is needed, as in response 2 above, the faculty will determine whether it is a cast post or a prefab post. Conservation of tooth structure is a strong consideration.
4. Parapost system

MID:
1.What is utilized in clinics? Prefab, cast, fiber
Prefab posts, fiber posts, cast posts are not routinely fabricated but the burnout posts are available

2.What criteria are used to determine the need for a post?
Remaining tooth structure, need for retention of the core

3.What criteria are used in the selection of post types?
What tooth and the amount of tooth structure

4.Which systems are available at your school?
Parapost system

PITT:

1. Prefab and casts posts are utilized in clinic

From the Prosthodontic Department Policies Document:

Endodontically treated teeth:

a. Any endodontically treated tooth may be restored with a custom cast post and core.
b. Anterior teeth including premolars require post and core (cast or prefab with pin) unless there is a conservative access opening with at least 1 mm of sound dentin circumferentially after preparation.
c. Molars require 3 mm – 4 mm of sound dentin surrounding the pulp chamber for an amalgam core, or a para post (cementer).
d. All preparations on endodontically treated teeth must exhibit a ferrule (2.0mm or greater).

UIC:

1.What is utilized in clinics? Prefab, cast, fiber.

1. We suggest the use of cast metal posts or prefabricated post in the following manner:

A cast post and core is indicated for teeth with:

- inadequate remaining coronal tooth structure to retain a core build-up and the final restoration
- adequate ferrule of 1.5 - 2.0 mm of sound coronal tooth structure from the core margin to the finish line of the tooth preparation
- flared or eliptical canals where prefabricated posts will not provide sufficient retention
- canals that are too large for any prefabricated post system
- anterior teeth where the prefabricated post does not extend to the incisal edge of the tooth preparation for support of the core build-up material
- single-rooted teeth, especially incisors and canines

<u>Prefabricated post and core build-up</u> (composite resin, amalgam) core is indicated for teeth with:

- <u>at least one</u> remaining axial wall at least 1 mm wide and more than 3 to 4 mm high and other remaining axial walls at least 1.5 – 2.0 mm high
- teeth with small circular canals
- teeth with root canals angled excessively from the post path of insertion making the construction of a cast post-and-core impossible
- teeth with excessive undercut tooth structure inside the chamber where preparing post room for the cast core may result in excessive removal of sound tooth structure, consequently compromising the integrity of the tooth.

Fiber posts are not used in the pre-doctoral or graduate clinics. Students do discuss all different systems available including fiber posts in an interactive didactic session.

2.What criteria are used to determine the need for a post?

Selection of the type and placement of post and core must be completed after the tooth is prepared for an indirect restoration.

3.What criteria are used in the selection of post types?

See answer above E1

4.Which systems are available at your school?
Prefabricated posts are most often used for molars, and in those instances we use the ParaPost system

WVU:
1.What is utilized in clinics?
Prefab, cast, fiber All
2. What criteria are used to determine the need for a post?
Amount of tooth structure lost
3.What criteria are used in the selection of post types?
Definitive restoration being placed
4.Which systems are available at your school?
Parapost

CWRU UDM, MICH, OSU, UWO: no response

III. CURRICULUM

A. When is your first clinical experience in Restorative Dentistry scheduled?
   1. Where do the patients come from?
   2. Do they stay with the student?
   3. What is the staffing ratio?
   4. Any problems or recommendations?

SUNY:
When is your first clinical experience in Restorative Dentistry scheduled?
Spring of the freshmen yr. They have an introduction to the clinic course. Then in Early Fall Semester of the Junior year
1. Where do the patients come from?
Advertising, Simile day, word of mouth
2. Do they stay with the student?
The patient stays with the student until completion of treatment. Only certain procedures may be assigned, on a limited basis, to a different student if the student in charge of the patient has completed the requirements.
3. What is the staffing ratio?
6-8 students per faculty
Any problems or recommendations?

IND:
The first clinical experiences in restorative dentistry occur within the D1 year as observation experiences. The students are required to have a minimum number of experiences and provide a written document. They are required to spend possibly 4 half days in clinic, assisting at chairside and observing 3rd and 4th year students. They are paired with a mentor.
Upon successful completion of the D1 operative course, the D2 students are required to perform a defined number of operative procedures on clinical patients. These students are assigned to a D4 student who is present to perform certain steps within the procedure since the D2 has not taken all the clinical preparatory courses (i.e. local anesthesia).

1. Patients are assigned to students through their respective Comprehensive Care Clinic Directors. Adult patients are admitted through the Screening Clinic. Each Comprehensive Care Clinic is assigned to the Screening Clinic each week on a particular half day. Students have approximately 20 half day screening clinic assignments per year scheduled on days that their clinic is assigned to screening. Clinic Directors utilize the school's computerized patient management system, axiUm, to assign patients to each student and to track patients through the system to ensure continuity of care. Patient tracking reports generated by the axiUm system also enhance the Clinic Director's ability to monitor student needs for patient experiences to facilitate student education and progress.

2. In general, the patients stay with the assigned students (3^{rd} and 4^{th} year) until the patient's treatment is completed or when the student graduates. However, due to student requirements and limited patients, student often share patients to fulfill requirements. When first and second year students participate, the patients are 3^{rd} and 4^{th} year student's patients and they stay with the upper class student.

3. There is a clinic coordinator for each of the 7 clinics and 1 to 2 assistants per clinic. Approximately 30 D3 and D4 students are assigned to a clinic. Also, there are 3 IDP students assigned to each clinic. On average, the faculty supervise 10 student procedures within the Comprehensive Care Clinics.

4. Problems/Recommendations: It is challenging to teach students when the faculty to student ratio is high. Due to the low number of patients, the system can be a problem at times.

MID:
When is your first clinical experience in Restorative Dentistry scheduled?
D3 year

1. Where do the patients come from?
Local area

2. Do they stay with the student?
Yes

3. What is the staffing ratio?
1 Faculty to 6 student pairs – 6 patients

4. Any problems or recommendations?
? Too soon to tell

PITT:
At Pitt Dental School, the first clinical experience is during the student's spring semester of their second year.
1. The patient pool comes from the Juniors and Seniors who mentor the second year student during the clinical restorative procedure
2. The patient does not stay with the second year student**.** The patient remains assigned to the Junior or Senior that mentored the clinical experience.
3. The students to faculty ratio is around 6:1. The staff that may help and assist the student chair side is around 3:1.
4. The biggest problem is trying to find the proper patient and restorative lesion.

UIC:
Patients are assigned to second year dental students during their Spring Semester, where they have 8-10 clinical sessions available for providing patient care. The patients are either on a recall program, transferred from a more senior student, or are new comprehensive care patients with simple needs. Approximately one third of the students will perform their first restorative treatment during this semester, and the remaining will do so as they begin their third year the following semester.
2. Do they stay with the student? Yes, patients remain with their assigned students.
3. What is the staffing ratio? Staffing for the clinic includes 2 dental assistants and 2 dental clerks for 25 students; Student/Faculty ratio is 8/1 in the pre-doctoral clinics.
4.Any problems or recommendations? The biggest problem is equalizing experiences for students, although significant efforts are made throughout the students' clinical education to assign patients as equitably as possible.

WVU:
When is your first clinical experience in Restorative Dentistry scheduled? Second year
1.Where do the patients come from?
Hygiene patients, initial assessment exams
2.Do they stay with the student?
No, not until assigned patients in 3rd year
3.What is the staffing ratio?
8/1

CWRU, UDM, MICH, OSU, UWO: no response

B. Do you have a clinical course in Operative Dentistry in the Junior or Senior year?
    1. How do you assign grades?
    2. Do you have Skills Assessments? Are they photographed?
    3. Are you evaluating portfolios?
    4. Do you have points or procedures requirements?

SUNY: Do you have a clinical course in Operative Dentistry in the Junior or Senior year?
In the Junior or Senior year, they don't have a clinical, only a didactic, Operative course.
1. How do you assign grades?
They have a comprehensive clinic course both in the Junior and senior year. The semester grade is calculated by a combination of: requirements met, points earned, attendance, number of faculty-student encounters, etc.
2. Do you have Skills Assessments? Are they photographed?
We have clinical performance evaluations (CPEs) that the students are eligible to take only when they have completed a minimum number of requirements.
3. Are you evaluating portfolios?
We have a treatment planning seminar where students discuss treatment planning of their cases.
4. Do you have points or procedures requirements?
Both, we have requirements and we also have points

IND:

1. Clinical grades are tabulated as a combination of the following: Rounds presentations, Restorative productivity (procedures/points), Clinical Assessment from faculty (Clinical directors), and Peer assessment from students. Historically, daily grades were factored into the clinical grades. The daily grades have been replaced with a formative model. Please refer to the summary below which describes the new formative feedback assessment.

The use of a traditional summative grading model in the IND University School of Dentistry Comprehensive Care Clinics was transitioned to a formative feedback model following faculty and student orientation in September 2012. The purpose was to provide a forum for faculty to critically assess students' daily clinical performance and to offer opportunities for students to routinely self-assess their progress towards overall competency based on defined criteria. Prior to implementation of the formative model, students' self-assessment of their daily clinical performance was informal and irregular. To maximize efficiency and acceptance of the forms, the faculty assessments and student self-assessments are based upon the procedure's defined criteria and use of a 3-point scale: exceeds expectation (e), does not meet expectation (d) and meets expectation (for performance meeting this criterion the entry was left blank). It was believed that the use of a grading by exception assessment method would increase the assessment frequency performed by faculty and self-assessment by students compared to a detailed entry system. A required entry is necessary from students and faculty regarding following infection control throughout the dental procedure (Y for yes/N for no).
The students fill out the self-assessment form, and then the faculty member fills out the evaluation form for the student's procedure. The intent is to have the students and faculty review the faculty assessment form to create an open dialog and teaching opportunities.

2. There are defined competency examinations. Operative Competency (includes five direct restorations involving both resin and amalgam with varying surfaces prepped and restored). There is also Crown Competency within the Prosthetics section. They do not have skills assessments and they are not photographed. .

3. No. We do not currently have e-portfolios at this point. However, there has been some preliminary work done in this area as preparation for the possibility of this entering into the first year of dental school
4. For graduation, students must achieve 270 restorative points (amalgam=1pt, FGC=3pts). Also, there are certain requirements such as 15 single restoration units they must minimally fulfill.

MID:
Do you have a clinical course in Operative Dentistry in the Junior or Senior year?
Not Operative, however parts of operative are taught within integrated courses, dental materials, repair of restorations,

1.How do you assign grades?
Based on didactic courses, performance exams, faculty ratings
2.Do you have Skills Assessments? Are they photographed?
Yes, performance exams, not routinely photographed
3.Are you evaluating portfolios?
Yes, but not yet
4.Do you have points or procedures requirements?
No

PITT: At Pitt Dental School, there is a series of 5 Clinical Restorative Courses beginning in July of the students' Junior year. During the series of courses, the students have requirements that culminate in a letter grade at the end of each semester. Ultimately, by graduation, the students are required to have successfully completed 100 restorations and pass the Final Clinical Restorative Competency during the Spring of their Senior year.

1. Fall Semester Junior year – one written exam and daily clinical grades (minimum of 5 restorations). Each component worth 50% of the final letter grade.
Spring Semester Junior year – one written exam, daily clinical grades (minimum of 5 restorations), and the 3rd Year Clinical Restorative Progression Competency, aka Mock NERB (successfully prepare and restore a class II and class III on patient(s); 6 hour time limit). Each component worth 1/3rd of the final letter grade.
Summer Semester Junior year – one written exam and daily clinical grades (minimum of 5 restorations). Each component worth 50% of the final letter grade.
Fall Semester Senior year – daily clinical grades (minimum of 5 restorations), and the 4th year Clinical Restorative Progression Competency, aka Mock NERB. Each component worth 50 % of the final letter grade
Spring Semester Senior year – daily clinical grades (minimum of 1 restoration), and the Final Clinical Restorative Competency (must have successfully completed 100 restorations prior to challenging the Final Competency). Each component worth 50% of the final letter grade.
The Clinical Restorative Progression Competency for both years is **graded by the same criteria and grading form that the NERB utilizes in its Patient Based Restorative Exam.**
The Written Exams are 40 multiple choice questions similar to the questions given on the Restorative portion of the Nation Boards.

2. At this time, we are trying to incorporate more photographs as a tool for teaching as well as preparing the student for the Clinical Restorative Competencies and NERBS/WREBS.
3. At this time, we are not evaluating portfolios.

UIC:
We do not have a separate course. Our clinical program is designed around a comprehensive care model that incorporates the various disciplines logistically and academically in the curriculum. In our new DMD curriculum there are two major courses in the junior year, DOST which is formatted in small group interactive sessions where students discuss patient scenarios. The other major course is called DAOB (Dental Applied Oral and Behavioral Sciences) in which the various disciplines of restorative dentistry, periodontics, endodontics, oral surgery, pediatric dentistry, oral medicine, orthodontics, and urgent care are combined in determining a single grade at the end of each semester. The DMD curriculum is in place through the junior year. The new senior courses, DAOB and DOSI, are being developed.
Grades in the clinical course of DAOB are assigned based on assessment in four components. Students must pass all four components in order to pass the course.

a.Faculty Observation (20%) – a compilation of individual faculty evaluations from each clinical session. Faculty evaluate students on the seven college competencies (professionalism and ethical behavior, dialogue, assessment of state of health, differential diagnoses, plan of action, intervention, student evaluation of outcome), assign a grade (A, B, C, F) and post a comment that is intended to give

constructive feedback to the student. All of the semester evaluation grades are averaged to arrive at one composite grade for this component. Each individual evaluation has equal weighting and can come from any of the clinical disciplines. By semester's end a student theoretically could accumulate 150 individual evaluations. In reality this number is more likely to be in the range of 80-100 due to rotation assignments, cancellations, and other activities in which students participate.

b.Varied Experiences (30%) – in this component the primary criterion is dollar production which is a good indicator of student activity and engagement. The class average is determined and grades are assigned using production ranges based on standard deviations. Other factors incorporated in determining grades in this component include attendance, diversity of procedures and instructors, timely faculty approval of entries into the patient electronic record and overall patient and practice management.

c.Independent Efforts (40%) – students take a number of performance exams in the course (e.g. Diagnosis and treatment planning, direct restorations, periodontal scaling and root planning, simulated root canal therapy, etc.). Most of these are on patients and a few are on typodonts. Each semester students are required to prepare and submit a portfolio (e.g. Cariology, implant, communication, etc.). These are graded using a rubric format. In addition to actual patient care, there a series of plenary presentations and written exams each semester. There are a range of topics including practice management, special patient care, cone beam radiographic imaging, pain control, etc. There are also various other requirements like EBD reports, attendance at case presentations, and orthodontic screenings that are evaluated or noted on a pass/fail basis.

d. Student Self-evaluation (10%) – for each clinical session and for each performance exam students must do a self-evaluation. Identical forms as used by the faculty are provided for the students to fill out. Grades in this component are determined based on closeness in matching the grades given by faculty

.

2. We have a number of performance exams on patients in restorative dentistry, periodontics, endodontics, pediatric dentistry and urgent care. Like the daily clinic evaluations, these are evaluated based on the seven college competencies: professionalism and ethical behavior, dialogue, assessment of state of health, differential diagnoses, plan of action, intervention, and student evaluation of outcome.

The competency of intervention relates to actual technical skills. The same electronic form found in Axium that is used for the daily clinical sessions is used for the performance exams. The same form is generic for all disciplines. Students must pass each and every performance exam in order to pass the course. In restorative dentistry we also have typodont exams on PFM and FGC bridge preparations and all ceramic crown preparations. Passing these exams is a prerequisite to taking the Mock Board exam. All typodont exams are graded using the same criteria and method as the regular board exams. The typodont preparations are sometimes photographed and used for feedback to students in orientation and debriefing sessions. We do not normally photograph patient procedures

3.Yes, we assign a portfolio project each semester. In the junior year the three portfolios are cariology, periodontal reevaluation, and behavioral aspects of patient care. These are graded on a percentage basis utilizing a rubric format.

In the senior year each student is required to present a multi-disciplinary case before their peers. There are inclusion criteria that must be presented and supporting EBD documentation must also be included. The case presentations are evaluated by both faculty and students in attendance again using a rubric format. Student self-evaluation is also required.

4. Currently we do not use points or procedures requirements for either promotion or graduation. We monitor production, attendance, diversity of procedures, and overall clinical activity. There are expectations and it is the responsibility of the managing partners to assure that all students have obtained clinically meaningful, diverse experience in all of the various disciplines in order to certify students for graduation. Due to the location of the College of Dentistry we are fortunate to have a wide patient base for our students. A typical roster of patients per student is often 40 – 50 in number composed of both active and recall patients. These patients in general fulfill varied experiences in direct and indirect restorations, periodontics, fixed and removable prosthodontics, oral surgery, pediatric and implant dentistry. Endodontics is more of a challenge since implant treatment has greatly increased in the college. Regardless, each student still gets a basic experience in endodontics which includes both an anterior and posterior performance exam on a patient. The predoctoral students also have experience in orthodontics in screening patients, following several cases with residents, and performing minor tooth movements. We have an excellent program in urgent care in which all students serve rotations in the junior year and participate as seniors on an ad hoc basis. We have found that student production has increased without a requirement system and experience across the board has not diminished. The graduating class of 2013 was able to accomplish the following numbers of procedures:

	Average/student	**Range**
Direct restorations	90	42 - 138
Indirect restorations (single unit)	17	8 - 43
Bridge units	3.4	-
Implant units	2.5	0 - 7
Complete dentures	6.5	4 - 14
Partial dentures	4	1 - 9
SRP quadrants	21.7	-
RCT procedures	10.9	-
Extractions	35	-

We feel that the students have received a great overall experience and that the comprehensive care model has greatly enhanced our student's preparedness for private practice.

WVU:
Do you have a clinical course in Operative Dentistry in the Junior or Senior year? yes
1.How do you assign grades? electronically
2.Do you have Skills Assessments? Yes Are they photographed? No
3.Are you evaluating portfolios? No
4.Do you have points or procedures requirements? Benchmarks

CWRU, UDM, MICH, OSU, UWO: no response

C. How many contact time hours are dedicated to pre-clinical dentistry (lecture, lab, amalgam, composite, single unit restorations)?

SUNY:
Pre-clincial course are typically two semesters. Four hours a week (One hour of lecture and 3 hours of lab.)

IND:
During the D1 year, the students meet 3 times a week for 18 weeks. Typically, each session has a lecture followed by a laboratory session. Students have a lecture or assigned presentation component first with a lab session that immediately follows lecture. They do waxing, resins, GI's, amalgams, and introductory fixed prostheses with single castings.
During the D2 year, the students usually meet 2 times a week for 16 weeks per semester. Again, each session has a lecture followed by a laboratory session. Within the students' second year, they begin Fixed prosthodontics, dentures, and removable partial dentures. The classes meet every M, W, and F morning throughout the second year. Within the second semester of the second year, they also have orthodontics, endodontics, and pedo. Therefore, the average is about 12 hrs/week.

MID
14 Hour lecture total for direct restorations – 6 amalgam, 8 composite
33 Hours amalgam lab
47 Hours composite lab
14 Hours single indirect restorations lecture (PFM, ACC and FGC, includes provisional, impression, CAD CAM imaging, die trimming, evaluation of restoration, cementation
45 Hours lab for single unit indirect restorations

PITT:
Waxing Lecture – 2 one hour lectures per week for 15 weeks
Waxing Lab – Two hour lab per week for 15 weeks
Amalgam Lecture – 2 one hour lectures per week for 15 weeks
Amalgam Lab – Three hour lab per week for 15 week
Composite Lecture – One hour lecture per week for 10 weeks
Composite Lab – Three and a half hour lab per week for 10 weeks
Single Unit Lecture – One hour lecture per week for 15 weeks
Single Unit Lab – Six hour lab per week for 15 weeks

UIC:
The table below includes hours devoted specifically in pre-patient care courses to restorative skills related to amalgam, resin-composite, and indirect restorations. There are many more hours devoted to topics like cariology, risk assessment, preventive dentistry, treatment planning, conduction comprehensive oral examinations, dental anatomy, occlusion, dental biomaterials, and basic operative/ restorative dentistry concepts.

DAOB	IDS / Lecture	Clinic Session	Amalgam	Composite	Indirect
311	0	0	0	0	0
312	17 hours	39 hours	36 hours	3 hours	0
321	36 hours	78 hours	7.5 hours	34.5 hours	36 hours
322	2.5 hours	24 hours	7.5 hours	13.5 hours	3 hours*
Total	55.5 hours	141 hours	51 hours	51 hours	39 hours

WVU, CWRU, UDM, MICH, OSU, UWO: no response

D. Do you have enough faculty? (If not, why)
   1. In your pre-clinical lab courses, what is the student/faculty ratio?
   2. In your clinics, what is the student/faculty ratio?

SUNY:
Do you have enough faculty? (If not, why)
No, we don't have enough faculty.
1.In your pre-clinical lab courses, what is the student/faculty ratio?
On average, we have a ratio of 12/1
2.In your clinics, what is the student/faculty ratio?
On average, the ratio in clinic is 8/1

IND:
No. We have faculty that have retired, died or moved with little to no hiring of clinical/preclinical faculty to fill the vacant positions. We rely heavily on part time faculty to help with clinical activities and D4 students to help with preclinical courses.
1. For the preclinical courses, the faculty (lab instructor) to student ratio varies from 1:8 to 1:12.
2. For the clinics, the average faculty to student ratio is 1:10 but sometimes can be higher.

MID:
Never enough
1.In your pre-clinical lab courses, what is the student/faculty ratio?
8 students to one faculty
2.In your clinics, what is the student/faculty ratio?

6 student pairs – patients – to one faculty

PITT:
Consideration for additional faculty is ongoing however the biggest hurdle to overcome is cost/budget and an attractive offering salary.
1. The student faculty ratio in pre-clinic is 12:1
2. clinic is 6:1 (on average).

UIC:
Do you have enough faculty? (If not, why) Yes
1.In your pre-clinical lab courses, what is the student/faculty ratio? Student / Faculty ratio is 8/1 in the undergraduate pre-patient care courses.
2.In your clinics, what is the student/faculty ratio? Student / Faculty ratio is 8/1 in the undergraduate clinic.

WVU:
Do you have enough faculty? (If not, why) NO; few quality applicants; highest need is in restorative

1.In your pre-clinical lab courses, what is the student/faculty ratio? 10-12/1
2.In your clinics, what is the student/faculty ratio? 8/1

CWRU, UDM, MICH, OSU, UWO: no response

E. Does your school use machine/computer grading in the pre-clinical courses?
   1. If so, what software/manufacturer?
   2. If so, for what type of restorations?

SUNY:
No

IND:
No. We do not use any computer grading software for lab purposes. Everything is graded by reasonably calibrated instructors. However, for the didactic portion, many of us do use a computer program. It is called ExamSoft. However, with the E4D units, the Compare® program will allow for students to scan in preps to assess them with an ideal preparation. We hope to begin this in the near future.

MID:
Not yet – getting prep check in November

PITT:
No.

UIC:
No

WVU:
Yes, just initiated, Axium system for all students

CWRU, UDM, MICH, OSU, UWO: no response

F. National Boards
   1. Do you have formal National Board preparation courses?
   2. Review sessions?
   3. Are the courses or reviews mandatory or optional?
   4. Does your school purchase review materials for students (like Crack the Code or Exam Master)?

SUNY:
Do you have formal National Board preparation courses?

No, we have review courses per discipline
1. Review sessions?
Yes, the different disciplines offer review sessions

2. Are the courses or reviews mandatory or optional?
Mandatory
3. Does your school purchase review materials for students (like Crack the Code or Exam Master)?
4. Yes, these resources are available for students

IND:
1. No formal National Board prep courses.
2.– 3. Review sessions are offered but are informal and optional. [Endo is mandatory]
4. Dental Dek in the first year student issue. Fourth years also often used Dental Dek but are purchased by the student.

MID:
1.Do you have formal National Board preparation courses?
Part of a course
2.Review sessions?
Incorporated into a course
3.Are the courses or reviews mandatory or optional?
Mandatory
4.Does your school purchase review materials for students (like Crack the Code or Exam Master)?
The library has both Crack the Code and Exam Master

PITT:
No formal National Board preparation courses at this time.
2. Each department may have a review sessions but it is limited to the individual disciplines i.e…endo, but not a formal school wide review session.
3. Any review session that is available is deemed optional to the student.
4.The school does not purchase review materials for the student.

UIC:
1. We currently have a NBDE Part 1 course (DBCS 326) during D2 Fall Semester.
2. Review sessions? This is a 5-week course that includes instructor-led review sessions, in-class caselets, and student-led presentations.
3. Are the courses or reviews mandatory or optional? Mandatory
4. Does your school purchase review materials for students (like Crack the Code or Exam Master)?
Currently our school does not purchase review materials for students.

WVU:
Do you have formal National Board preparation courses? No
2. Review sessions? yes
3.Are the courses or reviews mandatory or optional? mandatory
4.Does your school purchase review materials for students (like Crack the Code or Exam Master)?
No; students purchase dental decks; online training

CWRU, UDM, MICH, OSU, UWO: no response

IV. CARIOLOGY

A. Caries Management
1. Does your school have a formal caries management plan as part of the comprehensive treatment plan?
2. How is the caries management plan tracked once it has been implemented?
3. How are reevaluations documented?
4. By treatment note only or by procedure code completion?
5. Does the school dispense remineralization products to patients? If so, how is it dispenses or purchased?
6. Are treatments being planned based on CAMBRA concepts?
7. Are such treatments accomplished as planned?

SUNY:
1. The Caries risk assessment form has been implemented and every patient goes through an initial assessment. Re-assessments and follow up are still a challenge.
2. The student is in charge of following up on the proposed caries management plan.
3. The same initial assessment form is used for re-assessment.
4. Treatment note only. There are discussions on assigning codes for reassessment.
5. The patients purchase these products at a reduced price from the school.
6. We are starting to more and more, but we still face some resistance in favor of the traditional primarily restorative treatment.
7. Are such treatments accomplished as planned? Not always

IND:
1. The school does have a formal caries management plan as part of the comp treatment plan. It is part of the forms in aXium and it is required to be completed on each patient. The initial assessment form and management plan should be completed at each treatment planning session.
2. The student first fills out a form to assess the caries risk status of the patient. Then based on their classification of the patient, a management plan is filled out.
3. The management plan is left in process until it is completed at the 3 month re-eval.
Re-evaluations are documented by completion of the D0136 code in aXium. It is an internal code only, but can be tracked. It stays in process until the 3 month re-eval and is then completed.
4. It is noted by both treatment note and completion of the internal code.
5. The school dispenses Vanish cavity varnish in the clinics to students for them to use as in office tools with patients. Prevident is routinely prescribed to moderate-high risk patients by prescription writing to be filled at their pharmacy. We also recommend adjunctive fluoride regimens, such as ACT.
6. Treatment plans loosely follow CAMBRA, but it has never really been implemented.

MID:
1. Yes
2.Tracked by a code number and a phase 1 reevaluation performance exam
3.By procedure code and treatment note
4. By code

5.Not dispensed – but an Rx is written for fluoride (like prevident) or MI paste
6. Yes
7.Faculty dependent

PITT:

1- 2.Yes, our formal caries management plan starts at the patient's first screening appointment. During the appointment, the student completes an Oral Risk Assessment form in Axium to rate the patient at a LOW, MODERATE or HIGH Risk concerning Caries, Perio, Oral Cancer and Traumatic Injury. Also, the students complete a DIET Form in Axium that places the patient at a LOW-MODERATE-HIGH Risk based on numeric value. At the second appointment, typically the patient is seen in perio for either a full perio evaluation based on PSR scores or an adult prophy at which time a plaque index score is completed.
3 - 4.The caries management plan is tracked and documented at re-calls to see if the patient has any further caries and the two above mentioned forms are updated as well as PSR scores and plaque index. The procedure code completion would fall under a POE.
5. The school provides a Fluoride Tx or Fluoride Varnish, whichever is deemed applicable or necessary at the recall appointments. The patient also may be prescribed Prevedent Fluoride Toothpaste to aid in remineralization of incipient lesions and prevention of further caries.
6. Treatments are not being specifically planned based on CAMBRA, however, Pitt Dental School is considering implementing CAMBRA.

UIC:

1. University of Illinois College of Dentistry (UIC COD) expects students to create individual caries management plans for patients. According to the Restorative Department philosophy guidelines, every patient attending UIC COD clinics should be evaluated to determine caries risk in order to develop and effective plan to control or eliminate disease. It is mandatory for all patients during a comprehensive oral examination or a periodic oral examination. The caries management plan form can be found under Axium forms, it should be completed by the student, discussed with the patient and approved by the faculty. The form should be printed and given to the patient to ensure home compliance. We also ask students to re-evaluate risk factors as well as outcome of caries management plan during ongoing treatment, at the end of treatment or at recall appointments.

2.Students are asked to recall their patients according to the caries risk determined (3 month for high risks, 6 months for moderate to high). During this recall appointment students reassess caries risk, review patient's compliance, and proposed alternative therapies if necessary.
In order to track the implementation of some of the caries managements plans, D3 students must complete a patient portfolio where students select one patient of their patient family, summarize findings and propose a caries management plan based on their caries risk using the best available evidence. Students are asked to explain how patient's caries diagnosis influences the definitive treatment plan and show rationale through the evidence.

3.Reevaluations are documented by updating the risk assessment form in Axium, reclassifying the patient's caries risk if needed, reviewing patient's compliance, behavioral modification, and proposing alternative therapies if necessary.

4. By treatment note only or by procedure code completion? This is documented in a new caries management form as well as in treatment notes, no procedure codes used for caries management.

5.UIC COD does not dispense remineralization products like MI paste, Prevident 5000, ACT or Xilitol gums on site. We do apply fluoride varnish and the material we use is Vanish.

6. Yes, we use the caries management by risk assessment philosophy to propose individualized measures to our patients.

7. Clinic managers and faculty follow up with treatment implementation by meeting with students to review patient progress. There are instances in which the caries management plan is not accomplished as planed due to many factors such as patient's compliance, patient's attrition, students' focus on surgical treatment, etc.

WVU:
1. yes
2.How are reevaluations documented? electronically
3.By treatment note only or by procedure code completion? Both, and form completion
5.Does the school dispense remineralization products to patients? Yes If so, how is it dispensed or purchased? At our student clinic dispensing window. Pt pays upon check-out
6.Are treatments being planned based on CAMBRA concepts? yes
7.Are such treatments accomplished as planned? Whenever possible

CWRU, UDM, MICH, OSU, UWO: no response

V. OTHER

A. Biomimetics has been defined as "the study of structure and function of biological systems as models for the design and engineering of materials and machines."
   1. What is Biomimetic Dentistry?
   2. Is this an application of a new term for existing techniques?

SUNY: No response

IND:
As defined by the Academy of Biomimetic Dentistry: "Biomimetic dentistry, a type of tooth-conserving dentistry, treats weak, fractured, and decayed teeth in a way that keeps them strong and seals them from bacterial invasion. In dental practices around the world, Biomimetic Dentistry has practically eliminated cutting teeth down for crowns and destructive root canal treatment. Patients are happier and often *spend less* compared to conventional treatment."
1. The definition above does not really define "conventional" treatment but it appears that the Biomimetic approach is not different than other conservative treatment approaches. Conservative treatment is a hallmark of the Operative Faculty here at IND. Tooth preservation is a very important consideration. However we differ in that we do not think that resin composite is the answer to all restorative needs, especially the advanced needs of the typical dental school patient.

MID: No response

PITT:
According to the Biomimetic Dentistry CE website, Biomimetic Dentistry is a contrasting approach to the traditional restorative/prosthodontics approach to treating damaged/decayed teeth. Biomimetic approach to dentistry preserves the tooth and its tissues by returning the tooth to its full natural function through a hard tissue bond, allowing functional stresses to pass through the tooth and returning the damaged tooth to a functional, biologic and esthetic result. In other words, the bonded treatment is copying what is life-like.
1. Future research as it applies to evidence based dentistry on this subject will determine ultimately as to whether this is an application of a new term for existing techniques used in current bonding systems.

UIC:
1. Biomimetic dentistry is a conservative approach to therapy which mimics nature and conserves tooth structure whenever possible. Biomimetic approaches are now a strong trend in research to develop new therapies applied to medicine including dentistry. An example of biomimetics in dentistry at UIC COD is Dr. Ana Bedran-Russo's research which focuses on enhancing properties of collagen by mimicking collagen cross-linking mechanisms to improve the strength and stability of dentin matrix.
2.Is this an application of a new term for existing techniques?
No, or should not be. There is no basis for its use to describe existing techniques.

WVU, CWRU, UDM, MICH, OSU, UWO: no response

VI. REGIONAL CODE AGENDA

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

No Regional Agenda Items Submitted

Consortium of Operative Dentistry Educators

(CODE)

REGION V (NORTHEAST) ANNUAL REPORTS

Region V Director:
Dr. Richard Lichtenthal
Columbia University
New York, NY

Region V Annual Meeting Host:
Dr. Richard Lichtenthal
Columbia University
New York, NY

Region V Annual Report Editor:
Dr. Richard Lichtenthal
Columbia University
New York, NY

CODE REGIONAL MEETING FORM

REGION: V NORTHEAST

LOCATION INFORMATION FOR 2013 REGIONAL MEETING

University:	Columbia University, New York, NY		
Dates:	October 2-3, 2013		
Chairperson:	Richard Lichtenthal	Phone #	212-305-9898
University:	Columbia University	Fax #	212-305-8493
Address:	CDM 630 W. 168th Street	E-mail	Rml1@cumc.columbia.edu
	New York, NY 10032		

List of Attendees: Please complete the CODE Regional Attendees form (See next page)

Suggested Agenda Items for Next Year:

LOCATION INFORMATION FOR 2014 REGIONAL MEETING

University:	Columbia University, New York, NY	
Dates:	TBD	
Chairperson:		
University:		
Address:		

Please return all completed enclosures to
Dr. Ed DeSchepper, National Director, University of Tennessee, College of Dentistry;
875 Union Avenue, Memphis, TN 38103

Office: 901-448-1313 Fax: 901-448-1625 E-mail: edeschep@uthsc.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 REGIONAL ATTENDEES FORM

REGION V NORTHEAST

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Melissa Ing	Tufts	617-636- 3929		Melissa.Ing@tufts.edu

2013 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. CONSORTIUM OF OPERATIVE DENTISTRY EDUCATORS (C.O.D.E)

II. MATERIALS/TECHNIQUES AND DEVICES

1. What materials (both type and brand name) are used for pit and fissure sealants at your institution?

BU No responses submitted

CLMB Pit and fissure sealants used in our school are Delton (Densply) and UltraSeal XT Plus (Ultradent)

CONN Resins: Operative: Helio Seal; Filtek Supreme Plus Flow. Pedo: Embrace

DAL No responses submitted

HARV No responses submitted

HOW No responses submitted

UMD Ultra seal XT resin

LAV No responses submitted

MCG No responses submitted

UMON No responses submitted

UMNJ Resin-based Delton

NYU Ultradent: Pit and Fissure sealants

PENN Composite Resin Sealant – Clinpro by 3M ESPE

SUNY No responses submitted

TEMP Delton resin based sealer in the adult clinic. UltraSeal XT Plus by Ultradent Products, INC. – Pedo clinic. Glass ionomer: GC Fuji Triage by GC Corporation.

UTOR No responses submitted

TUFTS Fuji Triage, True Glass Ionomer Material, by GC America, is used in the predoctoral adult clinics. The pediatric clinics use UltraSeal, Composite Resin, by Ultradent.

USN No responses submitted

2. If glass ionomer products are used, are they used routinely or are they used under certain guidelines, e.g. partially erupted teeth, difficulty in isolation or in outreach clinics without the aid of suction?

BU No responses submitted

CLMB At the present time we do not use Glass ionomer sealants in our clinic generally, although we have them for areas where isolation is difficult.

CONN No responses submitted

DAL No responses submitted
HARV No responses submitted
HOW No responses submitted
UMD Triage is available
LAV No responses submitted
MCG No responses submitted
UMON No responses submitted
UMNJ No responses submitted
NYU Not used
PENN Routinely used as bases and liners; restorations in situations listed above, especially in the pedo clinic.
SUNY No responses submitted
TEMP Fuji II LC. GI products not used for sealants in the adult clinic. Pedo clinic: glass ionomer: GC Fuji Triage by GC Corporation. The manufacturer's instructions say "if extra retention is desired, application of GC Cavity Conditioner (10 sec) is recommended.
UTOR No responses submitted
TUFTS Both materials are used with isolation, usually with cotton roll isolation. Ultraseal may be done with RDI.
USN No responses submitted

3. What has been your experience with glass ionomer sealants?

BU No responses submitted
CLMB Limited
CONN Have not used GI as a sealant in Operative
DAL No responses submitted
HARV No responses submitted
HOW No responses submitted
UMD I have used Triage for partially erupted molars.
LAV No responses submitted
MCG No responses submitted
UMON No responses submitted
UMNJ No responses submitted
NYU No responses submitted
PENN Personally: None
Opinion: If you can effectively isolate and place a resin sealant, that should be the treatment of choice. However, if you can't place a resin sealant due to conditions that do not allow a predictably good outcome, a glass ionomer sealant should be considered. In either case, tooth preparation should NOT be done routinely for a sealant, and only done to remove caries.
Recent Literature:
Dhar, et al, Pediatric Dentistry Volume 34, Number 1, January/ February 2012, pp. 46-50(5)
Resin based sealants offered better long-term retention compared to glass ionomer-based fissure sealants. Tooth preparation improved the retention of sealants irrespective of the material used. Highest retention was seen in resin sealants with tooth preparation, and lowest retention was seen in glass ionomer-based sealants without preparation. There was a significant increase in caries in teeth sealed after preparation with either material. Teeth sealed with resin sealants wxhibited significantly higher caries development compared to

teeth sealed with glass ionomers. Conclusion: In the current study, resin-based sealants were found to be superior to glass ionomer-based sealants, and tooth preparation improved retention. Loss of sealants seemed to predispose tooth to development of caries, especially in cases where teeth preparation was done.

SUNY No responses submitted

TEMP In the Pedo clinic glass ionomer is only used for partially erupted molars where it is imperative to seal the fissures immediately and not wait to place a resin sealant when the tooth is fully erupted, ie. If the pits and fissures are so defective that the tooth will decay in the time we are waiting for full eruption.
Only been using GI for the last 2 months so there is no long term info.

UTOR No responses submitted

TUFTS GI sealants appear to be doing well. Fuji coat composite placed on top of GI.

USN No responses submitted

B. Does your institution teach impression techniques using intraoral digital scanning devices?

1. If so, what brand(s) of intraoral impression scanners are being used?

2. How many scanners do you have? How are they funded or provided?

3. Do all students use the scanners for their patients?

4. If scanning access is limited, how do you determine who gains access?

5. What has been your experience with intraoral digital scanning devices?

BU No responses submitted

CLMB We have two digital scanning devices (ITERO-CaDent) and we demonstrate how it is used to the students but we do not use them for patient care at the present time because of legal difficulties (University regarding HIPPA regulations. This should be cleared up for general use in the fall semester 2014. We have one CERAC system in the fourth year clinic, scanner and milling machine that is used extensively.

CONN Cerac. 4 scanners. No, all students do not use the scanners for their patients. Scanning access is new to the school. "Blue" units are in Grad Prosth & AEGD. "Red" units are in Prosth undergrad clinic and in the Preclinical lab. Prosth incorporated it into their preclinical course. It has been used the Prosth undergrad clinic; it has not been used in the Operative arena, and it is currently broken. One of the full time Operative faculty received training.

DAL No responses submitted

HARV No responses submitted

HOW No responses submitted

UMD Yes. LAVA (5) CEREC (1). Company provided LAVA and school purchased CEREC. Very few students use the scanners for their patients. Access is gained by very motivated students. Personally still more comfortable with physical impressions.

LAV No responses submitted

MCG No responses submitted

UMON No responses submitted

UMNJ Yes. 3M Lava. We have 6 scanners donated by the company. Only seniors use the scanners. After using standard elastomeric (polyvinylsiloxane) materials in Junior year scanner access is gained. Limited experience with intraoral digital scanning devices.

NYU Yes. CEREC from Sirona. We have 10 donated scanners. All students do NOT use scanners for their patients. One available on each floor and it is by appointment and used

	under direct faculty supervision. If teeth is properly prepared experience has been excellent.
PENN	Yes. LAVA Cos (3M ESPE). 8 are donated by 3M. All students have the opportunity and it is part of their requirements – New; Not all are taking advantage of it at this early stage. Dedicated assigned faculty have access to the scanners and all students have access to it; it is not limited. My experience has been completed training only. Not available in the faculty practice; not in the position to use it on the clinic floor.
SUNY	No responses submitted
TEMP	Not at the present time however there will be 4 E4D in the pre-clinic and 2 Itero units in the clinic.
UTOR	No responses submitted
TUFTS	Tufts has the Pros Dept, not OPR, teach use of intraoral digital scanning devices using the 4D machines in predoctoral clinics and Nobel Procera. In the postdoctoral clinics residents have choices to use other machines as well. There are 3 E4D machines in the predoctoral clinics and 1 Procera. Nobel Procera scanner is from the grant that Nobel has given to us. Students may use the E4D for their patients and the machines are used with direct supervision of one of our Pros faculty members who is specifically trained to use E4D. Operative faculty does not use the E4D in teaching at this time.
USN	No responses submitted
	C. Composite Resin
	1. What are the limitations in your clinic for the placement of Class II composite restoration if any? What is your criterion for a Class II composite restoration placement?
BU	No responses submitted
CLMB	(1) We should be able to place an acceptable rubber dam. (2) There should be enough remaining tooth structure to avoid placement of all occlusal contacts on the composite restoration.
CONN	(1) Small restorations is the policy, but in practice they are also placed for some larger restorations. (2) Isolation, position in the arch, occlusion are major factors and patient desires.
DAL	No responses submitted
HARV	No responses submitted
HOW	No responses submitted
UMD	Rubber dam isolation
LAV	No responses submitted
MCG	No responses submitted
UMON	No responses submitted
UMNJ	(1)To be used only in low stress occlusal areas, and only if complete isolation can be achieved. (2) See previous answer.
NYU	Our go to material of choice for Class II restorations is composite. Amalgam is rarely used. The main criteria for not being able to place a composite as the amalgam substitute is rubber dam isolation. Rubber dam isolation must be in place for any and all composite restorations.
PENN	No limitations. Universally accepted criterion: relatively conservative, supragingival restoration with good isolation capability
SUNY	No responses submitted
TEMP	Ability to isolate, size and location of the lesion, some consideration given to where the gingival margin ends (ie. Enamel or cementum).
	Criterion: (1) Esthetic concerns of the patient. (2) The occlusal outline form is small to moderate. As a general rule, the faciolingual width of the occlusal cavity preparation

	should not exceed one-third the inter-cuspal dimension. (3) Ideally, all cavosurface margins are located in enamel with most occlusal contact on tooth structure not composite. (4) The surgical site can be isolated effectively from contamination. Rubber dam is especially important when expert assistance is unavailable and is the most reliable method of operating field isolation.
UTOR	No responses submitted
TUFTS	Class II composites are done in discretionary manner using judgment. Eg. If isolation is excellent and there is very good moisture control with rubber dam on and the preparation is supragingival the faculty may choose to have a student do a Class II composite resin.
USN	No responses submitted
	2. What is taught for Class II composite restorations with gingival margins on dentin (apical to the CEJ); use of flowable or RMGI as an "open sandwich?"
BU	No responses submitted
CLMB	We discourage students from using composite resin on a gingival margin on dentin because of two reasons, (A) difficulty to isolate, (B) lack of bond durability and unpredictability of dentin bonding. We use 2B Auto-cure flowable composite in the proximal box up to apical of the proximal contact area and covered with light cure composite (250Z)
CONN	GI open sandwich
DAL	No responses submitted
HARV	No responses submitted
HOW	No responses submitted
UMD	Some faculty use flowable to seal the gingival margin. Open sandwich introduced by clinical faculty.
LAV	No responses submitted
MCG	No responses submitted
UMON	No responses submitted
UMNJ	Same as any other Class II composite (no GIC sandwich technique).
NYU	We do not change our technique. Proximal boxes extending onto the root surface if rubber dam isolation is possible than a layering technique using the usually technique of etch, bond and composite in incremental layers is the technique of choice.
PENN	Class II gingival margins that are apical to the CEJ is taught to be a contraindication to a posterior composite. However, if this was encountered, a 2 step self etch dentin treatment is taught, followed by a composite resin restoration under ideal isolation. Students are lectured on RMGI "Open Sandwich Techniques" in these instances during their D3 year, but they are not universally done on the clinic floor. Some faculty do teach this.
SUNY	No responses submitted
TEMP	Gingival groove placement is optional depending on access. Groove may be present inadvertently after decay removal. Flattening of the gingival (as with amalgam) wall is not recommended. Indications and contraindications are covered in the preclinic via lecture and video. Actual placement is not performed in the preclinic and students are told to ask for assistance from the supervising faculty when they are asked to perform it in the clinic for the first time. Flowable is not recommended but RMGI can be used in situations where gingival isolation is difficult.
UTOR	No responses submitted
TUFTS	Sandwich techniques using Flowable composite resin or RMG/GI as an "open sandwich" are taught as a case by case basis in the clinic. It is however, mentioned briefly during the Preclinical Operative Course.
USN	No responses submitted

3. Have esthetic inlays and onlays been increasing in frequency in your clinic? Do you see these increasing in the future as esthetic alternatives to large amalgam restorations instead of direct resin composite?

BU	No responses submitted
CLMB	Yes for both questions (onlay only)
CONN	No increase in Operative. Patient population is a significant factor.
DAL	No responses submitted
HARV	No responses submitted
HOW	No responses submitted
UMD	There is a lot of potential for a growing number of these restorations.
LAV	No responses submitted
MCG	No responses submitted
UMON	No responses submitted
UMNJ	No
NYU	Yes for both
PENN	Yes. Note: Gold inlays/onlays are still being done as well.
SUNY	No responses submitted
TEMP	No. Will be introducing CAD/CAM into the curriculum therefore an increase would be anticipated if the demographics of the patient population warrant.
UTOR	No responses submitted
TUFT	Esthetic inlays and onlays are done in the clinics but they have not increased in frequency in our clinics.
USN	No responses submitted

4. How many resin composite systems and bonding systems are available in your clinic? What bonding systems are being used? If there are multiple systems, are all systems taught in the pre-clinic courses also?

BU	No responses submitted
CLMB	We use 3M Products and Ultradent products in our preclinic and clinic. In Preclinic we talk about all systems available in the market .
CONN	3M Universal Adhesive system. (Prior to this system we had two systems: Adhese & Excite. Less confusion with one system.)
DAL	No responses submitted
HARV	No responses submitted
HOW	No responses submitted
UMD	2 of both. Optibond Solo and Prime and Bond NT adhesives. TPH and Esthetic. X composite resin. All are at least introduced and most have a preclinical experience.
LAV	No responses submitted
MCG	No responses submitted
UMON	No responses submitted
UMNJ	TPH Sepctra and Esthet-X. For bonding, Prime & Bond. Only TPH is taught in pre-clinic
NYU	Not sure if you mean brands or uses etc. see list… Ultraseal XT pit and fissure, Rely-X, Fuji Cem, Ameolgen, Peak LC. Anything used in the clinic is taught in the pre-clinic.
PENN	We have 1) self etch (se protect bong, kuraray), 2) total etch – 2 step-etch and rinse (prime and bond NT, dentsply/caulk and optibond dolo plus, Kerr), and 3) total etch – 3 step etch and rinse (optibond fl, kerr). All systems are taught didactically. Preclinically, self etch and total etch-2 step- etch and rinse are utilized.
SUNY	No responses submitted

TEMP Prime and bond used in the clinic and taught in the preclinic. Multi-link used in the AEGD clinic.

UTOR No responses submitted

TUFTS Tufts uses one Composite Resin bonding system for routine composite resin restorations. We use a 5th generation system, ExCiTe F by Ivoclar. This is also being used in out Preclin class.

USN No responses submitted

5. What type of matric systems are used for Class II posterior composites? How are these systems dispensed in your clinic?

BU No responses submitted

CLMB We use the Palodent System. Each student gets one and bands are kept in dispensary.

CONN Dead soft SS sectional matrix + wedge + spring ring: 2 systems:: Garrison Composi-tight & Palodent Plus. The rings are packed separately and autoclaved. The sectional matrices are in boxes with separators; there are forceps for selecting the desired matrix.

DAL No responses submitted

HARV No responses submitted

HOW No responses submitted

UMD Dead Soft, Garrison and Paladent Plus. These systems are dispensed by Prep Dispense.

LAV No responses submitted

MCG No responses submitted

UMON No responses submitted

UMNJ Tofflemire, Danville Contact Matrix

NYU V-Ring by Ultradent and gtoffelmire. Disposable V-ring at supply desk. Toffelmire retainers in kit dispensed at supply desk.

PENN Sectional matrix systems (Garrison, Palodent) distributed at the clinic window.

SUNY No responses submitted

TEMP Tofflemire retainer with flat circumfrential band; Garrison sectional both soft face and bitine rings with precontoured sectional bands; Students sign out sectional matrix kits from the dispensary. Tofflemire is included in the instrument cassette.

UTOR No responses submitted

TUFTS Composi-Tight by Garrison Dental Solutions is the Sectional Matrix System we currently use in the Preclin and Predoctoral clinics. We have 2 types of rings, their G ring for shorter and malposed teeth and the 3D 500 Orange Soft Face for standard sized teeth. The system is dispensed to students as an entire autoclaved kit including both rings and the company's special forceps during a clinic session.

USN No responses submitted

6. How do you prevent voids in composite restorations? Are you heating the composite to provide better flow?

BU No responses submitted

CLMB The role of internal stress in the formation of voids is speculative but for practical purposes we ask students to burnish each increment over the previous to prevent the formation of a gap or bridging between two layers. We do not heat our composite. However, one should consider the benefit of better flow and adaptability vs increased degree of conversion which can result in increased polymerization shrinkage associated with preheating.

CONN No heat is used. Careful placement in increments is taught.

DAL No responses submitted

HARV No responses submitted
HOW No responses submitted
UMD Incremental placement with compule. We are not heating the composite.
LAV No responses submitted
MCG No responses submitted
UMON No responses submitted
UMNJ Careful placement, pushing layers over previously cured material. No heating of composite.
NYU All composites are placed with syringes. Heating is not done.
PENN Incremental placement; no heating
SUNY No responses submitted
TEMP Compule dispensing and careful technique; No.
UTOR No responses submitted
TUFTS To prevent voids students are taught to take time to condense well into crevices. Composite is not heated to provide better flow.
USN No responses submitted

7. If known, what is the secondary caries rate of composite versus amalgam restorations?

BU No responses submitted
CLMB We have not kept an accurate record but, anecdotally, we see more caries under composite restorations than amalgam and they are more extensive.
CONN No data
DAL No responses submitted
HARV No responses submitted
HOW No responses submitted
UMD Not known.
LAV No responses submitted
MCG No responses submitted
UMON No responses submitted
UMNJ Not known
NYU No responses submitted
PENN At our institution – these statistics are not known, as they are not being tracked at this time (it is not a bad idea to do so – including tracking longevity of restorations in general)
SUNY No responses submitted
TEMP Official data not currently compiled. Collection of data using an axiom form may be possible if replacement parameters are defined and used during treatment planning.
UTOR No responses submitted
TUFTS The secondary caries rate of composite resin vs amalgam restorations at Tufts is not known.
USN No responses submitted

D. Pins in Restorative Dentistry

1. Does your school teach the use of pins in the pre-clinical curriculum?
2. Do your students use pins in the clinic?
3. Which pin system(s) are used?
4. If used, are pins limited to amalgam restorations?

BU No responses submitted
CLMB We no longer use pins.

CONN (1) Yes (2) Yes, not often. Faculty are likely to demo if this is the student's first encounter. (3) Whaledent max .021 pins. (4) Yes, mostly

DAL No responses submitted

HARV No responses submitted

HOW No responses submitted

UMD We teach the use of pins in the pre-clinical curriculum, the students use pins in the clinic. Whaledent Minikin. The pins are not limited to amalgam restorations.

LAV No responses submitted

MCG No responses submitted

UMON No responses submitted

UMNJ (1) Yes. (2) Yes (3) Whaledent Max 021 Restorative Pins and Link Pins (4) Yes

NYU We don't use them

PENN (1-2) Yes
(3) TMS Self sharing
(4) Yes

SUNY No responses submitted

TEMP (1) Yes, it is taught in a 3 hour module using extracted and sample prep ivorine teeth. Besides teaching pin placement the exercise also covers other learning objectives. (Students learn to distinguish dentin from enamel, base placement, visualize the size and location of the pulp chamber, learn placement of large amalgam restorations). (2) Yes. (3) Coltene Whaledent TMS. (4) No. Can be used for large posterior composites (usually core buildups for crowns) but this is rare.

UTOR No responses submitted

TUFTS (1) Pins are no longer taught in the Pre-clinical curriculum. (2) If needed, students are taught to use pins in the clinic. (3) Minim Pin Kits by Coltene Whaledent (4) If used, generally, pins will be used with amalgams only.

USN No responses submitted

E. Posts in Restorative Denistry

1. What is utilized in clinics? Prefab, cast, fiber

BU No responses submitted

CLMB All of the above (Prefab, cast, fiber)

CONN All

DAL No responses submitted

HARV No responses submitted

HOW o responses submitted

UMD Prefab, cast

LAV No responses submitted

MCG No responses submitted

UMON No responses submitted

UMNJ Prefab, cast

NYU Both

PENN prefabricated – parapost and prefabricated integrapost; and cast post/core; fiber posts being considered by materials committee at this time

SUNY No responses submitted

TEMP Prefab and cast.

UTOR No responses submitted

TUFTS Post are done with Pros faculty only. Prefab is the most popular post utilized in the clinics, Parapost XP or XH. The type of post chosen depends if there is enough tooth structure or not for bonding. If there is not enough structure for bonding but there is ferrule then a cast post and core will be treatment planned. We don't teach fiber posts at Tufts.

USN No responses submitted

2. What criteria are used to determine the need for a post?

BU No responses submitted

CLMB Endodontically treated teeth where extensive loss of tooth structure exceeds 50 % or less than 3 remaining walls and where there is a need for additional strength, protection and retention.

CONN Inadequate coronal structure to support and retain a core.

DAL No responses submitted

HARV No responses submitted

HOW No responses submitted

UMD Unclear

LAV No responses submitted

MCG No responses submitted

UMON No responses submitted

UMNJ Inadequate tooth structure to support a crown

NYU Cast Post: Less than 50% of tooth structure remains
Endodontic canals too wide or angulated
Pre-fab Posts: More than 50% of tooth structure remains but less than 75%
Adequate ferrule exists

PENN Amount of remaining tooth structure

SUNY No responses submitted

TEMP Amount of remaining coronal toothe structure. (<280 degrees of tooth structure or three walls)

UTOR No responses submitted

TUFTS No responses submitted

USN No responses submitted

3. What criteria are used in the selection of post types?

BU No responses submitted

CLMB Where insufficient tooth structure is left; Custom post: When 2 or less axial walls are left. Prefabricated: When 3 or more walls left.
Other considerations :

- Posterior tooth where the shape of pulp chamber provides adequate support for core
- Where because of the shape of the chamber it is impossible to relieve all the undercuts.
- The tooth with multiple and divergent root where a placement of more than one post is necessary

CONN Esthetics, core material, structural-mechanical needs.

DAL No responses submitted

HARV No responses submitted

HOW No responses submitted

UMD Generally prefab in the posterior, cast anterior

LAV No responses submitted

MCG No responses submitted

UMON No responses submitted

UMNJ Anterior teeth (including premolars) generally get a cast post; molars generally get a prefab post and core

NYU See above

PENN While metal posts have been the standard for many years, nonmetallic posts address the need for a more esthetic material in the anterior region. Fiber posts recently have shown to be improvements on other types of esthetic posts used in the past.

SUNY No responses submitted

TEMP Cast recommended for severe coronal breakdown resulting in limited resistance and retention form from natural tooth structure, especially on anterior teeth. When there is severe crown to root angulation (anterior) requiring excessive post bending, when small coronal size limits amount of buildup material around a prefab post (mandibular anterior and premolars).

UTOR No responses submitted

TUFTS No responses submitted

USN No responses submitted

4. Which systems are available at your school?

BU No responses submitted

CLMB Prefabricated: Coltene Whaledent Kits, -- Stainless steel/ Titanium straight sided serrated posts. Prefabricated Carbon/Resin Fiber Posts are available.

CONN Parapost system; DT Light Post

DAL No responses submitted

HARV No responses submitted

HOW No responses submitted

UMD Para post

LAV No responses submitted

MCG No responses submitted

UMON No responses submitted

UMNJ INTEGRA

PENN Listed above

SUNY No responses submitted

TEMP Parapost

UTOR No responses submitted

TUFTS No responses submitted

USN No responses submitted

III. Curriculum

A. What is your first clinical experience in Restorative Dentistry scheduled?

1. Where do the patients come from?
2. Do they stay with the student?
3. What is the staffing ratio?
4. Any problems or recommendations?

BU No responses submitted

CLMB 3rd year is the first clinical experience. Most patients are local. They stay with students whenever applicable. Depending on the day, staffing ratio ranges from 1/5 to 1/8. Calibration of instructors is difficult with voluntary faculty.

CONN 2nd year students assist 3rd & 4th year students to a limited extent fulfilling specified requirements such as applying a rubber dam. Students have their own assigned patients beginning August or September of their third year. Patients come from clinic population.

People who seek dental services. For the most part, the patients stay with the students. 1 faculty to 8 students in the clinic.

DAL No responses submitted

HARV No responses submitted

HOW No responses submitted

UMD 3rd year was first clinical experience. Some provide co-therapy or hygiene referral. Most first experience is their comp care patient. Instructor stays with student. Ratio unknown. Students reacquainted to operative procedures with simulation exercises.

LAV No responses submitted

MCG No responses submitted

UMON No responses submitted

UMNJ Freshman students assist upper classmen in the clinic. They take impressions and place rubber dams on each other. Students see their first patients on entering the Junior Year (generally in June). (1) Generally from Newark area. (2) Yes (3) Not sure what you mean by this. (4)Not that I'm aware of.

NYU January of the sophomore year. (1) Patient Pool/ Assigned by Academic Coordinators (2) Yes (3) 1 dedicated faculty/ 6 students (4)system works well.

PENN D1 as an assistant; d3 as a clinician. Patients come from main clinic patient pool. Yes, they stay with student. Faculty/Student 6:1 ratio. No problems or recommendations out of the ordinary

SUNY No responses submitted

TEMP Actual patient operative occurs in June between 2nd and 3rd year. Students can pick up new patients during rotation assignments. Assigned by central assignment. Patients stay with students. Ratio is ideally 1:6 faculty to student in clinic. New cluster model for comprehensive care implemented February 2013. At the present time students schedule their own patients resulting in unpredictable chair usage patterns. Staffing ratios can vary depending on patient show rate and faculty absences. Current system is the cluster model not departments therefore assumption is all chairs will be filled and faculty will be present. Some difficulty when faculty absences (sick, vacation, CE) are high and the patient attendance is high.

UTOR No responses submitted

TUFTS The first clinical experience in restorative dentistry is scheduled when there is an available patient and procedure for the student for an entering 3rd year student. This can be anytime during the early or late summer of 3rd year.

(1) The patients are either assigned to the 3rd year by their patient Co-ordinators or are transferred to them by their 4th year student partners. Also, the patients for operative can come from either a "recare" (prophy) exam or from a new patient. (2) The patient stays with the student until graduation. (3) We have good staffing ratio at Tufts. Most clinic sessions each instructor will have approximately 4 students so the students get much personal attention. (4) As far as "problems" I feel ours are the same as any other schools'. We try to work on faculty calibration and keeping things as fair as possible for all our students.

USN No responses submitted

B. Do you have a clinical course in Operative Dentistry in the Junior or Senior Year?
   1. How do you assign grades?
   2. Do you have Skills Assessment? Are they photographed?

3. Are you evaluating portfolios?
4. Do you have points or procedures requirements?

BU No responses submitted

CLMB Not formal. Dental materials course related to the materials used on the clinic.
(1) We do not grade but keep record of their competence as they work (quarterly evaluations)
(2) Yes, no photograph except when they are planning to present the case.
(3) Yes; Patient roster, caseload, progress with comprehensive care, skill assessment, time management
(4) No point requirement but we track procedures.

CONN There is a lecture series in the 3rd (junior) and 4th (senior) years.
(1) It is a pass/fail system. In the clinic it is Pass/Fail overall, and on a daily basis it is satisfactory/needs improvement
(2) There are progress exams (test cases) on specific procedures. No photographs.
(3) No
(4) Operative has not had specific unit/procedure treatment requirements for many years, other than procedure centered progress evaluations (test cases). Until this year Operative had required prerequisite procedure experiences which have now been replaced with recommended prerequisites.

DAL No responses submitted

HARV No responses submitted

HOW No responses submitted

UMD Yes.
(1) Quality point totals
(2) We have competencies. They are no photographed
(3) Not at this time
(4) Both

LAV No responses submitted

MCG No responses submitted

UMON No responses submitted

UMNJ Yes.
(1)Combination of competency exams and total clinic points.
(2) Competency exams. They are not photographed.
(3) No
(4) Both

NYU Yes
(1) Clinical Component 65% (based on completed competencies by target dates); Didactic Exam 15%; On-line Quiz 10%; Global Assessment 10% and All must be passed independently
(2)Yes; Photographed sometimes
(3) Yes
(4) Yes Minimum

PENN Yes D3 and D4; D3 and D4 Case presentations
(1) CCE Examinations, CRB Reviews, Case Presentations
(2) Yes and No respectively

(3) I have begun this in the preclinic D1 – clinically this is a work in progress – in the process of establishing comprehensive all inclusive portfolio system.
(4) Yes

SUNY No responses submitted

TEMP Two didactic courses in the Junior year focusing on literature review. Two courses in the senior year, one on esthetics and one on implants. Junior and senior clinic courses evaluate clinical progress.

(1) The Senior Clinical Grade is based on completion of: (a) competency exams, (b) completion of clinical requirements, (c) grade derived from a formula based on quantity and quality of restorations. 600 points minimum required for graduation.
For the Junior year clinical grade in restorative: (a) completion of minimum of 200 points in Restorative Clinics. (b) Completion treatment plan skills exam.
(2) Yes we have skills assessment and no they are no photographed. Skill exams in Junior and Senior years. Competency exams can be taken after minimum number of procedures and passage of skill exams.
(3) Not at this time. Website designed but not initialized.
(4) Both

UTOR No responses submitted

TUFTS We do not have a clinical course per se 3rd year/ 4th year in Operative Dentistry but we do have "workshops" and classes/seminars. The workshops include refreshers in Operative teeth preparations, board preparations and dental materials.

(1) How grades are assigned: Students attempt "Competency Exams" on several Class IIs and IIIs on patients as well as on typodonts in Year 3 and Year 4. There is also a "Mock Boards" which we call OCCE (Operative Clinical Competency Exam) where the student will perform either a Class II or Class III on their patients. The evaluation paperwork has categories of: Excellent, Acceptable, Unsatisfactory. Once filled out by the faculty, the paperwork is handed into the Division Head who then assigns a grade based on the written evaluation and comments.
(2) There is a skills assessment in treatment planning and in esthetic cases where students are required to take photographs of their case presentations.
(3) The portfolio system has been started but not fully implemented at Tufts. 1st year Preclinic requires students to collate their best typodont samples at the end of the year and hand them in as part of their portfolio. In addition, an online Portfolio system was launched as a pilot with selected 3rd and 4th year students last year.
(4) Tufts is currently on a point system. However, there are minimum essential experiences in certain disciplines.

USN No responses submitted

C. How many contact time hours are dedicated to pre-clinical dentistry (lecture, lab, amalgam, composite, single unit restorations)?

BU No responses submitted

CLMB One afternoon per week for the first three semesters and four days per week in the fourth semester as part of the preclinical comprehensive care case based course.

CONN Scheduling of hours is approximate, interpreted, estimated from course syllabi schedules:
Year 1 Oper preclin course 42 hours:

Lab 30 hours

- 20 hours resin
- 6 hours amalgam
- 4 other: Lean-A-Prep; rubber dam

Lect 12 hours

- 4 hours resin
- 3 hours amalgam
- 5 hours other: Learn-A-prep; Ergonomics; Intro to course, Instruments, R. Dam, CAD-CAM, Evaluation criteria & process.

Year 2 Oper Preclin course 84 hours:

Lab 74 hours

- 29 hours resin
- 33 hours amalgam
- 12 hours indirect

Lect 10 hours

- 4 hours resin
- 3 hours amalgam
- 2 hours indirect

DAL No responses submitted
HARV No responses submitted
HOW No responses submitted
UMD No responses submitted
LAV No responses submitted
MCG No responses submitted
UMON No responses submitted
UMNJ 280 hours including lecture time
NYU Lecture 76 hours; Lab 307 hours; exam 8 hours; seminars 3 hours
PENN Preclinic:
OP Dent: Lecture Hours/ Seminars: 48 hours
Lab hours: 164
Amalgam – 41 hours; Composite – 32 hours; Gold Inlay – 16 hrs
Porcelain Onlay – 7 hrs
Fixed Pros: Lecture hours: 20 hours
SUNY No responses submitted
TEMP Breakdown:
Lecture: Amalgam (8) Composite (8) Single Unit Restoration (7) Misc (11)
Lab: Amalgam (54) Composite (54) Single Unit Restoration (60) 2 courses
UTOR No responses submitted
TUFTS Lecture: Approx 60 hours 1st year, Lab: Approc 60 hours 1st year, Amalgam (Lecture=1 hr, Lab=minimum of 9 hrs), Composite Resin (Lecture= 4 hrs, Lab= minimum of 20 hrs), Single Unit Restorations as porcelain inlays/onlays (CAD/CAM) are covered during a 1 hr lecture but single unit restorations lab is only covered during Pros course.
USN No responses submitted

D. Do you have enough faculty? (if not, why?)
   1. In your pre-clinical lab courses, what is the student/faculty ratio?

2. In your clinics, what is the student/faculty ratio?

BU	No responses submitted
CLMB	Never Pre-clinical: Depends on the day, it ranges from 1/8 to 1/10 Clinics: Depends on the day, it ranges from 1/5 to 1/8
CONN	Yes for year 1 & 2 Operative Preclin due to the fact that we have dedicated part-time and volunteer faculty and in Yr 1 AEGD residents. Preclinic Yr 1: varying from about 1:3 to 1:4; Yr 2: 1:5 to 1:10. In clinic 1:8
DAL	No responses submitted
HARV	No responses submitted
HOW	No responses submitted
UMD	No responses submitted
LAV	No responses submitted
MCG	No responses submitted
UMON	No responses submitted
UMNJ	Yes. Preclinic 10:1 and in clinic 8:1
NYU	Yes. Just invested one million dollars in more full time faculty. Pre-clinical: D1 6-8/1; D2 9/1 Clinic: 5-6/1
PENN	Yes Pre-clinical: 6-7 students/1 faculty Clinic: 5 students/ 1 faculty
SUNY	No responses submitted
TEMP	For the preclinic, when all faculty are present there is adequate staffing. Pre-clinical: 12:1 first year; 14:1 second year Clinic: ideally it is 6:1. See above explanation regarding staffing of the cluster model.
UTOR	No responses submitted
TUFTS	(1) The student/faculty ratio in pre-clin is approximately 2 faculty per 32 students. If one faculty member is out or it is the beginning of the year when students require more assistance we could use more help. (2) In the clinics, the student/faculty ratio is approximately 1 faculty per 4 students.
USN	No responses submitted

E. Does your school use machine/computer grading in the pre-clinical courses?
   1. If so, what software/manufacturer?
   2. If so, for what type of restorations?

BU	No responses submitted
CLMB	Not at the present time . Planning to incorporate the KAVO system next semester.
CONN	No.
DAL	No responses submitted
HARV	No responses submitted
HOW	No responses submitted
UMD	No responses submitted
LAV	No responses submitted
MCG	No responses submitted
UMON	No responses submitted
UMNJ	No

NYU Yes for practical and written examinations. No for final grade calculations
Scantron is used. All practical examinations
PENN No
SUNY No responses submitted
TEMP No.
UTOR No responses submitted
TUFTS Tufts does NOT use machine/computer grading in the Operative pre-clinical course.
USN No responses submitted

F. National Boards

1. Do you have formal National Board preparation courses?
2. Review sessions?
3. Are the courses or reviews mandatory or optional?
4. Does your school purchase review materials for students (like Crack the Code or Exam Master?)

BU No responses submitted
CLMB (1) Not formal
(2,3) No
(4) No.
CONN (1-2) No
(3-4) No responses submitted
DAL No responses submitted
HARV No responses submitted
HOW No responses submitted
UMD (1) No some reviews are offered by course faculty
(2) Area specific
(3) Optional
(4) Student purchase review material
LAV No responses submitted
MCG No responses submitted
UMON No responses submitted
UMNJ (1) No
(2) Yes
(3) Mandatory
(4) No
NYU (1) Yes, Part I
(2)Yes
(3) Optional
(4) Board review material is available on vital book and we supply Kaplan text
PENN (1) No
(2) Yes, online materials were created for OP Dent
(3) Optional
(4) No
SUNY No responses submitted
TEMP (1) No official prep courses for the written section however the students take a simple written test.
(2) Yes
(3)Optional

(4) Purchase the practice written exam (part II)

UTOR No responses submitted

TUFTS Tufts has formal National Boards preparation courses and review sessions. Tufts professors put together a large booklet of review materials and review lectures are also found online. Students are blocked out for Boards Part II review lectures. Students can purchase their own Dental Decks/Crack the code review materials. Tufts does not purchase for the students but money is set aside in the loan funds.

USN No responses submitted

IV. Cariology

A. Caries Management

1. Does your school have a formal caries management plan as part of the comprehensive treatment plan?
2. How is caries management plan tracked once it has been implemented?
3. How are reevaluations documented?
4. By treatment note only or by procedure code completion?
5. Does the school dispense remineralization products to patients? If so, how is it dispenses or purchased?
6. Are treatments being planned based on CAMBRA concepts?
7. Are such treatments accomplished as planned?

BU No responses submitted

CLMB (1) Yes
(#2-4) It was in paper charts but now is being put into the EHR (AXIUM)
(5) Yes, as well as prescriptions
(#6) Not as regularly as it should (faculty variables)
(#7) Follow up should improve with the HER

CONN (1) Yes
(2) Repeat of caries risk assessments that are supposed to be done at recall exams.
(3) Prior to Axium (begun in July 2013), a reevaluation form was completed.
(4) Both
(5) Caries specific products available for purchase are Control Rx high fluoride toothpaste and xylitol sweetened chewing gum & mints
(6) We have a formal caries risk assessment procedure, including recommendations to the patient based upon high or low risk.
(7) Follow-up depends upon vigilance on the part of the student. Perhaps our change to Axium about in July will provide a mechanism for tracking patient compliance.

DAL No responses submitted

HARV No responses submitted

HOW No responses submitted

UMD (1) No
(2) None
(3) Only recall are perio related
(4) Treatment note
(5) No responses submitted
(6) No

(7) N/A

LAV No responses submitted

MCG No responses submitted

UMON No responses submitted

UMNJ (1) Yes
(2) Caries Risk Assessment forms and Axium records
(3) Caries Risk Assessment forms
(4) Procedure code
(5) No
(6) Yes
(7) Remains to be seen

NYU (1) Yes
(2) Manually in the patient chart
(3) In the patient chart
(4) Treatment note but procedure codes are used on scanable forms submitted and recorded
(5) No
(6) Yes
(7) Medical and Surgical procedures are accomplished according to the Caries guideline established at NYU. These guidelines mimic for the most part the CAMBRA protocols.

PENN (1) Yes
(2) Yes, tracked by procedure code
(3) Cambra form completion (reevaluation) after the completion of phase I OP Dentistry
(4) Procedure code and TX note
(5) No
(6) Yes, there are pop ups of the recommended plan based on the risk score
(7) Yes

SUNY No responses submitted

TEMP (1) Caries risk assessment followed by reevaluation
(2) By a specific form during recall evaluations. Form is placed into the chart.
(3) Reevaluation forms available
(4) Treatment note only
(5) N/A
(6) ICDAS and CAMBRA concepts are currently taught in the didactic courses but a formal policy for treatment planning and treatment management is not present. New policies based on CAMBRA concepts are currently being written.
(7) TBD

UTOR No responses submitted

TUFTS (1) Tufts has a formal caries management plan as part of the comprehensive treatment plan.
(2) The caries management plan is NOT tracked once it has been implemented but we are currently working on tracking it at this time. Treatment notes are entered into the computer about how materials have been dispensed to the patient and explanations on how to use the materials.
(3-4) No responses submitted
(5) The school does dispense remineralization products to patients as a CAMBRA kit. Three CAMBRA kits are offered: Extreme, High or Medium risk kits.

USN No responses submitted

V. Other

1. What is Biomimetic Dentistry?

BU	No responses submitted
CLMB	Treating teeth with minimum invasion and restoring with materials that closely resemble natural structure
CONN	No responses submitted
DAL	No responses submitted
HARV	No responses submitted
HOW	No responses submitted
UMD	No responses submitted
LAV	No responses submitted
MCG	No responses submitted
UMON	No responses submitted
UMNJ	No responses submitted
NYU	Webster defines biomimetics as "the study of the formation, structure, or function of biologically produced substances and materials (as enzymes or silk) and biological mechanisms and processes (as protein synthesis or photosynthesis) especially for the purpose of synthesizing similar products by artificial mechanisms which mimic natural ones". We would define Biomimetic Dentistry as restorative dentistry utilizing materials which mimic natural ones as closely as possible.
PENN	Biomimetic dentistry only removes the damaged and carious tooth structure from the teeth, and the final restoration is bonded to the remaining healthy natural tooth structure. These bonded restorations function like the tooth structure (mimic the properties of the tooth structure being restored) and supposedly should end the restorative dental cycle.
SUNY	No responses submitted
TEMP	Approaching problems through the lens of reverse engineering using nature as a prototype and developing materials whose properties more closely mimic the material being removed. An example would be the invention of Velcro in 1948.
UTOR	No responses submitted
TUFTS	Means to copy what is "life-like", as in nature, keep as natural as possible. Only the damage and the caries is removed and final restoration is bonded to remaining tooth structure. Conservative dentistry, trying to avoid root canals. Using direct composite resin restorations, using porcelain or composite inlays and onlays vs. traditional dental treatments such as amalgams porcelain fused to metal crowns, gold restorations.
USN	No responses submitted

2. Is this an application of a new term for existing techniques?

BU	No responses submitted
CLMB	A new term for a conservative dentistry reflecting a change in conceptual mindset.
CONN	No responses submitted
DAL	No responses submitted
HARV	No responses submitted
HOW	No responses submitted
UMD	No responses submitted
LAV	No responses submitted
MCG	No responses submitted
UMON	No responses submitted

UMNJ Having worked for a number of years in the development of new dental restorative materials (at J&J and on funded grants, I can say that this is not a new concept, only new terminology for an old concept.)

NYU More than a new term it is refection of a modern concern and emphasis for mimicking as closely as possible the human interaction of the materials utilized for patients. However, in dentistry the term seems to be used more as a marketing strategy (like minimally invasive dentistry) and may not be a term we should embrace as something new.

PENN Not really. It is a conceptual change in how the restorative process is completed. More information is needed on how it presently is taught at other institutions and how this is viewed relative to the examining boards.

SUNY No responses submitted

TEMP I think it is a shift in the way future research could or should be conducted. It changes the types of questions researchers will be asking and trying to answer in the future.

UTOR No responses submitted

TUFTS No responses submitted

USN No responses submitted

VI. REGIONAL CODE AGENDA

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

No Regional Agenda Items Submitted

Consortium of Operative Dentistry Educators

(CODE)

REGION VI (SOUTH) ANNUAL REPORTS

Region VI Director:
Dr. Phyllis Joy Filker
Nova Southeastern University
Fort Lauderdale-Davie, FL

Region VI Annual Meeting Host:
Dr. Phyllis Joy Filker
Nova Southeastern University
Fort Lauderdale-Davie, FL

Region VI Annual Report Editor:
Dr. Phyllis Joy Filker
Nova Southeastern University
Fort Lauderdale-Davie, FL

CODE REGIONAL MEETING FORM

REGION: VI SOUTH

LOCATION INFORMATION FOR 2013 REGIONAL MEETING

University:	Nova Southeastern University, Fort Lauderdale-Davie, FL		
Dates:	October 16 & 18, 2013		
Chairperson:	Phyllis Filker	Phone #	954-262-7342
University:	Nova Southeastern University	Fax #	954-262-1782
Address:	3200 S. University Drive	E-mail	filker@nova.edu
	Ft. Lauderdale, FL 33328		

List of Attendees: Please complete the CODE Regional Attendees form (See next page)

Suggested Agenda Items for Next Year:

What types of methods, programs, apps are used to make more interactive and engaging learning sessions

What is being taught and used for direct and indirect pulp capping

What are the guidelines for using desensitizers

Are there patient shortages? What screening programs are being used? Are patient incentives being used? Are there shortages of patients for board exams

What is supplied to students as far as instruments and supplies? What do students purchase ?

What are remediation programs, courses or projects for students who fail performance examinations (competency examinations) or whole courses?

LOCATION INFORMATION FOR 2014 REGIONAL MEETING

University:	University of Kentucky
Dates:	TBD
Chairperson:	Dr. Phyllis Filker
University:	Nova Southeastern University
Address:	Fort Lauderdale-Davie, FL

Please return all completed enclosures to
Dr. Ed DeSchepper, National Director, University of Tennessee, College of Dentistry;
875 Union Avenue, Memphis, TN 38103

Office: 901-448-1313 Fax: 901-448-1625 E-mail: edeschep@uthsc.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 REGIONAL ATTENDEES FORM

REGION VI SOUTH

NAME	UNIVERSITY	PHONE #	FAX #	E-mail
Dr. Mary Baechle	Virginia Commonwealth University			mbaechle@vcu.edu
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Dr. Lee W. Boushell	University of North Carolina, Chapel Hill			Boushell@dentistry.unc.edu
Dr. Kevin Frazier	Georgia Regents University of Augusta			kfrazier@gru.edu
Dr. Audrey Galka	Nova Southeastern University			agalka@nova.edu
Dr. Sharon Siegel	Nova Southeastern University			scsiegel@nova.edu
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Dr Luis Sensi	East Carolina University			
Dr. Peter Pugliese	Nova Southeastern University			ppuglies@nova.edu
Dr. Evren Kilinc	Nova Southeastern University			Kilinc@nova.edu

2013 NATIONAL CODE AGENDA
REGION II
SUMMARY RESPONSES TO NATIONAL AGENDA

(Editor Note: Questions condensed for printing purposes)

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

2013 NATIONAL CODE AGENDA

I. CONSORTIUM OF OPERATIVE DENTISTRY EDUCATORS (C.O.D.E.)

The organization has grown and evolved over time. At present there is no organizational constitution and by-laws. Consideration is warranted.

A. What is the interest, need, value?

B. Are there concerns?

C. Who wishes to participate in the process of formulation of a constitution and by-laws? Each region is to submit the name of one individual who wishes to participate on an ad-hoc constitution and by-laws committee.

The members of Region VI agree on the importance of the CODE meeting and the exchange of ideas and fellowship among dental educators in operative dentistry. In an attempt to define CODE objectives, the group has begun developing a list of perceived needs of the organization. The goal is to continue this mission by submitting this document to the National level.

II. MATERIALS/TECHNIQUES AND DEVICES

A. In recent years there have been articles indicating that glass ionomer sealants are just as effective as resin-based composite sealants.
   1. What materials (both type and brand name) are used for pit and fissure sealants at your institution?
   2. If glass ionomer products are used, are they used routinely or are they used under certain guidelines, e.g. partially erupted teeth, difficulty in isolation or in outreach clinics without the aid of suction?
   3. What has been your experience with glass ionomer sealants?

Although evidence (JADA 2102 Feb;143 (2):115-22 was submitted to the contrary most schools noted a decrease in the retention rates of RRGI sealants as compared to composite resin. The majority of schools are using Ultradent XT Plus. Most schools noted that they were not using RRGI sealants in the predoctoral clinics.

B. Does your institution teach impression techniques using intraoral digital scanning devices?
   1. If so, what brand(s) of intraoral impression scanners are being used?
   2. How many scanners do you have? How are they funded or provided?
   3. Do all students use the scanners for their patients?
   4. If scanning access is limited, how do you determine who gains access?
   5. What has been your experience with intraoral digital scanning devices?

Seven schools noted that they are teaching impression techniques using intraoral digital scanners. Utilization in the clinics ranged from "not at all" to MUSC who has a 6 operatory clinic with both CEREC and E4D in each operatory. In addition they have embraced the scanners for grading in the simulation lab.

Funding included:

- donations
- Sirona's gifting program
- School purchase
- Loaned in exchange for research projects

There was little information available on the outcomes in the various programs.

C. Composite Resin
   1. What are the limitations in your clinic for the placement of Class II composite restoration if any? What is your criterion for a Class II composite restoration placement?

All schools agreed that rubber dam isolation is mandatory for the placement of Class II composite restorations. Several schools also cited that large restorations were not allowed.

   2. What is taught for Class II composite restorations with gingival margins on dentin (apical to the CEJ); use of flowable or RMGI as an "open sandwich?"

The majority of schools agreed that the "open sandwich" technique using RRGI was taught for these restorations. ULSD cited literature to support this technique. GRU explained a

two step "open sandwich" procedure to assure gingival margin sealing. UF shared an article from the Journal of Esthetic Dentistry Summer 2012 Vol. 2 (see exhibits) using the Deep Margin Elevation method. All agreed that special attention must be paid to sealing that subgingival margin.

3. Have esthetic inlays and onlays been increasing in frequency in your clinic? Do you see these increasing in the future as esthetic alternatives to large amalgam restorations instead of direct resin composite?
   Those schools using the CAD/CAM technology have embraced these more. UNC noted that there has not been quality long tern clinical trials to support their use.

4. How many resin composite systems and bonding systems are available in your clinic? What bonding systems are being used? If there are multiple systems, are all systems taught in the pre-clinic courses also?
   Most schools are still using a fourth generation bonding agent in both the preclinical courses and the clinic. Most schools using nano-fil or nano-hybrid composite.

5. What type of matric systems are used for Class II posterior composites? How are these systems dispensed in your clinic?
   All schools are teaching and have available some kind of sectional matrix system. A few schools also had thin Tofflemire bands available.
6. How do you prevent voids in composite restorations? Are you heating the composite to provide better flow?
   No school had a protocol to heat the composite. Most agreed layering with condensation resulted in the best outcomes although all had issues with voids in some cases. No one had definitive answer to how to prevent voids.

7. If known, what is the secondary caries rate of composite versus amalgam restorations?

No school had data on this question except GRU who noted that they were similar with the caveat that "amalgam was usually placed in more adverse locations."

D. Pins in Restorative Dentistry
   1. Does your school teach the use of pins in the pre-clinical curriculum?
   2. Do your students use pins in the clinic?
   3. Which pin system(s) are used?
   4. If used, are pins limited to amalgam restorations?

All schools are still teaching pins although NSU noted that they are no longer using pins in the clinic. Those schools teaching pins in the clinc used primarily Coltene/ Whaledent with UKY using Stabilock. All schools were concerned with literature citing cracks casused by placing pins.

E. Posts in Restorative Dentistry
   1. What is utilized in clinics? Prefab, cast, fiber
      Majority of posts are pre-fab fiber although most noted cast still being performed.
   2. What criteria are used to determine the need for a post?
      Remaining tooth structure was noted by all schools.
   3. What criteria are used in the selection of post types?

Criteria used for selection included: Size of canal, vitality of tooth, position in the arch, and restorative material used

4. Which systems are available at your school?
   Various systems used.

III. CURRICULUM

A. When is your first clinical experience in Restorative Dentistry scheduled?
   Responses ranged from spring of the D1 year to D3 year.
   1. Where do the patients come from?
      All noted that patients come from surrounding areas to create the "patient pool"
   2. Do they stay with the student?
      All schools except GRU and UAB noted comprehensive care with assigned family of patients staying with students. Initial D1 and D2 experiences were not with these assigned patients.
   3. What is the staffing ratio?
      Ranged from one faculty per four to eight students
   4. Any problems or recommendations?
      Problems noted were shortage of patients and faculty in some programs.

B. Do you have a clinical course in Operative Dentistry in the Junior or Senior year?
   All but one had an Operative course in the junior year and most did not have one in the senior year.
   1. How do you assign grades?
      Each school had a defined unique mechanism to assign grades. ULSD noted that it does not have grades.
   2. Do you have Skills Assessments? Are they photographed?
      All schools responded "yes" that they have a skills assessment except for UAB. There are no routine photographs being taken.
   3. Are you evaluating portfolios?
      Only VCU and UAB are evaluating some kind of portfolio in their curriculum although several other schools noted that they are thinking about it.
   4. Do you have points or procedures requirements?
      All schools had points, recommended procedure numbers, or a combination of both.

C. How many contact time hours are dedicated to pre-clinical dentistry (lecture, lab, amalgam, composite, single unit restorations)?
   Varied

D. Do you have enough faculty? (If not, why)
   Six schools noted that they do not have enough faculty.
   1. In your pre-clinical lab courses, what is the student/faculty ratio?
      Ranged from 4-1 to 20-1
   2. In your clinics, what is the student/faculty ratio? Ranged from 5-1 to 12-1

E. Does your school use machine/computer grading in the pre-clinical courses?
   1. If so, what software/manufacturer?
   2. If so, for what type of restorations?

   MUSC and MMC were the only schools that were actually using the E4D software to grade preclinical projects.

F. National Boards

1. Do you have formal National Board preparation courses?
2. Review sessions?
3. Are the courses or reviews mandatory or optional?
4. Does your school purchase review materials for students (like Crack the Code or Exam Master)?
   Five schools have formal National Board review courses with three noteing that it was optional. Although UF is optional attendance, a mock exam is given which counts towards their final grade in the course which is mandatory. Only MMC and ECU purchase review materials.

IV. CARIOLOGY

A. Caries Management

1. Does your school have a formal caries management plan as part of the comprehensive treatment plan? Most schools have either already embraced a CaMBRA plan as part of the curriculum or is in the process of doing so. UKY was the only exception.
2. How is the caries management plan tracked once it has been implemented?
   Most track this plan through the axiUm EHR.
3. How are reevaluations documented? axiUm

4. By treatment note only or by procedure code completion? both
5. Does the school dispense remineralization products to patients? If so, how is it dispenses or purchased? Four schools noted that they dispense products including 5000ppm toothpaste and MI paste. These schools charge the patients a fee.
6. Are treatments being planned based on CAMBRA concepts? yes
7. Are such treatments accomplished as planned?
   Most schools agreed that this is a problem and depends on the faculty oversight.

V. OTHER

A. Biomimetics has been defined as "the study of structure and function of biological systems as models for the design and engineering of materials and machines."

1. What is Biomimetic Dentistry?
2. Is this an application of a new term for existing techniques?
   All schools responded similarly with the general consensus that this was just another term for minimally invasive or minimum intervention dentistry.

VI. REGIONAL CODE AGENDA

*To be established by the respective Region and Regional Director. Please also report on responses to the Regional Agenda by all participants***2013 NATIONAL CODE AGENDA**

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

2013 NATIONAL CODE AGENDA

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

Region VI School Abbreviations

UAB	**University of Alabama**	**MMC**	**Meharry Medical College**
UFL	**University of Florida**	**UNC**	**University of North Carolina**
ECU	**Eastern Carolina University**	**NOVA**	**Nova Southeastern University**
GRU	**Georgia Regents University**	**UPR**	**University of Puerto Rico**
UKY	**University of Kentucky**	**MUSC**	**Medical University of South Carolina**
ULSD	**University of ULSD**	**VCU**	**Virginia Commonwealth University**

I. CONSORTIUM OF OPERATIVE DENTISTRY EDUCATORS (C.O.D.E.)

The organization has grown and evolved over time. At present there is no organizational constitution and by-laws. Consideration is warranted.

A. What is the interest, need, value?

MMC: It is needed

ECU: NA

VCU: Not sure. Need more information.

UNC: It is my understanding that CODE began as a part of the ACCORD project initiated by Cliff Sturdevant and, as such, was for the purpose of calibration. Clarification is needed.

UPR: Recognize the importance of CODE in teaching operative dentistry among dental schools. CODE should impact the curriculum development in operative dentistry. Value the importance of self-assessment, critical thinking and provide operative treatment to patients based on evidence.

B. Are there concerns?

UFCD: A constitution would be of value and would assist with consensus concerning the mission and purpose of the organization. Bi-laws would help to outline the process by which the group functions.

MMC: Not at this time

ECU: N/A

UNC: Is CODE helping to meet essential need(s) of operative dentistry educators?

UPR: Yes, faculty resistance to change, faculty calibration among dental schools, the incorporation of new developments into the curriculum and the commitment to make them

available.

C. Who wishes to participate in the process of formulation of a constitution and by-laws? Each region is to submit the name of one individual who wishes to participate on an ad-hoc constitution and by-laws committee.

MMC: Michael Yacko

ECU: N/A

UNC: This is secondary to A. and B. above.

UPR: Each region is to submit the name of one individual who wishes to participate on an ad-hoc constitution and by-laws committee.
Name -----Dr.Juan Agosto----------

II. MATERIALS/TECHNIQUES AND DEVICES

A. In recent years there have been articles indicating that glass ionomer sealants are just as effective as resin-based composite sealants.

GRU: Disagree

1. What materials (both type and brand name) are used for pit and fissure sealants at your institution?

ULSD: Resin - Ultradent Ultraseal

ULSD: Cochrane Database Syst Rev. 2013 Mar 28;3
Sealants for preventing dental decay in the permanent teeth.
AUTHORS' CONCLUSIONS: The application of sealants is a recommended procedure to prevent or control caries. Sealing the occlusal surfaces of permanent molars in children and adolescents reduces caries up to 48 months when compared to no sealant, after longer follow-up the quantity and quality of the evidence is reduced. The review revealed that sealants are effective in high risk children but information on the magnitude of the benefit of sealing in other conditions is scarce. The relative effectiveness of different types of sealants has yet to be established.

ULSD: J Dent Res. 2012 Aug;91(8):753-8
Randomized trial on fluorides and sealants for fissure caries prevention.
Placement of resin sealant, semi-annual application of NaF varnish, and annual application of SDF solution are all effective in preventing pit and fissure caries in permanent molars

ULSD: J Am Dent Assoc. 2012 Feb;143(2):115-22.
Twenty-four month clinical evaluation of fissure sealants on partially erupted permanent first molars: glass ionomer versus resin-based sealant.

Resin-based and glass ionomer sealants exhibited similar retention rates at 24 months. However, marginal staining was lower in the glass ionomer group, and the authors found no caries in teeth in this group. Consequently, glass ionomer sealants may be a better choice when salivary contamination is expected.

ULSD: Eur Arch Paediatr Dent. 2010 Feb;11(1):18-25.
Resin-modified glass-ionomer cements versus resin-based materials as fissure sealants: a meta-analysis of clinical trials.
CONCLUSIONS: This meta-analysis found no conclusive evidence that either material was superior to the other in preventing dental caries

UFCD: The Department of Restorative Dental Sciences at the University of Florida College Of Dentistry is responsible for teaching the curriculum in preventive dentistry which includes the placement of sealants. The Department of Pediatric Dentistry teaches the use and application of sealants to the DMD students as well. Both departments are using Ultradent Ultra Seal XT plus. There has been no effort to discuss or change the college's current use of Ultradent's product.

GRU: Ultraseal XT – resin

MMC: **UltraSeal XT Plus** by Ultradent; **Aegis** Sealant by Bosworth

ECU: Ultra-seal XT. GC Fuji Triage

UKY: 3M/ESPE Clinpro Pit and Fissure Sealant Fluoride Releasing

VCU: HelioSeal F by Ivoclar Vivadent in the pre-doctoral clinics; UltraSeal XT by Ultradent in Pediatric Dentistry.

UNC: Resin-based sealant - Clinpro Sealant (3M-ESPE)

MUSC: Seal-Rite composite pit and fissure sealant.

UAB: UltraSeal XT Plus – Ultradent

UPR: Composite sealant: Clinpro – 3M ESPE

2. If glass ionomer products are used, are they used routinely or are they used under certain guidelines, e.g. partially erupted teeth, difficulty in isolation or in outreach clinics without the aid of suction?

NSU: Resin based sealants are the first choice of material, but glass ionomer materials may be used as an interim preventive agent when moisture control cannot be assured, such as with a newly erupted tooth…" CDA Journal Vol. 38 No 10, 2010

NSU: Resin Based Sealants: Glass Ionomer Sealants: GC America Triage^{R}

ULSD: N/A

UFCD: Glass ionomer sealants are not used.

GRU: Not used

MMC: (Yes) - Used in General Practice Program.

ECU: All 3 apply

UKY: Glassionomer sealants were introduced in the first year composite course but are not currently available for use on the clinic floor

VCU: We use glass ionomers:

- as cements: GC FujiCEM 2 Resin Modified Glass Ionomer Cement Automix
- as a liner/base: 3M ESPE Vitrebond Light Cure Glass Ionomer Liner
- in certain situations for Class Vs: GC Fuji II LC Light-Cured, Resin-Reinforced Restorative
- as an interim restoration (caries control, post-endo, etc.)

UNC: N/A

MUSC: They are only used in the pediatric department and not exclusively there.

UAB: GI products are used for restorative purposes but NOT as sealants

UPR: Long term temporary restorations were caries is left (indirect pulp cap).

3. What has been your experience with glass ionomer sealants?

NSU: Poor retention **ULSD:** N/A **MMC:** Favorable

UFCD: Not Applicable **GRU:** None

ECU: Positive

UKY: My experience is limited to demonstration of this type of sealant on extracted teeth for our students and use on a sealant trip with the First year Students to Eastern KY. I liked how it handled and there seemed to be fewer voids.

VCU: We do not use them. **UNC**: N/A

MUSC: They don't last as long.

UAB: None recently

UPR: N/A

B. Does your institution teach impression techniques using intraoral digital scanning devices?

GRU: Not in the pre-doctoral program, but it is used in the Orthodontic Residency

ULSD: Yes (Answers provided by prosthodontics)

MMC: Yes **ECU:** Not yet

UKY: No **VCU:** No

UNC: Currently we have discussion with some forward momentum to establish an adhoc committee for the purpose of identifying a way to begin implementation.

UAB: CEREC, E4D

UPR: No

1. If so, what brand(s) of intraoral impression scanners are being used?

NSU: Our primary impression scanner is the CEREC Blue CAM and Red CAM from Sirona. We plan to only have the Blue Cams by September 2013. We also have an E4D Scanner.

ULSD: We have 2 systems available for the DMD clinic: iTero and 3M LAVA COS One additional system for the graduate program, including grad pros and GPR: E4D (scanner and mill)

UFCD: Cerec AC and Itero acquisition units

MMC: CEREC **VCU:** N/A

MUSC: We utilize both E4D and CEREC with a heavy emphasis on E4D and the new NEVO scanner from E4D. We have a 6 operatory clinic with both a CEREC and E4D in each operatory and in the esthetic clinic we have an additional two E4D systems. Furthermore we have 6 e4d scanners in the simulation lab and 35 design stations.

2. How many scanners do you have? How are they funded or provided?

NSU: We presently have 5 Red CAMs, one Blue CAM and one E4D; we will be accepting 5 more Blue CAMs and trading out the Red CAMs for Blue CAMs with a contact currently being reviewed.

NSU: With respect to funding, the machines were acquired in various ways. The E4D is a loaner, with which in exchange for the use of the machine we agreed to do a certain number of research projects. One Blue CAM and MCXL Milling Machine was purchased by the school from the Prosthodontics Budget. The other machines were from the Gifting Program from Sirona.

ULSD: We have 1 iTero, 8 LAVA COS, 1 E4D scanner, and 1 E4D mill.
They are all provided by the company.

UFCD: We currently have two Cerec AC machines in our Aesthe-Tech Clinic with a plan to add four in our pre-doctoral student clinics (one per clinic). We also have one in the Graduate Prosthodontic Clinic, two in our Seminole AEGD Clinic, and two in our Hialeah Internationally Trained Dentists Program. We have an Itero unit in one of our four student clinics

MMC: 10 "How are they funded or provided?" Donated

VCU: N/A

UAB: CEREC (2) – owned by the school, E4D(1) – consignment from the vendor for school use.

MUSC: 14 E4D all being upgraded to NEVO in October purchased by the school, 7 CEREC blue cam systems with MCXL systems donated and CEREC with their gifting program and 1 Omnicam system with a MCXl mill Donated by Patterson. We also have a 3shape D800 scan

3. Do all students use the scanners for their patients?

NSU: Yes, the students do use scanners for their patients. There is one scanner in the predoctoral clinic at all times. Our protocol is for the student to complete two CAD/CAM restorations from casts made from PVS impressions and then the next CAD/CAM can be scanned in the mouth.

ULSD: It's an elective experience.
The students who are interested in digital impressions will make the request to the faculty. The clinical faculty will then evaluate the clinical situation to determine if it is indicated.

UFCD: We have a requirement for in the third and fourth year which mandates that they have minimal experience with the scanners. Some students take it upon themselves to get more experience than others. At this point, they are not used routinely yet. With the addition of the scanners to all of our student clinics each students experience will increase dramatically.

MMC: No **VCU:** N/A

MUSC: Yes many students graduate doing more single visit CAD/CAM than conventional restorations.

UAB: No because it depends on case selection

4. If scanning access is limited, how do you determine who gains access?

NSU: Our protocol at the present time is for D4 students, to be the ones to be performing the scanning if it is to be done in the clinic, since they are all trained. There is a signup sheet for each half day to scan casts, design and mill with a faculty member.

NSU: the entire D4 Class have had three full days of hands-on training with the scanning, designing and milling, so I anticipate that there will be more use of the scanners.

ULSD: All the students have access to the scanners; however, the faculty will need to evaluate the patients to approve the usage.
Generally speaking, we can accommodate no more that 2 digital impression procedures per half day clinic.
A reservation is required to book the appointment for digital impression.

UFCD: Our requirements dictate that they must use this technology at some point in each of their clinical education years. The third year requirement is to perform one Cerec restoration on a patient or assist on two cases and in their fourth year they must perform one Cerec restoration on a patient.

MMC: Only used within patients' specific treatment plans.

VCU: N/A

MUSC: Scanning is not limited

UNC: Access is granted via faculty who have received the full training for both systems. Appointments are made under the scheduled faculty coverage.

5. What has been your experience with intraoral digital scanning devices?

NSU: We have had excellent results with the intraoral scanning devices. We are only doing in-house milling at this point. We have not had the ability to send scans to the laboratory due to legal issues with going through our fire wall in the University. We have been attempting to get a dedicated secure line for at least two years.

NSU: We are tracking the remakes or redos on CAD/CAM restorations but I am unable to provide a percentage figure at this point. Since we are doing all of the milling ourselves, if we find an unacceptable margin on the cast, we just rescan the cast. My impression is that I do not believe the remake rate is any higher than that of our PFMs.

ULSD: It's a great education tool because it provides the students immediate feedback on the impression and the teeth preparation.

UFCD: Several operative faculty have worked with students on some level using CAD/CAM technology for approximately eight years now at UFCD and it has been a very positive experience.

MMC: (Positive) Digital Dentures-undecided.

UKY: None other than a CE course in 2006.

VCU: We have had some scanners in the school periodically, but they are not being routinely taught or utilized at present.

MUSC: Very positive and is the preferred way to make restorations. They get over 70hrs of preclinical instruction on it so they are ready before they get to the clinics. We have completed over 2000 single visit e.max restorations over the past 4 years and have had less than 5 failures.

UAB: Students are fast learners, some faculty feel more at ease than others using the devices; not enough cameras at times, it imposes on the faculty who may be covering several patient/students since it requires very close supervision.

C. Composite Resin

1. What are the limitations in your clinic for the placement of Class II composite restoration if any?

ULSD: Must have rubber dam isolation. Posterior teeth exhibiting moderate-to-severe wear due to attrition or parafunction habits are also not good candidates for posterior composite resins.

UFCD: Limitations include difficulty establishing an appropriate control of the field; high cries risk patients, and inexperience of the student-dentist.

GRU: Poor isolation, lack of enamel.

MMC: No capping of cusp tips; No Sub Gingival restorations; No Large Restorations

UKY: Our limitations are in the polishing materials available on the clinic floor based on uniformity, expense, and reluctance to change.

VCU: Possible limitations may include: operating site cannot be isolated from contamination by oral fluids, all of the occlusion is on the restorative material, restoration that extends onto the root surface. (Heymann H, Swift E, Ritter AV, eds. Sturdevant's Art and Science of Operative Dentistry. 6th ed. St. Louis: Mosby Elsevier; 2013.)

MUSC: The only real contraindication for placing a class II composite in our clinic is an inability to get proper isolation.

UAB: Consistent use of proper isolation and refusing its placement in deep preparations.

UPR: Lack of adequate isolation. The use of high intensity light curing unit to reach the gingival seat of the box.

What is your criterion for a Class II composite restoration placement?

NSU: There is no written policy but we do teach based on the best available evidence. We basically follow the below criterion from Summitt et al. *

1. The patient should not be allergic or sensitive to resin-based materials.
2. The patient should exhibit acceptable oral hygiene. Secondary caries is a significant cause of posterior composite failure.

3. Centric occlusal stops should be located primarily on tooth structure. Maintaining occlusal stops on enamel has been shown to promote low posterior resin composite wear.
4. The patient should not exhibit excessive wear from clenching or grinding. Posterior resin composite restorations have improved longevity when subjected to lower functional and nonfunctional stresses.
5. The tooth should be amenable to rubber dam isolation. Margins of Class 2 resin composite restorations placed without a rubber dam showed marginal leakage 4 to 6 weeks after placement.
6. Esthetics should be a prime consideration. Composites do not exhibit the same durability in posterior teeth as do other, less esthetic restorative materials such as amalgam and gold.
7. The faciolingual width of the cavity preparation should be restricted to no more than one third of the intercuspal distance to reduce occlusal forces and wear.
8. All cavosurface margins should be on enamel. Of particular importance is that the gingival cavosurface margin in Class 2 restorations should be located on intact enamel.

   The bond of adhesives to dentin degrades with time, placing an external cavosurface margin on dentin at increased risk for recurrent caries.

*(Summitt, James B. Fundamentals of Operative Dentistry: A Contemporary Approach, 3rd Edition. Quintessence Publishing (IL), 012006. p. 299).

ULSD: The literature supports the use of composite resin as an equivalent to amalgam in moderately sized Class 1 and Class 2 preparations. (Statement on posterior resin-based composites. ADA Council on Scientific Affairs; ADA Council on Dental Benefit Programs. J Am Dent Assoc 129(11):1627-1628, 1998).

UFCD: The most important requirement is appropriate rubber dam isolation.

GRU: None, if limitations not present; less common in 2nd molars

MMC: *****Small restorations
*No occlusal bearing areas

ECU: Impossibility of isolation, extensive (+ than one cusp) preparations

UKY: Size of lesion, proximity to dentin/cementum at gingival margin, patient caries rate, position of tooth in the arch, and patient preference would all be considered criterion for materials choice.

According to Summitt's 3rd ed., "as with PRRs Class 2 preparations should be limited to obtaining access to the carious dentin and removing the carious dentin and any overlying

UKY: fragile or demineralized enamel." To bevel or not to bevel: "Research has demonstrated that the beveling of facial and lingual proximal walls significantly reduces marginal leakage. The decision to place a gingival margin bevel requires clinical judgment.

When sufficient dentin supported enamel remains, resin composite adaptation is enhanced. Occlusal surface margins are avoided."

As for composite restoration placement:

a. Shade selection
b. Isolation Cavity preparation (245 or 256 bur: RILA)
c. Pre-wedge
d. Etch
e. Clean tooth and preparation with Consepsis (or other disinfectant)
f. Primer Optibond FL agitating for 30 secs, evaporate solvent 5 secs. without desiccating.
g. Adhesive applied to dentin and enamel, cure 30 secs
h. Place appropriate Matrix system
i. Place composite resin incrementally and light cure 30 secs
j. Remove matrix
k. Contour, finish and polish
l. Remove dental dam
m. Check occlusion and adjust as necessary

VCU: good oral hygiene, definite esthetic need, able to isolate with a rubber dam, margins on enamel.

UNC: Any adhesive dentistry is contra-indicated if isolation cannot be accomplished.

MUSC: We encourage the students to tell the patients the pros and cons of both amalgams and composites, especially concerning the difference in expected longevity of each restoration. If proper isolation is able to be obtained and the patient prefers composite, even knowing that it may not last as long as amalgam, then we allow the students to proceed with a composite restoration.

UAB: Proper case selection with caries risk assessment, enforcement of proper HY protocol, Bu-Li dimensions for proper resistance form.

UPR: The preparation is based on caries extension. Proximal contact development by pre-wedging and the use of pre-polymerized resin tag. The restoration is incrementally placed (3 mm layer).

2. What is taught for Class II composite restorations with gingival margins on dentin (apical to the CEJ); use of flowable or RMGI as an "open sandwich?"

NSU: We do teach the open sandwich technique using RMGI (Fuji 2 Restorative)

ULSD: Use RMGI (Fuji II LC) as initial layer. SADJ. 2011 Aug;66(7):320-4.
Cervical microleakage in Class II open-sandwich restorations: an in vitro study.
The open-sandwich technique significantly ($p<0.001$) reduced the microleakage otherwise seen in Filtek Z250 when margins were placed in dentine and thermocycled.

ULSD: European Cells and Materials Vol. 11. Suppl. 2, 2006 (page 23)
The microleakage in open-sandwich class II restorations.

Overall, the best adaptation at cervical and junction interfaces was obtained using the resin modified glass-ionomer - composite open-sandwich technique.

ULSD: Indian J Dent Res. 2009 Apr-Jun;20(2):159-63. doi: 10.4103/0970-9290.52891.
Influence of flowable materials on microleakage of nanofilled and hybrid Class II composite restorations with LED and QTH LCUs.
CONCLUSIONS: A layer of flowable materials at the gingival floor of Class II composite restorations may be recommended to improve the marginal seal of a restoration.

ULSD: Oper Dent. 2009 May-Jun;34(3):306-11. doi: 10.2341/08-91.
The effect of flowable materials on the microleakage of Class II composite restorations that extend apical to the cemento-enamel junction.

ULSD: Both flowable liners (Flowable Filtek Supreme XT and Dyract Flow) resulted in a significant reduction of the microleakage occurring under both types of composite materials at the gingival floors ($p < 0.05$), but there was no significant difference between them. The choice of light curing technology (LED vs QTH) had no significant effect on the amount of microleakage observed

UFCD: The open sandwich technique using glass ionomer has been taught for several years in our pre-clinic. This year we introduced the concept of deep margin elevation (Deep Margin Elevation article in Exhibits). We have done approximately ten of these in the clinic to date and are following up with these patients. The results have been excellent.

GRU: RMGI open sandwich

MMC: Fuji – Glass Ionomer Use of flowable or RMGI as an "open sandwich?" Used on cervical CSA and in the sandwich technique in conjunction with filled resins

ECU: Both, depends on isolation.

UKY: The bonded-base or "open sandwich technique" There is considerable in vitro evidence this results in a reduction of marginal leakage plus evidence of good antibacterial activity. (Summitt, 3rd Ed., p.309).

VCU: For restorations with adequate enamel, see answer above. For restorations apical to the CEJ, we do teach (in the pre-clinical lecture course) the use of glass ionomer in the bottom of the box "open sandwich". Whether or not this is done in clinic is up to the judgment of the Clinical Attending.

UNC: If using resins that are light cured only, light access to deep margins may represent a contra-indication. We do not have a formal consensus on the use of Flowable, vs RMGI, vs Comp Resin at the sub-G margin.

MUSC: We extensively use glass ionomer in these cases due to issues with moisture control and problems associated with bonding to cementum and dentin and the lack of durability therein. Using a flowable in these cases still requires an adhesive and meticulous moisture control, which can be difficult to guarantee in these types of cases.

UAB: RMGI on gingival portion of proximal bos - as open sandwich technique

UPR: The use of glass ionomer hybrid liner (base) such as vitrebond plus but margins are restored with composite. However, few faculty members prefer the sandwich technique using flowable resin (Filtex Flow- 3MM) or compomer (Dyract Flow- Dentsply)

3. Have esthetic inlays and onlays been increasing in frequency in your clinic? Do you see these increasing in the future as esthetic alternatives to large amalgam restorations instead of direct resin composite?

NSU: We are seeing an increase in the frequency of the onlay for an accepted restoration by patients instead of direct composite restorations. Since the D4 students are all trained in this technology, they will more than likely drive the treatment offered to the patients as an alternative. So I believe we will be seeing an ever increasing use of CAD/CAM onlays offered and accepted as treatment for amalgam replacements. We believe that the inlays are still being restored with direct composite more frequently.

NSU: The philosophy of the Sections of Prosthodontics and Restorative Dentistry and Cariology is conservative, minimally invasive dentistry. I believe that this type of restoration is more conservative than a crown restoration and provides a better alternative to very large direct composite restorations.

ULSD: We place very few ceramic/resin inlays or onlays.

UFCD: Yes, the number of esthetic inlays has definitely increased over the last several years. This is due to patients demanding esthetic alternatives but also due to our Aesthe-tech Clinic and the use of the Cerec system.

GRU: Yes Do you see these increasing in the future as esthetic alternatives to large amalgam restorations instead of direct resin composite? Yes

MMC: Yes **ECU:** Yes and yes

UKY: No, they have not. Do you see these increasing in the future as esthetic alternatives to large amalgam restorations instead of direct resin composite? No, I would be in favor of an increase in milled and /or pressed ceramic restorations of all types as I found them to be esthetic and well received in my Practice.

VCU: I do not think so. Do you see these increasing in the future as esthetic alternatives to large amalgam restorations instead of direct resin composite? Possibly.

UNC: These have not been used with increasing frequency, primarily to the limited long-term clinical trials and the quality of the studies that we do have.
Boushell LW, Ritter AV. Ceramic Inlays: A case presentation and lessons learned from the literature. J Esthet Restor Dent 2009; 21:77-87.

MUSC: Yes inlays and in particular, onlays, are commonly done but only due to our widespread implementation of CAD/CAM technology at MUSC. Sometimes, the difference in cost between a direct and indirect restoration can be a big deterrent for

patients, particularly the patient populations that seek treatment in dental institutions. These restorations are ideal for those patients who can afford them. However, realistically, there will always be a place for direct restorations as long as the price of indirect restorations remains significantly higher than indirect.

UAB: (YES) Do you see these increasing in the future as esthetic alternatives to large amalgam restorations instead of direct resin composite?(YES)

UPR: Not necessary. It is nice to have indirect restorations but too expensive when compare to amalgam.

4. How many resin composite systems and bonding systems are available in your clinic? What bonding systems are being used? If there are multiple systems, are all systems taught in the pre-clinic courses also?

NSU: We presently use Kerr: Optibond-Fl as the adhesive system and ESPE/3M Filtek Supreme Plus Kerr: Premise as the composite systems. Only the FilteK Supreme Plus is used in the preclinical course.

ULSD: One each…"What bonding systems are being used?" One composite – EsthetX HD and one adhesive – XP-Bond.

UFCD: We have one system. We use Optibond FL. The students receive an excellent lecture on the history of bonding systems and a very thorough review of all of the systems available and how they are used.

GRU: One system, Premise/Optibond FL – Kerr

MMC: (One) what bonding systems are being used? (Prime Bond) If there are multiple systems, are all systems taught in the pre-clinic courses also? (Yes) (SureFil)

ECU: (1) what bonding systems are being used? All Bond 3

UKY: Filtek Supreme Ultra. Geristore by Denmat and also Dyract by DENTSPLY are RMGI systems. What bonding systems are being used? Bonding systems: Kerr Optibond Primer and Adhesive, fourth generation bonding systems. If there are multiple systems, are all systems taught in the pre-clinic courses also? We introduce other generations and brands of bonding systems in the didactic course but these are not available on the clinic floor.

VCU: We have 3M Etchant and Optibond Solo Plus for our bonding system, plus BondLink to add to our bonding sequence when doing composite core build-ups with a dual-cured material such as CompCore or Ti-Core. We have 3M ESPE Filtek Z250 Universal Restorative, Dentsply Esthet•X HD micro-matrix (microhybrid) restorative, and Kerr Revolution Formula 2 flowable, light-cure, hybrid resin restorative. All of the above mentioned materials are taught in the pre-clinic course and available in the clinic too. AEGD has SureFil SDR flow available to them, which is mentioned in pre-clinic lecture, but is not taught in the pre-clinic lab, nor is it available in the pre-doctoral clinics.

UNC: Nano-fil and Nano hybrid. Total Etch - 1 Bottle ethanol based primer/adhesive. Taught pre-clinical and used clinical.

MUSC: We currently have one bonding system and two different brands of composite – one designated for esthetic areas, the other to be placed everywhere else.
What bonding systems are being used? Optibond XTR is the only bonding system used and taught to our pre-doctoral students.

UAB: Z-100 and Esthet-X, If there are multiple systems, are all systems taught in the pre-clinic courses also? YES.

UPR: At least 3 systems: Ceramex – Prime & Bond (Dentsply); TPH 3 - Prime & Bond (Dentsply); Filtex Supreme Ultra – Single Bond Plus (3M)

What bonding systems are being used? See back

If there are multiple systems, are all systems taught in the pre-clinic courses also? Yes.

5. What type of matric systems are used for Class II posterior composites? How are these systems dispensed in your clinic?

NSU: The clinic is presently using the Garrison Matrix System and the D3 and D4 students have that system in their kits. The D2 and D1 students are using the Triodent System and the clinics will be changing to that system next year. The clinic supplies the rings and the bands for patient care.

ULSD: Regular Tofflemire or sectional. How are these systems dispensed in your clinic? Autoclaved and available from dispensary

UFCD: We are using the Garrison 3D Composi-Tight system. The rings and forceps are distributed with the rubber dam tray from sterilization. The wedges and segmental matrices are available in each clinic's supply room.

GRU: Tofflemire retainer in every kit use HO matrix bands; V-3 / Triodent, checked out when needed

MMC: (Garrison Ring, Tofflemire Ring) How are these systems dispensed in your clinic? Student will secure desired matrix for the dispensary

ECU: Palodent, how are these systems dispensed in your clinic? Composite tub

UKY: The Matrices include: Composi-tight sectional Matrices, by Garrison, Caulk Auto Matrix, (and the highly disregarded by the composite faculty) Toffelmire Matrix. These systems are signed for and delivered at the Dispensary window.

VCU: We use both the regular TrioDent system (yellow and green rings) as well as the blue disposable rings. We also use the Palodent matrix system (bitine rings). Both systems are taught and used in the pre-clinic courses, as well as in the pre-doctoral clinic.

UNC: Sectional matrix system (V3 or Palodent Plus), Convexi-T system, Students check out the system they plan to use from the dispensary.

MUSC: We use the Triodent V3/Palodent Plus system and these are dispensed as needed in the clinic once the preparation has been completed.

UAB: Standard Universal SS (0.001 in thick) band; sectional matrix system (Garrison and Palodent). How are these systems dispensed in your clinic? The rings are dispensed via student kits

UPR: Metal bands and they are dispensed at the time of use. Other systems are mentioned but not available at the Clinic.

6. How do you prevent voids in composite restorations? Are you heating the composite to provide better flow?

NSU: Very good question! At this time it is a problem and we are investigating solutions. We do not heat the composite.

ULSD: No special protocols. Not heating the composite.
Dent Mater. 2011 Apr; 27(4):e51-9.
Pre-warming of dental composites. Microleakage studies showed that pre-warming had no significant bearing on the results

UFCD: We do not heat the composite. We are currently teaching the placement of SureFil SDR from Dentsply in the proximal boxes to raise the gingival wall to the level of the pulpal wall. Once this is accomplished the students place 3M's Z250 incrementally to complete the restoration.

GRU: Thin increments, about 2 mm, for both curing and adaptation are you heating the composite to provide better flow? No

MMC: Layered with good Condensation. Are you heating the composite to provide better flow? NO

ECU: Incremental placement Are you heating the composite to provide better flow? NO

UKY: The students are taught incremental placement with blade type instrumentation and to avoid 'punching holes in the composite with condensers as though it were amalgam. We do not heat composite despite some research supporting the increased flow and increased Vickers micro-hardness purported by these studies. They are made aware of these studies and encouraged to pursue evidence based Dentistry.

VCU: 1st increment of flowable in the bottom of a class II box (see the following description), adequate and careful placement/condensing of composite before curing, etc.

- Place a small amount of flowable into the bottom of the box.
- Take a clean explorer or perio probe and run tip through the material, making sure it has flowed into all of the corners of the box, eliminating any air bubbles. Do NOT fill the box up to the contact area with flowable! Do NOT cure!

- Place the first increment of hybrid composite into the box and condense into place using the small end of the condenser. Doing this helps to further push the flowable into all of the areas of the bottom of the box, providing for a restoration that is well-adapted to the margins, preventing or reducing microleakage. The 1st increment especially in the bottom of the box and prep floor should be <1mm for reduced shrinkage bond stress on VLC.
- Light cure this initial increment for 40 seconds.
- Place additional composite incrementally <~ 2 mm with adequate pressure to force it into all corners walls, floor and boxes. The restoration can be built up with buccal-lingual increments diagonalized apically-occlusally, reducing bond stress in class I and II preps.

UNC: Lubrication of composite placement instruments with adhesive, proper placement technique.

MUSC: We are using Surefil SDR as a base material in all posterior composites with strict instructions to leave 1-1.5 mm of inter-occlusal space in which to place a hybrid composite to "cap" the flowable material. We do not heat composite.

UAB: Multi layer placement. Are you heating the composite to provide better flow? No

UPR: By avoiding too much handling of the material. Are you heating the composite to provide better flow? No, but few faculty do it.

7. If known, what is the secondary caries rate of composite versus amalgam restorations?

NSU: Do not have that data. **ULSD:** Not known

UFCD: Only a few articles deal with secondary caries rate in resin composite or amalgam. Although controversy does exist, the majority of the clinical trials point to higher presence of caries lesions adjacent to composite resins than amalgams. However, it is important to mention that the presence of an active or arrested lesion adjacent to a restoration does not mean failure of the material, but rather failure of the material handling or to implement an effective management of the caries process.

GRU: Same, although amalgams usually placed in more adverse locations

UKY: I have been unable to unearth that data from anyone in control of such information. There is the JADA study of 2007 showing that Amalgam had around 10-12 % recurring caries while Composites were in the 15-20% range after 5 years. There is no Axium data available for UKCD. I would have to add anecdotal comment to this. In 29 years of private practice I observed very little recurrent decay of either unless the condition of the patients' health changed i.e. diabetes, dry mouth from meds, Sjogren's, etc. or they were non-compliant in their home care.

VCU: Not known.

UNC: Unknown, though we are shifting to a new EPR which should allow us to track this (assuming correct diagnosis and data entry!)

MUSC: I do not know our specific rate here at MUSC.

UAB: We do not have data for our clinics.

UPR: JADA (2007) Jun 138:775 with comments in J Evid Based Dent Pract. (2008) June 8:83 suggest that the risk of secondary caries is over 3 times greater for posterior composite than for amalgam restorations. Another study suggest that resins restorations fail due to secondary caries and bulk fracture while amalgam and glass ionomer fail due to bulk fracture (J Dent 1993, 21:338).

D. **Pins in Restorative Dentistry**

1. Does your school teach the use of pins in the pre-clinical curriculum?

NSU: We teach the use of pins in the preclinical course through lectures only. We no longer have hands on lab.

ULSD: Yes

UFCD: We give the students the information in their reading assignments and introduce them to pins in a lecture. We stopped placing pins in the preclinic this year.

GRU: Yes **MMC:** Yes

ECU: Yes **UKY:** Yes **VCU:** Yes

UNC: Yes, Pins and Slots depending on the amount of loss of vertical wall height.

MUSC: Absolutely; the students receive extensive training in Operative I (sophomore year).

UPR: Yes. Stabilok-

2. Do your students use pins in the clinic?

NSU: No

ULSD: Yes, but use is declining.

UFCD: We use pins occasionally in the clinic

GRU: Yes **MMC:** Yes

ECU: Yes **UKY:** Yes

VCU: Yes, but probably not that often. **UNC:** Yes

MUSC: Yes, practically every student gains clinical experience using pins with amalgam, many also get experience using them with composite resin/core buildup material.

UPR: Yes

3. Which pin system(s) are used?

ULSD: Whaledent Minim pins are standard.

UFCD: TMS pins

GRU: TMS Link Plus, Ti alloy in Minim size, TMS Link, Stainless Steel in Minikin size

MMC: Stabilok Titanium Pins by Fairfax Dental

ECU: Self-threading

UKY: Stabilok, Fairfax Dental, Inc.

VCU: TMS Pin System (Coltene/Whaledent Inc.), Minim Self shearing. Many use amalgapins in lieu of TMS pins.

UNC: Whaledent TMS, Minikin, Minim

MUSC: Whaledent TMS and Bondent. The TMS Minum (0.024) is the workhorse pin; Bondent pins are used occasionally.

UAB: Max Pin – Whaledent

UPR: Stabilok- Fairfax Dental

4. If used, are pins limited to amalgam restorations?
ULSD: Yes

UFCD: The Division of Operative Dentistry limits the use of pins to amalgam restorations.

GRU: No **MMC:** (No) – Composite

ECU: By concept yes; Older faculty still uses for composite sometimes.

UKY: Yes, Editorial comment: "I do not recommend pins."

VCU: Not necessarily, although this is probably where they are utilized most often.

UNC: Usually limited to complex amalgams.

MUSC: No TMS and Bondent pins are used with amalgam, composite resin and core build-up materials.

UAB: No. they can be used under composite foundations based on case selection.

UPR: No, also with composite core built up.

E. **Posts in Restorative Dentistry**

1. What is utilized in clinics? Prefab, cast, fiber

NSU: Prefab, cast, fiber. We use cast post and cores for anterior teeth and single rooted premolars that have ½ or more of the tooth missing with endodontic treatment or anterior teeth/premolars that have a significant amount of tooth structure missing that will serve as abutments for FPDs or RPDs.

NSU: We use fiber posts to retain the core if there is half or more of the tooth missing from premolars and molars/more than one rooted endodontically treated tooth.

ULSD: Prefab and fiber

UFCD: All three types of posts are utilized in our clinics.

GRU: Prefab >90% of cases, cast posts 10%, no Fiber posts used.

MMC: Prefab, cast, fiber (In General Practice Clinic)

ECU: ALL

UKY: All three types of posts are utilized in treatment of selected teeth.

VCU: Cast gold and Pre-fab (PARAPOST XP Stainless Steel Post). We do not use fiber posts.

MUSC: We use a prefab post called the DT Lightpost (Bisco)

UNC: Preference is for adhesively retained fiberposts with primary focus on retaining as much dentin as possible during RCT and Post space preparation. The goal is to allow for flexure to normal root. Creation of a 1-2 mm ferrule beyond the core material onto dentin is considered absolutely necessary. What is utilized in clinics? Prefab, cast, fiber We use the Parapost Fiber Lux and Taper Lux

UAB: D-T Post by Bisco. We have discontinued the use of cast posts.

UPR: Post may not be needed if the remaining tooth structure is sound.

2. What criteria are used to determine the need for a post?

NSU: See above. Half or more of tooth structure missing, heavy occlusal forces from bruxer, FPD, RPD. All posterior ETT need a crown, but only those that have a significant amount of tooth structure missing without internal retention need a post. Anterior teeth only need a post to retain the core.

ULSD: Badly broken down tooth with no other means of retention.

UFCD: The Division of Operative Dentistry is only responsible for teaching the fiber posts in the clinic. The criteria are greater than 50% coronal tooth loss and a minimum of a 2mm ferrule available.

GRU: Can't retain core any other way **MMC:** Remaining Toots Structure

ECU: Amount of structure left to retain core / ferrule

UKY: a. The ability to create a ferrule effect is considered key in the decision to do Endo/post and core or extract with site preservation and an implant placement.
b. The amount of remaining crown structure or if there is enough root to super erupt to create the ferrule effect is also considered.

VCU: Post and cores are taught more in the prosthodontics department. Therefore, the following are general guidelines:

- Indication for a post – only to retain a core.
- Posts are rarely used in molars. Can use amalgam in canals if needed. Usually if the pulp chamber is less than 4mm in height additional retention is needed.
- We do not do cast post and cores on molar teeth. Molar teeth receive pre-fab post and cores or chamber-retained core build-ups on endo-treated molars. We do cast post and cores on premolars.

MUSC: Two or more solid walls remaining after the crown preparation is completed = no post needed

UAB: The amount of remaining natural tooth structure; use of bridge abutment

3. What criteria are used in the selection of post types?

NSU: See above

ULSD: Fiber post for composite core restorations; metal post for amalgam core restorations

ULSD: Braz Dent J. 2012;23(2):135-740.
Longitudinal clinical evaluation of post systems: a literature review.
A ferrule must be present for safe indication of the fiber posts. Fiber glass posts have demonstrated good survival in clinical studies, with similar performance to cast-post-and cores. Metallic posts have good clinical survival, but the associated failures are mostly irreversible, unlike what happens with the glass fiber posts.

UFCD: In operative we only deal with fiber posts and the only essential criteria that guide us toward a fiber post is use in esthetic situations where a full ceramic crown will be used.

GRU: Parapost for relatively narrow small to medium sizes canals; Cast post in large canals that have large flare near orifice.

MMC: Anterior and Posterior

ECU: Same as above

UKY: Position of tooth in the arch, remaining crown structure, size of the root canals, and type of definitive restoration should all be considered in post selection.

VCU:

- Cast post and cores are reserved for the restoration of endodontically teeth with the most extensive tooth loss.
- Prefabricated post and cores are utilized with endodontically treated teeth that have more coronal tooth structure remaining.
- Anterior teeth Cast Post and Core indications:
- Extensively damaged
- Large mesial and distal restorations
- Loss of or undermined incisal edge
- Tooth will serve as a FPD or RPD abutment
- Large, tapered canal space which will not allow a prefab post restoration
- Prefabricate posts fit well in circular canals, but many canals are oblong in cross section and therefore a custom post may be more beneficial. Ferrule is the most important factor, than post type or restorative material.

MUSC: We use the DT Lightpost because it is double tapered, thus, a moreconservative post space can be prepared. We use a fiber post as many literature articles suggests this post has the least amount of failures due to its modulus of elasticity being similar to dentin.

UAB: Only one type is used in the undergraduate clinic

UPR: Horizontal cracks, in canine when canine rise the occlusion, bruxism, when half of the crown is missing.

4. Which systems are available at your school?

NSU: The Fiber post system is the K post by Kerr.
ULSD: Whaledent ParaPost; RelyX

UFCD: ParaPost Taper Lux with ParaCore (Coltene/Whaledent), cast posts, and titanium ParaPosts

GRU: SS Paraposts

MMC: Cast Post and Pre-Fab Post

UKY: All three systems are available

VCU: See answer to questions E.1. above.

MUSC: Prefabricated (DT Lightpost)

UAB: D-T Post by Bisco

UPR: V'Block –Brasseler; ParaPost – Coltene-Whaledent; Flexi-Post-EDS

III. CURRICULUM

A. When is your first clinical experience in Restorative Dentistry scheduled?

NSU: D3 year when students are assigned patients for comprehensive care

ULSD: Summer of D3

UFCD: The first clinical experience occurs in the second year. The students are required to assist in the clinics and perform certain procedures such as finishing and polishing a composite restoration. Students are assigned their own patients for the first time at the beginning of their third year after taking National Board I.

GRU: January Soph yr **MMC:** 2nd Year Students

ECU: 3rd year for the current class. 2nd year ideally

UKY: First semester of second year is their first Patient experience.

VCU: D1 year, spring semester, depending on patient availability. Students can administer anesthesia and assist.

UNC: Fall 2nd year.

MUSC: We have a two day Pre-clinical Competency exam during May-Semester and the students (now rising juniors) begin in the restorative clinic in early June**.**

UAB: Spring semester of D2 - as operator, Spring semester of D1 - as assistant

UPR: First clinical experience is at the junior year. However, rubber dam placement between students occurs at the sophomore year.

1. Where do the patients come from?

NSU: The patients at NSU-CDM are screened first by faculty to determine if they are appropriate for the predoctoral student. They are then assigned to students through their Patient Care Coordinator.

ULSD: Normal patient pool

UFCD: Our patients drive from up to three hours away. Most are referrals from other patients. Many are retired and have the time to spend with us. Many come to our clinics seeking free dental care which we do not provide.

GRU: Clinic population; senior student referrals

MMC: Tennessee, Kentucky, Alabama and Surrounding Area

ECU: Reg. patients

UKY: Patients come from screening clinics held once in the morning and once in the afternoon.

VCU: Regularly scheduled patients in the third and fourth year dental students' practices.

UNC: Local areas via central screening, patients in the hygiene program and urgent care

MUSC: The school-wide patient pool there is an attempt to pair new juniors with an "easier" first patient but that is not always possible. The complexity of patients coming to the dental school has been increasing in recent years.

UAB: From current D3 or D4 students

UPR: Most of them from the community.

2. Do they stay with the student?

NSU: Yes. All predoctoral patients are assigned to students for comprehensive care.

ULSD: Yes

UFCD: Yes, our goal is for the patient to stay with the assigned student. Unfortunately, due to requirements sometimes patients get moved around more than we would like. Our plan is to move toward a case completion requirement versus numbers requirements. The actual numbers would be less visible to the students and much more visible to those assigning patients.

GRU: Usually not **MMC:** Yes **ECU:** Yes

UKY: The patients are assigned to students by their Team Leaders. In theory they do remain with that student for comprehensive care.

VCU: Not with the D1 students, but we do try to keep the D3/D4 students with the same patients until graduation.

UNC: Primarily comprehensive care, some limited care. School wide movement to vertical group practice where DDS2/DDS3/DDS4 students care for a group of patients

and procedures are assigned to student based on procedural difficulty and student development.

MUSC: Yes, they are all "comp-care" patients and stay with that student until completed.

UAB: Usually not, because the D2 have limited number of rotations in Comp Care

UPR: Yes, most of the patients receive comprehensive treatment depending on their needs.

3. What is the staffing ratio?

NSU: 1 faculty for every 5 students

ULSD: Very few assistants for four-handed dentistry…most are now floor managers, schedulers, etc in the comprehensive clinics

UFCD: We currently have two dental assistants and two patient coordinators in each clinic. We have approximately 40 students in each clinic with almost half out on rotations each day.

GRU: Student/faculty = 4 to 1 **MMC:** 5 student/instructor

ECU: 1 to 6

UKY: The student to staff ratio is eight to one.

VCU: The D1 student usually has a D3 or D4 student helping supervise him or her with the procedure.

UNC: DXT 1-3, OPER up to 1-8

MUSC: We strive for 1:6 but with increasing class size that is slipping toward 1:8 at times.

UAB: Same as for D3 and D4, because they are paired with an upper classman.

UPR: Seniors: 5 modules of 12 students each, two faculties per Module and two dental assistant. Juniors are divided in 4 modules of 10 students each, 1 faculty per module and 3 rubbing dental assistants.

4. Any problems or recommendations?

NSU: We are working towards case completions based on complexity.

UFCD: We have a shortage of patients. We plan to begin marketing to draw more patients to our student clinics.

GRU: Has been well received by students and considered an excellent bridge between Freshman-year preclinical course and junior clinic.

MMC: Yes, shortage of faculty

UKY: To more adequately match student needs with patient needs we are instituting the use of the Patient Assignment Module in Axium. As clinical faculty I feel that second year student/faculty ratio needs to be flexible due to inexperience of students.

VCU: More patient availability would be great to allow for more student experience; ensuring the most appropriate case for the student to assist that will be the best learning experience.

MUSC: Rarely; this year there were no clinical problems. But with the greater class sizes there were a larger number that received an incomplete because they hadn't completed at least three operative treatments.

UAB: This has worked out well for them and for us.

B. Do you have a clinical course in Operative Dentistry in the Junior or Senior year?

NSU: At the present time NSU-CDM has a "boot camp" review operative course for 1 week prior to entering clinic. Clinical Restorative Dentistry CDM 3500 (D-3) and CDM 4500 (D-4)

ULSD: Yes, in the D3 summer there is a review course for placing large restorations. This is done in the simulation clinic.

UFCD: Yes, we have three clinical courses in Operative Dentistry in both the junior and senior years (a total of six).

GRU: Junior- Operative is part of a general restorative course

MMC: Yes

ECU: NO

UKY: Yes, 831 Operative and 841Operative review and Fixed Prosthodontics

VCU: Junior year: Yes, Senior year: No

UNC: Unsure what the question is referring to. DDS3 students participate in a simulation lab based course called Advanced Operative Dentistry.

MUSC: Yes, each semester there is a clinical Operative course.

UAB: Yes, both years. Grades are assigned for both courses at the end of the academic year. Progress is assessed continuously during the year.

1. How do you assign grades?

NSU: Semester grades will be determined by successful completion of a variety of clinical daily experiences (Pass/Fail grades), Independent Preclinical and Clinical Performance Assessments (IPPAs and ICPAs) and an Objective Structured Clinical Examination (OSCE).

NSU: Competence will be assessed by daily clinical evaluation grades (and mandatory attendance), 2 IPPAs, 4 ICPAs and 1 Treatment Planning OSCE. Student self assessment will be part of all procedures as will be faculty evaluation of management skills, professionalism and the level of agreement in the student and faculty evaluations.
NSU: D2 Summer Semester and Fall Semester grades will be PR (Progress) or NPR (No Progress). D3 Winter Semester grade will be numerical.

Numerical grades will be calculated in the following manner:
Average grade of IPPAs, ICPAs and an OSCE: 100% (weighted equally)

*Daily Clinical Evaluations (DCE's) will be pass/fail grades. (DCE's are graded pass/fail, but the numerical grade achieved on every daily restorative procedure is recorded.) Independent Preclinical and Clinical Performance Exams will be graded on a scale of 55-100.
NSU: There is a point system affecting the numerical grade for level of agreement in the student and faculty evaluations. (Self-assessment is included in DCE's, IPPA's and ICPA's)

- Five points will be added to every IPPA and ICPA grade where student and faculty have a high level of agreement in their evaluations,
- Five points will be deducted from every IPPA and ICPA grade where there is a lack of agreement in their evaluations and
- No points will be added or deducted where there is minimal agreement in the evaluations.

NSU: There is a negative point system for failed Daily Clinical Evaluations and for IPPA's and ICPA's not completed by deadline.

- Two points will be deducted from the final course grade for every failed Daily Clinical Evaluation.
- Five points will be deducted from the final course grade for each IPPA and ICPA not completed by deadline.

NSU: There is a positive point system for grades of "high pass" on Daily Clinical Evaluations".

- For every "high pass" (grade of 96 or higher) achieved on a daily clinical evaluation, one point will be added to the student's final course grade, with a maximum of 10 points being added to the grade.
- Only students who have completed all IPPA's and ICPA's by deadline will be eligible for the positive point system regarding "high pass" grades.

ULSD: No grades

UFCD: Grades are based on 50% quality and 50% quantity. Quality grades are calculated on daily clinical assessments and quantity grades are based on the number of RVUs accumulated. Six skills assessments are required before the end of both the junior and senior years (twelve total). This only affects the grade if they are not all completed. (Please see additional Operative Course Syllabus Overview in Exhibits)

GRU: 30% competency scores, 25% Operative points (RVU) 25% Indirect restoration units, and 20% faculty subjective evaluations

MMC: Through the use of the Axium System

ECU: Based on performance and professionalism criteria

UKY: Daily "Objective" grading sheets turned into 831 and 841 Course Directors from clinical faculty.

VCU: For the Clinical Junior Year Operative Course, grades are an average of
1.) Clinical Activity
2.) Mini Mock Board
3.) Patient Competencies
4.) Case Documentations
5.) Written Exam
6.) Professional Conduct. Additionally, faculty complete Subjective Evaluations periodically, and Final Subjective Evaluations must be Satisfactory

UNC: Assessment forms with written criteria

MUSC: Yes, although those grades have become inflated.

UAB: Based on productivity points, expected procedure grades, competencies and the average of faculty assessment.

UPR: Daily, competency exams

2. Do you have Skills Assessments? Are they photographed?

NSU: Students' technical skills are assessed as part of the daily grades, IPPAs and ICPAs. Are they photographed? They are not photographed.

ULSD: Checked off by faculty. Are they photographed? No

UFCD: Yes we have six skills assessments in each of the junior and senior years. They are not typically photographed due to time constraints.

GRU: Yes- Class II, III, and V Are they photographed? No

MMC: (Yes) Are they photographed? Occasionally

ECU: YES, Are they photographed? Sometimes

UKY: Clinical skills assessments in Course 831which has two bench top skills assessments and three clinical requirements for assessment. There are two bench top Competency requirements in the 841 Course plus the mock board exam to contribute to these grades. Are they photographed? No

VCU: Yes, typodont and clinical competencies. Are they photographed? No.

UNC: Yes (competencies) but not routinely photographed.

MUSC: We have a two day Technical Assessment at the end of the Fall and Spring semesters. They are not routinely photographed though I usually photograph the best and worst for lecture use.

UAB: No

UPR: Yes and a faculty member photograph them for feedback, faculty calibration and portfolio.

3. Are you evaluating portfolios?

NSU: No **ULSD:** No

UFCD: We are not evaluating portfolios yet.

GRU: Only for the Senior Comp Care cases

MMC: No

UKY: We are currently working on a portfolio assessment for clinical procedures.

VCU: Yes, during the fall semester.

UNC: No, though there is current discussion on the use of student portfolios.

MUSC: No

UAB: They are mandatory for graduation. D1: P/F; D2: P/F; D3: P/F; D4: numerical grade.

UPR: Yes

4. Do you have points or procedures requirements?

NSU: We do not have requirements but recommended benchmarks, in relative value units based on complexity, of procedures are suggested.

ULSD: No points. Minimal suggested experiences and competency exams. Patients are supposed to be treated comprehensively.

UFCD: Yes, we call these RVUs.

GRU: Points for Operative, Procedures for fixed

MMC: Yes

ECU: Procedures that generate points

UKY: Traditionally third year students have a minimum requirement of thirty operative experiences before they can advance to 841. At this point I have received no written or verbal information as to what the exact Fourth year requirements may be or how they are tracked clinically.

VCU: A combination of both: They do have "requirements" (expectations) and competencies the D3 year, but they calculate a "production" amount the D4 year based on a point system, mimicking private practice (assigning a dollar amount to procedures; additionally, what they earn in the 3rd year is carried over into the 4th year); the D4 year also has some requirements. The D3 year requires 300 points total to pass the class with a "C". Each surface = 1 point, and the grade is given at the end of the D3 year after the spring semester.

UNC: Yes

MUSC: Actually, we require a certain number of hours of "operative experience". Class I – 1 hour, Class II – 2 hours, complex Class II, 3 hours, etc. All our clinical departments operate this way. The Operative "requirement" to graduate has been about 200 hours but that is slowly rising.

UAB: Both

UPR: Requirements.

C. How many contact time hours are dedicated to pre-clinical dentistry (lecture, lab, amalgam, composite, single unit restorations)?

NSU:	D1 Fall Semester	Lecture: 8 hours	Lab: 25 hours
	D1 Winter Semester	Lecture: 32 hours	Lab: 69 hours
	D1 Summer Semester	Lecture: 4hours	Lab: 40 hours

ULSD: Operative – 188 hours; Intro to Indirect Restorations – 128 hours

UFCD: We have approximately 445 preclinical contact hours for dental anatomy, operative dentistry I, II, and III and single crowns. (The Division of Prosthodontics teaches single unit crowns in pre-clinic.)

GRU: (lecture, 40 hr. lab 120 hr, including exams, practicals; amalgam, composite, single unit restorations taught by pros)?

MMC: 340 Hrs

UKY:
Amalgam: Lectures are 34contact hours and Labs are 62 contact hours.
Composite: Lectures are 16 contact hours and Labs are 36 contact hours.
These numbers do not count Midterm and final exams or skills assessments.
Single unit restorations: Lectures are 21 hours of contact time and Labs are 48 contact hours.

VCU: Lecture: 213, Lab: 782

UNC:

- Lecture 30 hrs
- Lab 114 hrs
- Amalgam 47 hrs
- Composite 42 hrs

MUSC: Operative:

- Amalgam: 24 hrs lecture, 48 hrs lab (sophomores also take Dr. Featherstone's CAMBRA MOOC as part of this, outside of class time)
- Composite: 26 hrs lecture, 52 hrs lab
- PreClinical Occlusion- 14 hrs.lecture, 42 hrs lab
- Fixed Pros I: Lecture: 12 hours Lab: 27 hours
- Fixed Pros II- 16 hrs. lecture, 48 hrs lab
- Fixed Pros III: 15 hours lecture 45 hours lab (cad/cam ceramics)
- Fixed Pros IV: Lecture: 4 hours Lab: 3 hours

UAB:

EXERCISE	LAB HOURS	LECTURE HOURS	PRACTICAL EXAM HOURS
INLAY ONLAY #12, #19 CAD CAM	**20**	**3**	
COMPLETE CAST RESTORATION #30	**20**	**1**	**4**
PFM PREPARATION #6	**20**	**1**	
PFM PREPARATION #12		**1**	**4**
ALL CERAMIC # 8	**8**	**1**	

UAB: D2 Pre Clinic

	Lecture	Lab
D1 Preclinic Operative(does not include single crowns or CAD/CAM)	80	144

AMALGAM	20	70
COMPOSITE	14	65

UPR: 250 hours

D. Do you have enough faculty? (If not, why)

NSU: Providing faculty coverage for both the newly developed IRDS course and clinic is challenging, since several content experts and pre-clinical laboratory faculty in the IRDS course are also team leaders and/or clinical faculty.

ULSD: Yes

GRU: No, recent increases in class size from 60 to 80

MMC: No **UKY:** No (If not, why) Money

VCU: Usually we have enough.

UNC: No, there is not adequate interest/concern that translated into funding.

MUSC: No, faculty cost money**.**

UPR: Faculty members on administrative positions

1. In your pre-clinical lab courses, what is the student/faculty ratio?

NSU: 1: 8

ULSD: 13:1

UFCD: In the past year our ratio has been 14:1. This semester we have made some changes to decrease the ratio to 10:1.

GRU: 10/1

MMC: 5/1

ECU: 1-10

UKY: Officially, 6:1.

VCU: It varies, depending on the semester, the number of part-time faculty available, etc. It can be anywhere from sometimes more than 1:15 or 1:11.

UNC: 1 to 10 (if graduate students and DDS4 teaching assistants are counted), 1- 20 if consider only full time faculty….unacceptable!

MUSC: 1:18 to 1:23 we now have to use student teaching assistants to the detriment of the weaker students. On the plus side, our TA's gain extensive experience and some of them have gone on to become full-time faculty members.

UAB: 20:1

UPR: 8/1

2. In your clinics, what is the student/faculty ratio?

NSU: 1:5

ULSD: 6:1

UFCD: We have comprehensive care clinics with no limit on the number of specific procedures that can be scheduled. As a result, some days the ratio is 2:1 and other days it is 12:1.

GRU: 6/1

MMC: 5/1

ECU: 1- 6

UKY: Officially, 8:1.

VCU: This varies as well, also depending on the semester, the number of part-time faculty available, etc. It is usually 1:6, but can be up to 1:8 or 9 if needed.

UNC: 1 to 8

MUSC: Historically, 1:6 but now it is moving toward 1:8 at least on certain days. This is the second year of class size-70+, up from 56 with no increase in faculty.

UAB: 10:1 or 8:1

UPR: 6/1

E. Does your school use machine/computer grading in the pre-clinical courses?

ULSD: No

UFCD: We do not use computer grading at this time. However, this is something we are looking into for the future.

GRU: Not for lab practical exams. ExamSoft is used to administer and grade written exams.

MMC: Yes

ECU: No

UKY: No

VCU: We use the DentSim units for DentSim procedures.

UNC: No

MUSC: Yes

UAB: No

UPR: No, but Blackboard is used didactically.

1. If so, what software/manufacturer?

NSU: No

UFCD: NA

MMC: DentSim

UKY: N/A**VCU:** DentSim

MUSC: E4D Compare

UPR: Yes

2. If so, for what type of restorations?

UFCD: Not applicable

MMC: Amalgams and Composites

UKY: N/A

VCU: Preparations only, no restorations.

MUSC: It is used to grade dental anatomy wax-ups and used extensively in fixed pros to grade crown preparations. It is presently being evaluated for use in Operative preparations.

F. National Boards

1. Do you have formal National Board preparation courses?

NSU: No

ULSD: Review materials are on-line; no classes

UFCD: Yes, we have a formal course.

GRU: Yes

MMC: (No)
We have scheduled Reviews given upon completion of all courses covered in the NB Examinations (Part I & II). These reviews are not graded nor placed on a transcript, therefore, they are not considered to be formal preparatory courses.

ECU: Yes

UKY: Yes

VCU: No

UNC: No

MUSC: No, not anymore

UAB: Yes

UPR: Yes

2. Review sessions?

NSU: No

ULSD: Not classroom

UFCD: Yes, we have review sessions.

GRU: Yes

MMC: (Yes)
Review session are provided to students in one of three ways: 1) The NB Review mentioned above, as conducted by each individual faculty member; 2) Official peer tutoring via the Center for Educational Development and Support (CEDS); 3) A semester long Board Review offered to first year students for the purpose of remediation.

ECU: Yes

UKY: Yes

VCU: No

MUSC: Yes

UAB: Yes

UPR: Yes

3. Are the courses or reviews mandatory or optional?

ULSD: Optional

UFCD: Although attendance in the review sessions is not mandatory, students are given an exam on each section similar to the board exam. The examination grades are averaged for the final grade in the mandatory course.

GRU: Mandatory

MMC: (Mandatory) Currently all reviews are mandatory with the exception of the peer tutoring at the CEDS Center (though it is highly recommended).

ECU: Mandatory

UKY: Mandatory

VCU: N/A since we have no courses

MUSC: Optional and poorly attended.

UAB: Mandatory

UPR: Mandatory

4. Does your school purchase review materials for students (like Crack the Code or Exam Master)?

NSU: No

ULSD: No

UFCD: No, we do not purchase review materials other than the released exams.

GRU: No

MMC: (Yes); the school has purchased both Exam Master (Part I) and Dental Decks (Part I and II) for all students.

ECU: Yes

UKY: No. Students are required to purchase certain study materials.

VCU: No

MUSC: No

UAB: No. The students purchase them as they see the need.

UPR: The school purchases them.

IV. CARIOLOGY

A. Caries Management

1. Does your school have a formal caries management plan as part of the comprehensive treatment plan?

NSU: *A Caries Risk Assessment* form is completed for each patient and updated yearly at the periodic exam visit. A note and a code (N0160) are also completed in the EHR (axiUm) A *Preventative Treatment Plan* is also completed at the initial visits and updated yearly.

ULSD: Yes

UFCD: Yes, our students do a caries risk assessment during treatment planning and establish a caries management plan after the assessment. This plan becomes part of the patient's chart.

GRU: Yes

ECU: Yes

MMC: Yes

UKY: No

VCU: We have clinic treatment guidelines based on caries risk as determined by our Caries Risk Assessment in axiUm, as well as an "Oral Disease Control Therapy" phase that patients must have completed before proceeding with prosthodontic work or being placed on Recall.

UNC: No, nothing formal but just hired a full time faculty devoted to cariology and the development/ implementation of said program.

MUSC: No, it is currently being set up using a CAMBRA model.

UAB: Yes

UPR: Not yet. We are working on it.

2. How is the caries management plan tracked once it has been implemented?

NSU: See question 1

ULSD: AxiUm

UFCD: The caries management plan becomes part of the patient's chart and is reviewed and updated at minimum during periodontal recall visits but also at the Post-Treatment Disease Control Assessment which must be completed prior to beginning any prosthodontic treatment. It is again reviewed and modified, if appropriate at the Case Completion Assessment.

GRU: Revisited annually or prior to starting fixed or removable prosthodontics

MMC: The caries assessment form is compared to the patient's treatment plan at recall appointments.

ECU: The management plan is re-evaluated at completion of disease control phase.

UKY: We must rely on the integrity of the student to update existing Axium charting to reflect present status of the patient

VCU: We have an "Oral Disease Control Therapy" code and procedure that the student must complete: "Upon completion of the Oral Disease Control Phase of Treatment, students will complete the Oral Disease Control and review it with the designated faculty. Once approved, an entry will be made in the EHR stating that "ODCT was completed and approved by the supervising faculty.""

MUSC: axiUm

UAB: The tracking is being implemented at present once we embrace full electronic record keeping

UPR: Probably in the progress note and the evaluation form designed for it.

3. How are reevaluations documented?

NSU: See question 1

ULSD: axiUm

UFCD: Re-evaluations are forms in Axium.

GRU: CRA form in Axium updated

MMC: In SOAP notes in the patient records

ECU: Digitally (axiom)

UKY: They are documented by charting changes on Axium. Old charting screenshots are reportedly saved.

VCU: New Caries Risk Assessments are performed at Recalls.

MUSC: axiUm

UAB: The tracking

UPR: The record progress note and the evaluation form designed for it.

4. By treatment note only or by procedure code completion?

NSU: Both **ULSD**: Treatment note

UFCD: Re-evaluations are documented with a treatment note and form creation/completion.

GRU: Both **MMC:** Both **ECU:** tx form/note/code

UKY: They are saved by treatment note and procedure code completion.

VCU: Both **MUSC:** It will be done by both in axiUm

UPR: Both

5. Does the school dispense remineralization products to patients? If so, how is it dispenses or purchased?

NSU: We provide a *Caries Risk Assessment Kit* that is dispensed to patients. There is a fee for this kit. Students should dispense to all appropriate high caries risk patients. Other remineralization products dispensed are MIPaste (Plus)

ULSD: No

UFCD: We no longer dispense any products.

GRU: Only SensoDyne NuPro, (local pharmacies won't carry) purchase at cost from the school

MMC: (No) Products are prescribed (pharmacy or over-the-counter). Other products are applied clinically.

ECU: Not dispensed yet. Prescribed only.

UKY: No. Prescriptions for these products are written (it takes too much time, so students who leave this until the end of the appointment often "forget" to write).

VCU: Yes. We have MI Paste available (when recommended by faculty) for the patients to purchase through the school's dispensary. There is a code and a fee for this to enter into axiUm. We also have ClinPro 5000+ fluoride (in place of Prevident 5000+), and that is prescribed and sold at the Front Desk.

UNC: Clinpro 5000 or Prevident 5000, MI Paste Plus

MUSC: No, at least not yet.

UAB: Yes. Fluoride gels and MI paste. The dispensary keeps an inventory of these items. We charge patients for the Rx items as they are dispensed/recommended by the faculty in our clinic. Entry made in record of item/s prescribed.

UPR: No

6. Are treatments being planned based on CAMBRA concepts?

NSU: Yes

ULSD: Yes

UFCD: Yes, treatments are planned on CAMBRA concepts.

GRU: Yes

MMC: Yes

ECU: YES hopefully.

UKY: Unfortunately, no, the treatment is not based on CAMBRA or ICDAS.

VCU: Yes, on concepts of CAMBRA.

MUSC: Yes. The sophomores are presently studying CAMBRA in depth as part of our Operative I course.

UNC: CAMBRA concepts will be utilized.

UAB: Somewhat

UPR: Not yet

7. Are such treatments accomplished as planned?

NSU: Students are instructed to follow-up for patient compliance. Alternative preventive options may be chosen (fluoride varnish, prescription fluoride gels, pastes or rinses) based on patient compliance.

ULSD: Unsure

UFCD: Yes, treatments are accomplished as planned but this requires diligence to continually focus and review the management plan.

GRU: Usually

MMC: This program is newly implemented and will be evaluated every 6 months

ECU: Unfortunately, depends on faculty working with students

UKY: Having come from private practice, whatever system there is seems haphazard at best.

VCU: Yes

MUSC: We don't know yet, this is the first year.

UAB: Somewhat

UPR: Not yet

V. OTHER

A. Biomimetics has been defined as "the study of structure and function of biological systems as models for the design and engineering of materials and machines."

1. What is Biomimetic Dentistry?

NSU: Biomimetic dentistry, a type of tooth-conserving dentistry, treats weak, fractured, and decayed teeth in a way that keeps them strong and seals them from bacterial invasion. In dental practices around the world, Biomimetic Dentistry has practically eliminated cutting teeth down for crowns and destructive root canal treatment. http://www.academyofbiomimeticdent.org/

NSU: Instead of simply filling cavities as though they were potholes, biomimetic dentistry keeps the patient's long-term dental health in focus. By using advanced adhesive techniques and properly fashioned onlays, dentists can make sure that dental work will fail in a repairable way, before your teeth suffer any biological failure. By sealing the tooth against infection and bonding the tooth strongly to prevent fracture, biomimetic dentists make sure they don't make dental problems any more serious than they already are.
http://www.moorestownsmiles.com/biomimetic-dentistry.html

UFCD: While the pattern of oral disease (infections, wear, para-functions) has been influenced by the ever-changing human lifestyle, the original structure of enamel and dentin appear to be the same today as it was 3,000 year ago. According to the Academy of Biomimetic Dentistry, Biomimetic Dentistry literally means "copy what is life-like". In addition, it is a type of tooth-conserving dentistry that treats weak, fractured, and decayed teeth in a way that keeps them strong and seals them from bacterial invasion. Biomimetic restorations include stress-reduced direct composite restorations and porcelain/composite inlays and onlays that restore the biomechanics of broken and damaged teeth. In the "biomimetic approach", the dental tissues (enamel, dentin, DEJ) are returned to full function through a hard tissue bonding mechanism, allowing functional stresses to pass through the tooth and return the damaged tooth to a functional, biologic, and esthetic treatment result. Conventional approaches to treating damaged and decayed teeth require more aggressive preparation to place a "strong", stiff restoration. The emphasis is on the

strength of the restoration, but no attention is placed into the function and biomechanics of final restored tooth *(http://www.academyofbiomimeticdent.org)*.

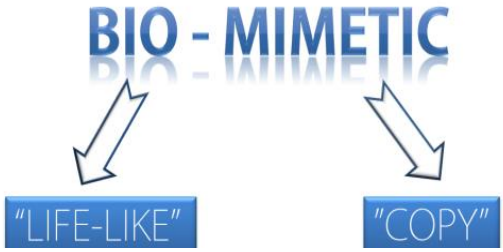
GRU: A buzzword: an attempt to promote minimally invasive or minimum intervention dentistry in a formal manner.
http://www.academyofbiomimeticdent.org/

MMC: The art and science of incorporating material and mechanics that mimic human biological systems into the restoration of components of the stomatognathic system. i.e. Articulators, implants, fixed or removable prosthetics, etc.

ECU: Restorations based on observation/behavior of natural structures.

UKY: What is Biomimetic Dentistry?

Translated literally, biomimetic dentistry means to copy what is life-like. Nature has provided the most successful and ideal properties to our natural teeth. When restoring damaged, broken, and decayed teeth, the goal is to return the tooth to its original strength, function, and esthetics. Biomimetic dentistry accomplishes all of this in a conservative, strong, and attractive approach.



1

VCU: According to the ADA, "Biomimetic approaches are being investigated, as are tissue engineering concepts for the development of materials more closely resembling those being replaced. Surface chemistries and topologies of implantable materials are being studied to enhance cellular interactions. … The development and microstructure of tissues continues to be studied with the hope that biological processes can be mimicked in the fabrication of biomimetic prosthetic materials (Marshall et al, 2001; White et al, 2001; Kamat et al, 2000; and Kirkham et al, 2000)."
American Dental Association. Future of Dentistry. Chicago: American Dental Association, Health Policy Resources Center:2001.

UNC: one definition can be found at http://biomimeticdentistryce.com/what-is-biomimetic-dentistry /
"Traditional approaches to treating damaged and decayed teeth require more aggressive preparation to place a "strong", stiff restoration. The emphasis is on the strength of the restoration, but no attention is placed into the function and biomechanics of final restored tooth. By ignoring this critical aspect, it is no surprise that complications such as root canals occur more frequently and future treatment becomes progressively more aggressive and invasive. So begins the restorative dental cycle in which the teeth are ultimately lost from successive treatments. With Biomimetic dentistry, only the damage and decay is removed from the teeth, and the final restoration is bonded to the remaining healthy natural

tooth structure. These bonded restorations function and behave "Biomimetically" and break the restorative dental cycle (not patient's teeth)! Copyright © 2013 BiomimeticDentistryCE.COM. This assumes current dentin bonding technology establishes a long-term stable dentin bond *and* that current ceramic/composite resin material properties are stable over the long term. This may not be a good assumption.

MUSC: It is the science of dental materials

UPR: If you navigate through the internet you will find that biomimetic dentistry is defined as tooth conserving dentistry. It treats weak, fractured, and decayed teeth to keep them strong and sealed against bacterial invasion. To preserve what we got, for as long as we got with polymers and ceramics.

2. Is this an application of a new term for existing techniques?

NSU: This is definitely a new term for existing procedures. Biomimetics Dentistry has combined the principles of Caries Risk Assessment and minimally invasive dentistry and given them a new comprehensive name.

UFCD: It is actually an old term used for new applications, especially in dentistry.

GRU: Yes

MMC: Yes

ECU: Likely

UKY: It does not quite mean we have reached the goal of copying nature but we are doing a better job than even ten years ago. Personal opinion only is expressed in this comment: I do not think dentistry has yet reached this goal of returning the tooth to its "original strength, function, and esthetics". However, I hope to live to see the day when we can place the 'magic elixir" into the tooth to help it regenerate to health.

VCU: In some ways – dentistry has always been concerned with issues of biocompatibility.

UNC: A clear definition of the term "biomimetic dentistry" is necessary in order to discuss this question.

MUSC: In my opinion, yes.

UPR: That is the question. Are there anything different of what we actually do or we are dealing with a new way to advertised and gain new patients

VI. REGIONAL CODE AGENDA

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

The Regional Agenda for 2013 was developed after review of the suggestions from the individual Region VI CODE members. In addition many of the submitted questions were incorporated into the 2013 National Agendas.

I. In order to identify what is currently being utilized in the Southeastern Region VI schools please fill in the below grid. Please note *primary* means most often used. Provide company and product name for clarity when materials are listed

	School: NSU
Primary dentin bonding agent	Optibond FL
Secondary dentin bonding agent	
Primary resin composite	Filtek Supreme Ultra
Secondary resin composite	Premise (Kerr)
Primary base/liner	Fuji Lining Cement LC
Secondary base/liner	
Primary pulp capping agent	MTA
Primary luting cement	Fuji Plus for MCCs and Variolink for Ceramic Crowns
Secondary luting cement	Variolink and Multilink Automix
Primary impr material (castings)	
% of students that use or have experience with CAD/CAM clinically	100%
Primary Indirect provisional material	Colpak
Secondary Indirect provisional material	Revotek, Luxatemp Ultra
Post. amalgam/composite ratio	
Anterior vs. Posterior restoration ratio	For Crowns Anterior 35%/Posterior 65%
# students in senior class	125
# students in freshman class	

	School: **ULSD**
Primary dentin bonding agent	XP-Bond
Secondary dentin bonding agent	N/A
Primary resin composite	Esthet-X HD
Secondary resin composite	N/A
Primary base/liner	Fuji Lining LC
Secondary base/liner	Fuji 2 LC
Primary pulp capping agent	Dycal
Primary luting cement	Resin Modified Glass Ionomer Cement (RelyX Luting Plus Automix Cement, 3M)
Secondary luting cement	Self-Adhesive Resin Cement (Rely X Unicem 2 – Automix, 3M)
Primary impr material (castings)	Polyvinyl siloxane (Aquasil Ultra Light and Heavy Body; Dentsply)
% of students that use or have experience with CAD/CAM clinically	15 %
Primary Indirect provisional material	Polymethyl methacrylate (Jet; Lang Dental)
Secondary Indirect provisional material	Bis-acryl composite resin (Integrity; Dentsply)
Post. amalgam/composite ratio	10:1 or greater for amalgam (approximate)
Anterior vs. Posterior restoration ratio	1:3 (approximate)
# students in senior class	120
# students in freshman class	120

	School: GRU
Primary dentin bonding agent	Optibond FL, Kerr
Secondary dentin bonding agent	N/A
Primary resin composite	Premise, Kerr
Secondary resin composite	N/A
Primary base/liner	Vitrebond, 3M
Secondary base/liner	N/A
Primary pulp capping agent	Ultrablend, Ultradent
Primary luting cement	Rely-X Luting Plus, 3M
Secondary luting cement	Duo-Link, BISCO
Primary impr material (castings)	Extrude, Kerr
% of students that use or have experience with CAD/CAM clinically	70%
Primary Indirect provisional material	Integrity, Caulk
Secondary Indirect provisional material	Jet Acrylic
Post. amalgam/composite ratio	About 1/3 (Ag:CR)
Anterior vs. Posterior restoration ratio	About equal
# students in senior class	70
# students in freshman class	82

	School: VCU
Primary dentin bonding agent	Optibond Solo Plus by 3M ESPE
Secondary dentin bonding agent	3M ESPE Adper Scotchbond Multi-Purpose Plus Dental Adhesive for amalgam bonding
Primary resin composite	3M ESPE Filtek Z250 Universal Restorative
Secondary resin composite	Dentsply Esthet•X HD micro-matrix (microhybrid) restorative, and Kerr Revolution Formula 2 flowable, light-cure, hybrid resin restorative
Primary base/liner	3M ESPE Vitrebond Light Cure Glass Ionomer Liner
Secondary base/liner	---
Primary pulp capping agent	Dycal by DENTSPLY
Primary luting cement	GC FujiCEM 2 Resin Modified Glass Ionomer Cement Automix
Secondary luting cement	Panavia 21 by Kuraray America, Inc.
Primary impr material (castings)	Aquasil by DENTSPLY Caulk
% of students that use or have experience with CAD/CAM clinically	None presently
Primary Indirect provisional material	Integrity by DENTSPLY Caulk
Secondary Indirect provisional material	Alike by GC America
Post. amalgam/composite ratio	For the 2012-2013 year: 99 amalgam/100 composite ratio NOTE: It is unknown which build-ups were done in amalgam vs. a composite core, so those numbers are not included, (which could change this ratio).
Anterior vs. Posterior restoration ratio	For the 2012-2013 year: 44 anterior/100 posterior ratio
# students in senior class	98
# students in freshman class	98

	School: MMC
Primary dentin bonding agent	Priming Bond
Secondary dentin bonding agent	Priming Bond
Primary resin composite	Esthetics and Surfil
Secondary resin composite	Esthetics and Surfil
Primary base/liner	Lime Lite - Pulp Dent
Secondary base/liner	Dycal CA (OH)2 Dentsply
Primary pulp capping agent	Ca OH 2 – Dentsply
Primary luting cement	Fuji -
Secondary luting cement	Ketac
Primary impr material (castings)	PVS
% of students that use or have experience with CAD/CAM clinically	50% Juniors-Seniors & Sophomores)
Primary Indirect provisional material	Jet Acrylic, IRM
Secondary Indirect provisional material	Integrity
Post. amalgam/composite ratio	50/50
Anterior vs. Posterior restoration ratio	75 – 25
# students in senior class	47
# students in freshman class	61

	School: UAB
Primary dentin bonding agent	Scothbond Multipurpose – 3M ESPE
Secondary dentin bonding agent	Prime and Bond NT – Caulk Dentsply
Primary resin composite	Z-100
Secondary resin composite	Esthetix
Primary base/liner	Fuji Liner LC – GC America
Secondary base/liner	
Primary pulp capping agent	Dycal – Caulk Dentsply
Primary luting cement	Rely X (routine cementation) Variolink (resin)
Secondary luting cement	
Primary impr material (castings)	Aquasil
% of students that use or have experience with CAD/CAM clinically	PCD: all have a demo and exercise in D2 Pros course. Clinic: On a case-need basis. % who use varies each year
Primary Indirect provisional material	Acrylic Resin (PMMA)
Secondary Indirect provisional material	Integrity
Post. amalgam/composite ratio	Expected 1:2; Actual: 1:3
Anterior vs. Posterior restoration ratio	Resin restorations: Expected: 1:1; Actual: 2:1
# students in senior class	54
# students in freshman class	60

	School: UNC
Primary dentin bonding agent	Kerr - Optibond Solo Plus
Secondary dentin bonding agent	3M ESPE - Singlebond Plus
Primary resin composite	3M - ESPE Filtek Supreme Ultra
Secondary resin composite	Kerr - Herculite Ultra
Primary base/liner	3M - ESPE - Vitrebond Plus
Secondary base/liner	N/A
Primary pulp capping agent	Dycal
Primary luting cement	3M - ESPE - Rely-X Luting Plus
Secondary luting cement	3M - ESPE - Ketac-Cem
Primary impr material (castings)	3M-ESPE - Imprint or Dentsply - Aquasil
% of students that use or have experience with CAD/CAM clinically	< 10%
Primary Indirect provisional material	Dentsply - Integrity
Secondary Indirect provisional material	Lang - Jet (PMMA)
Post. amalgam/composite ratio	Class of 2013 - 0.81 (raw #s = 1673/2044)
Anterior vs. Posterior restoration ratio	Class of 2013 - 1.06 (raw #s - 2167/2044)
# students in senior class	81
# students in freshman class	81

	School: University of Florida
Primary dentin bonding agent	Optibond FL
Secondary dentin bonding agent	Amalgambond
Primary resin composite	Filtek Supreme Ultra
Secondary resin composite	Filtek Z250, Surefil SDR, Paracore
Primary base/liner	Vitrebond
Secondary base/liner	Fuji II LC
Primary pulp capping agent	Dycal/Theracal
Primary luting cement	GC Fuji Plus
Secondary luting cement	Zinc Phosphate/Polycarboxilate
Primary impr material (castings)	Aquasil
% of students that use or have experience with CAD/CAM clinically	100% (Students are required to do one restoration per year.)
Primary Indirect provisional material	Integrity
Secondary Indirect provisional material	Rely X Unicem 2, Variolink Veneer
Post. amalgam/composite ratio	1/9.5
Anterior vs. Posterior restoration ratio	1/1.8
# students in senior class	83
# students in freshman class	93

	School: UKY
Primary dentin bonding agent	**Kerr Optibond Fl fourth generation**
Secondary dentin bonding agent	N/A
Primary resin composite	**3M/ESPE Filtek Supreme Ultra**
Secondary resin composite	**N/A**
Primary base/liner	***GC Fuji LINING™ LC***
Secondary base/liner	**N/A**
Primary pulp capping agent	**Dycal/DENTSPLY self-cure**
Primary luting cement	**RelyX™ Unicem 2 Automix Self-Adhesive Resin Cement 3M/ESPE**
Secondary luting cement	***GC FujiCEM™ 2*** **Resin Modified Glass Ionomer Cement**
Primary impr material (castings)	Imprint™ 3 VPS Impression Material 3M ESPE
% of students that use or have experience with CAD/CAM clinically	**0% (only pre-clinical)**
Primary Indirect provisional material	**Jet Acrylic Lang Dental Manufacturing**
Secondary Indirect provisional material	**DENTSPLY Integrity *Temporary Crown* & Bridge Material**
Post. amalgam/composite ratio	**1:4 7/01/12 to 6/30/13**
Anterior vs. Posterior restoration ratio	**Information unavailable at this time**
# students in senior class	**57 students**
# students in freshman class	**68 students**

	School: MUSC
Primary dentin bonding agent	Optibond XTR
Secondary dentin bonding agent	none
Primary resin composite	Grandio SO
Secondary resin composite	Filtec Supreme
Primary base/liner	Vitrabond
Secondary base/liner	Fuji II
Primary pulp capping agent	Pulpdent paste
Primary luting cement	RelyX Luting
Secondary luting cement	RelyX Unicem
Primary impr material (castings)	Impregum
% of students that use or have experience with CAD/CAM clinically	100% 70 per class
Primary Indirect provisional material	PulpDent Tough Temp
Secondary Indirect provisional material	Jet acrylic
Post. amalgam/composite ratio	0.76 =1069/1400 (CY 2013 to date)
Anterior vs. Posterior restoration ratio	0.69 =1695/2469 (CY 2013 to date)
# students in senior class	70
# students in freshman class	74

	School: UPR School of Dental Medicine
Primary dentin bonding agent	**Prime & Bond – Dentsplay**
Secondary dentin bonding agent	**Single Bond – 3M**
Primary resin composite	**TPH3 – Dentsplay**
Secondary resin composite	**Filtex Supreme - 3M**
Primary base/liner	**Vitrebon Plus – 3M**
Secondary base/liner	**Dycal (light cure) – Caulk/ Ultrablend - Ultradent**
Primary pulp capping agent	**Calcium Hydroxide (Dycal) – Caulk**
Primary luting cement	**Unicem – 3M**
Secondary luting cement	**Relay X – 3M**
Primary impr material (castings)	**Aquasil – Dentsply; Express – 3M**
% of students that use or have experience with CAD/CAM clinically	**20**
Primary Indirect provisional material	**ProTemp Plus – ESPE / 3M**
Secondary Indirect provisional material	**Jet – Lang**
Post. amalgam/composite ratio	**50/50**
Anterior vs. Posterior restoration ratio	**40/60**
# students in senior class	**50**
# students in freshman class	**47**

Does your schools protocol for caries detection utilize the International Caries Detection and Assessment System (ICDAS) described below:

Description of Codes:

0 Sound

1 First Visual Change in Enamel (seen only after prolonged air drying or restricted to within the confines of a pit or fissure)

2 Distinct Visual Change in Enamel

3 Localized Enamel Breakdown (without clinical visual signs of dentinal involvement)

4 Underlying Dark Shadow from Dentin

5 Distinct Cavity with Visible Dentin

6 Extensive Distinct Cavity with Visible Dentin

If your school does not use this protocol, does it use another set of criteria to describe the progression of a carious lesion? Please explain

NSU: It is taught in didactic IRDS I lectures in the subject matter of cariology, but not applied clinically at this point.

ULSD: No, we do not currently use the ICDAS as part of our caries diagnosis protocol.

GRU: No. Does not adequately deal with the differences between root caries, radiographic caries, pit and fissure caries.

VCU: It is taught in the Cariology course in the D2 year. It has also been presented to our faculty by the Cariology course director. However, it has of yet to be completely integrated into the pre-doctoral clinics.

MMC: (Yes)

NSU: We classify lesions, didactically, according to extent of demineralization and on lesion activity- active or arrested.

GRU: Separate criteria for different types of caries.

VCU: We observe the clinical presence/absence of demineralization/remineralization, the proximity of the carious lesion to the DEJ on radiographs, compare carious progression with current vs. previous sets of radiographs, etc. Diagnosing active vs. inactive (or remineralized lesions) also guides treatment decisions.

UF: ICDAS is being used only in research projects at this time. We record lesions as being in enamel or dentin (E-1, E-2, D-1, D-2 and D-3) and use our caries risk assessment form and odontogram at comprehensive examinations.

UKY: No

MUSC:

1. Caries in enamel less the ½ way to DEJ
2. Caries in enamel greater than ½ to DEJ
3. Caries at DEJ
4. Caries in outer dentin (less that ½ distance to pulp)
5. Caries of inner dentin (greater than ½ distance to pulp)
6. Caries into pulp

II. What is your school's protocol for vetting and implementing new technologies/dental materials prior to their introduction into the dental curriculum? (i.e. lasers, CAD/CAM, intraoral cameras, caries detecting devices, ceramics, etc.)

NSU:

1. Students must complete " New Product Form" and submit to both team leader and respective pre-doctoral director(Instructor wanting to introduce new product would submit form directly to respective pre-doctoral director)
2. Pre-doctoral director evaluates and takes to chair of department
3. The chair will evaluate the product and confirm with Kathie Lowe that the new product will not cause a sterilization problem
4. Decision of chair will proceed back through respective pre-doctoral director to the instructor or to the student's team leader
5. Product will not be used until chair has rendered an official decision through the pre-doctoral director

ULSD: Implementation of new technologies and dental materials are based on current peer reviewed literature and recommendations from specialty advisors within our curriculum.
GRU: No formal protocol, unfortunately.

VCU: We have a Practice Affairs committee that would handle such matters. Basically, to implement a new technology/dental material prior to its introduction into the curriculum, it would need to be first presented to the Committee, including information such as research supporting its use, why it may be better than what we are currently using (if applicable), the cost to the school, etc. The Practice Affairs Committee will seek further input if/where needed by appointing an Ad Hoc subcommittee for investigation and reporting, and then vote on the matter. Consideration is also given to its proper insertion over the four year curriculum and the education of the faculty. If the Committee approves, then implementation of the new technology/material can proceed.

MMC: New innovative materials and or technologies are presented to faculty in departmental meetings. The efficacy of the new approaches is discussed followed by recommendations regarding adoption into the curriculum and implementation strategies. If this involves major curricular changes, these recommendations are presented to the curriculum committee for their deliberations.
UAB: These decisions have been made at the departmental level. Exceptions: magnification, camera use, data system are centrally selected.
UNC: Individuals with expertise (relative) in the area of interest form an adhoc committee for assessment of the available literature, cost, practical experience, etc. This committee then seeks departmental input based on findings and makes recommendations. The department develops protocol for implementation and specifics relative to clinical usage.
UF: This is something we typically discuss with clinical administration, invite representatives from different companies and make a decision based on evidence, need, cost, etc

UKY: There is no such protocol. There is a materials committee whose members have disappeared due to attrition (retirement) other than one remaining member (me). I have only been a fulltime faculty member one year and I have been working to affect change and recruit committee members who in theory present material and equipment changes to the Division Chief who presents to the Director of undergraduate clinics who presents to the Dean and CFO.

MUSC: Nothing enters the student clinic until it has been used/taught in the sophomore laboratory courses. Devices and materials are typically "played with" by faculty in Faculty Practice before being considered for purchase for student use.

UPR: Not yet. However, faculty and students are being exposed to both ICDAS and CAMBRA.

If your school does not use this protocol, does it use another set of criteria to describe the progression of a carious lesion? Please explain:
Clinical evaluation, X-rays, transillumination.

III. Do you use numerical or pass/fail grading in your restorative clinics for-

NSU: Numerical for Prosthodontics
NSU: Restorative semester grades will be determined by successful completion of a variety of clinical daily experiences (Pass/Fail grades), Independent Preclinical and Clinical Performance Assessments (IPPAs and ICPAs) and an Objective Structured Clinical Examination (OSCE).
NSU: Competence will be assessed by daily clinical evaluation grades (and mandatory attendance), 2 IPPAs, 4 ICPAs and 1 Treatment Planning OSCE. Student self assessment will be part of all procedures as will be faculty evaluation of management skills, professionalism and the level of agreement in the student and faculty evaluations
NSU: D2 Summer Semester and Fall Semester grades will be PR (Progress) or NPR (No Progress). D3 Winter Semester grade will be numerical.
Numerical grades will be calculated in the following manner:
Average grade of IPPAs, ICPAs and an OSCE: 100% (weighted equally)
*Daily Clinical Evaluations (DCE's) will be pass/fail grades. (DCE's are graded pass/fail, but the numerical grade achieved on every daily restorative procedure is recorded.)
Independent Preclinical and Clinical Performance Exams will be graded on a scale of 55-100.
NSU: There is a point system affecting the numerical grade for level of agreement in the student and faculty evaluations. (Self-assessment is included in DCE's, IPPA's and ICPA's)

- Five points will be added to every IPPA and ICPA grade where student and faculty have a high level of agreement in their evaluations,
- Five points will be deducted from every IPPA and ICPA grade where there is a lack of agreement in their evaluations and
- No points will be added or deducted where there is minimal agreement in the evaluations.

NSU: There is a negative point system for failed Daily Clinical Evaluations and for IPPA's and ICPA's not completed by deadline.

- Two points will be deducted from the final course grade for every failed Daily Clinical Evaluation.
- Five points will be deducted from the final course grade for each IPPA and ICPA not completed by deadline.

NSU: There is a positive point system for grades of "high pass" on Daily Clinical Evaluations".

- For every “high pass” (grade of 96 or higher) achieved on a daily clinical evaluation, one point will be added to the student’s final course grade, with a maximum of 10 points being added to the grade.
- Only students who have completed all IPPA’s and ICPA’s by deadline will be eligible for the positive point system regarding “high pass” grades.

ULSD:

- Daily procedure performance (Numerical)
- Daily Professionalism performance (Numerical)
- Competency Exam performance (Numerical)
- Other grading opportunities (describe) (Clinical Proficiency Examinations/Mock Boards-Numerical)

GRU:

- Daily procedure performance (Numerical)
- Daily Professionalism performance (Numerical)
- Competency Exam performance (Pass / Fail)
- Other grading opportunities (describe) – (Numerical grades associated with clinical production levels)

VCU: Daily procedure performance No, unless off the grid "commendation" or "infraction" which is documented on a "Student Performance Report" signed by the faculty and the student.

VCU: Daily Professionalism performance No, unless off the grid "commendation" or "infraction" which is documented on a "Student Performance Report" signed by the faculty and the student.

VCU: Competency Exam performance Yes – numerical on a 1-5 scale (1-2 are failing, 3-5 are passing)

VCU: Other grading opportunities (describe) We use Subjective Evaluation forms quarterly to evaluate students’ abilities as described in our school’s Technical Standards for Dental Education Programs. This includes areas of knowledge and technical skills including motor, sensory/observation, communication, cognitive, and behavioral. Students must demonstrate these standards in order to fulfill the requirements of a dental education program, and thus, are required for advancement through and graduation from the program.

MMC: We use a numerical grading system for all of the above utilizing the Axium Software.

UAB:

- Daily procedure performance: Numerical
- Daily Professionalism performance: Numerical
- Competency Exam performance: Numerical at present but changing to P/F
- Other grading opportunities (describe) – Faculty Assessment Grades (twice per semester): Numerical

UNC:

- Daily procedure performance - numerical (2nd/3rd yrs) - P/F (4th yrs)
- Daily Professionalism performance - none (2nd/3rd yrs) - P/F (4th yrs)
- Competency Exam performance - numerical
- Other grading opportunities (describe) - mock boards utilize actual licensure examination grading

UF: Exceeded Expected Outcome, Achieved Expected Outcome, Modifications Necessary, Did Not Meet Expected Outcome (Assigned 1-4) Competency Exam performance – Numerical

UKY:

Daily procedure performance	Numerical
Daily Professionalism performance	Numerical
Competency Exam performance	Numerical
other grading opportunities (describe)	Written commentary, OSCE, mini-mocks, and Mock Board Exams.

MUSC: Numerical grade. These are now so inflated that it's basically pass/fail with a range for "pass". Pass is 90 or 95 or 100 and Fail is anything less than 90.

- **Daily Professionalism performance** Pass / Fail
- **Competency Exam performance** Pass / Fail

UPR: Selected faculty members try them and submit recomendations to department Chair or the Assistant Dean for Clinical Affairs

IV. Clinical Progress in Restorative Dentistry

A. What is the most common obstacle or hindrance to a student's clinical progression in restorative dentistry? Rank these from most to least common

NSU:

I. Operative Experiences or Requirements- There are no longer any requirements but there are recommended benchmarks.
II. Fixed Experiences or Requirements: There are no longer any requirements so this is not an issue.
III. Restorative Competency success- Finding appropriate patients with appropriate lesions; e.g. class II amalgam procedures difficult to find so Class II ICPA can be either amalgam or composite.
IV. Other: Finding enough RPDs to test clinical competency

ULSD:

I. Operative Experiences or Requirements
II. Fixed Experiences or Requirements
III. Restorative Competency success
IV. Other

Operative Experiences, Fixed Experiences, Restorative Competency, Complete

dentures, Removable partial dentures

GRU:

I. Operative Experiences or Requirements 3
II. Fixed Experiences or Requirements 1
III. Restorative Competency success 2
IV. Other- completing Phase 1 treatment before Fixed/Removable can be initiated

VCU:

I. Operative Experiences or Requirements #3
II. Fixed Experiences or Requirements #4
III. Restorative Competency success #2
IV. Other #1: Lack of patient experience

MMC: Adequate patient pool suitable for pre-doctoral clinical education.

I. Operative Experiences or Requirements [3]
II. Fixed Experiences or Requirements [1]
III. Restorative Competency success [4]
IV. Other (complete dentures) **[2]**

UAB:

I. Operative Experiences or Requirements - 1st - Reason: pts NOT necessitating amalgam restorations; better prevention leading to reduced OP needs)
II. Fixed Experiences or Requirements - 2nd - Reason: pts lack of funds, multiple number of appts for fixed and removable
III. Restorative Competency success - 3rd - Reason: std still not ready to attempt the entire competency without faculty feedback
IV. Other (Time and case management) 4th Reason: sequencing, informing pts clearly what to expect, time commitment as school pt.

UNC:

I. Operative Experiences or Requirements - 3rd
II. Fixed Experiences or Requirements - 1st
III. Restorative Competency success - 4th
IV. Endodontic Experiences - 2nd

UF:

I. Operative Experiences or Requirements-3 (least common)
II. Fixed Experiences or Requirements –1 (most common)
III. Restorative Competency success-2

UKY:

I. Operative Experiences or Requirements #2
II. Fixed Experiences or Requirements #3
III. Restorative Competency success #1
IV. Other #4 Inconsistent (un-calibrated) feedback from Operative Faculty)

MUSC:

I. **Operative Experiences or Requirements:** more and more patients are refusing amalgam despite its lower cost and greater longevity. Caries is increasing so we still have plenty of patients but students are placing fewer amalgams. It hasn't reached a critical point yet but if the trend continues, it will.
II. **Fixed Experiences or Requirements:** Patients needing / wanting fixed partial dentures many cases that used to be bridges are now done with a single tooth implant. All our students learn to restore implants, some graduate without placing an FPD.
III. **Restorative Competency success:** Students taking it seriously, initial failure rate is moderate, on retake, everyone passes.
IV. **Other**

UPR:

I. Operative Experiences or Requirements (1)
II. Fixed Experiences or Requirements (2)
III. Restorative Competency success (3)
IV. Other

B. Provide reasons for lack of progress in any or all categories listed above such as- lack of suitable patients, patient finances, lack of clinic time, student motivation, student experience (competency success), etc.

NSU: Lack of progress in Restorative could be student motivation, time management and in ensuring that a variety of patient procedures are in their patient families.
There is a lack of supply of suitable patients for RPD competencies.

ULSD: All are mostly lack of suitable patients with financial capabilities.

GRU: Fixed = insufficient faculty in perio, oral diagnosis creates a bottle-neck to progress. Patient finances affect all categories.
VCU: I would say lack of suitable patients (many times too complex for beginning students) and patient finances. The students seem to have enough clinic time, good competency success and are motivated.

MMC: The primary reason for lack of suitable patients is finance. The school is in direct competition with several "free clinics" in our area.
UAB: See responses above

UNC: Mostly the lack of suitable patients (patient ability/desire to pay is part of this), Implant technology has lowered the number of teeth that undergo endodontic therapy (though it is unlikely that this is a major reason).
UF: Lack of patients with the finances necessary to pay for treatment.
UKY: My opinion and I stress it is my opinion, the students could progress earlier and to a higher level if they had more individual supervision and coaching early in their clinical experiences in Operative and Fixed. They have plenty of clinic time but due to drawn out paper work (Axium step checks) and unavailability of faculty to move them to the next step; we literally teach them to be inefficient and slow.

MUSC: See above

UPR: lack of suitable patients, patient finances, competency success, and faculty resistance to change among others.

C. Describe any recent changes to your clinical restorative curriculum that has made a positive difference in student clinical progress in any categories in part "A" above.

NSU: We believe that having all of the D4 students trained to do CAD/CAM is making a positive difference in the ability of the school to provide CAD/CAM restorations to patients in a timely manner.
NSU: Cariology and Restorative Dentistry: The D-3 rotation with Broward College Dental assistants and the D-4 DAU rotation should have a positive impact in student clinical progress. Implementation of the treatment planning OSCE should also make competency testing in this discipline more time efficient. Recommended benchmarks should also help improve student motivation.
ULSD: N/A
GRU: Establishing a junior advisor system to provide mentoring, Sr. year General Dentistry experience allows expedited treatment progress
VCU: Unsure.
MMC: The Final Clinical Competency Examination (FCCE) protocol was changed to make it more convenient for students to secure patients for the exam. Students may request to sit for the FCCE during any clinical session based on patient availability.
UAB: Changes in patient selection, screening during the first visit
UNC: We have moved to a "vertically integrated" model (it is being implemented this year) that seeks to provide skill-level appropriate clinical restorative procedures in a group practice setting. A group of patients is assigned to 60 students (20 DDS2, 20 DDS3, 20 DDS4). These patients/students have faculty (Group Directors) and staff (patient care coordinators) that oversee treatment planning and clinical treatment. The goal is better continuity of care and more opportunity to assess treatment outcomes. Currently, since each class size is about 80 DDS students, we have 4 group practices, each with 60 students as indicated above. The group directors become much more in tune with the needs of the family of patients and are in position to direct how the care proceeds and with whom (appropriate level of DDS student). This is very faculty/staff intensive.
UF: We recently changed our daily clinical assessment from numerical grading (1-4) to the grading mentioned above. We also added a required remediation program for students receiving two assessments of "did not meet expected outcome". If a student receives three of the same, they fail the operative clinical course.

Since students seem to have mastered selecting the simplest cases to be tested on, we also changed our semester grade calculation. We decreased the weight of competency or skills assessments and increased the RVU (relative value units) requirement for an "A". This has not increased student clinical progress but it has increased productivity, number of experiences and chair utilization

UKY: ADEC simulators are now in the operative labs with cheeks and 'faces', not just dentaforms on posts. All of the 1st year Operative courses have new course directors and new text books with as integrated a curriculum as we have been able to implement within a one year time span. This includes the first fixed course, formerly the gold crown course which now introduces PFM and various all porcelain restorations. WE have started a so called "Generalist" model for the Operative Faculty in Clinic. This model works out for me individually but slows down the process of coaching and supervision for our Operative students.

MUSC: There have been no changes in curriculum in past several years.

UPR: We are expecting positive changes for the years to come. The new simulation lab for operative and fixed in addition to a new core course for junior students entitle Clinical Applications of Dental Biomaterials, are expected to enhance students' performance and their academic progress.

EXHIBITS

Deep Margin Elevation: A Paradigm Shift

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Localized subgingival margins can complicate the use of indirect adhesive restorations (isolation, impression taking, and delivery) and subsequently hinder their durability and relationship with the periodontal tissues. This article proposes a technique involving placement of a modified Tofflemire matrix followed by immediate dentin sealing and coronal elevation of the deep margin to a supragingival position using a direct bonded composite resin base. The deep margin elevation technique may be a useful noninvasive alternative to surgical crown lengthening. This technique may also facilitate the placement of large direct composite resin restorations. The fundamental principles of deep margin elevation are presented. *(Am J Esthet Dent 2012;2:xxx–xxx.)*

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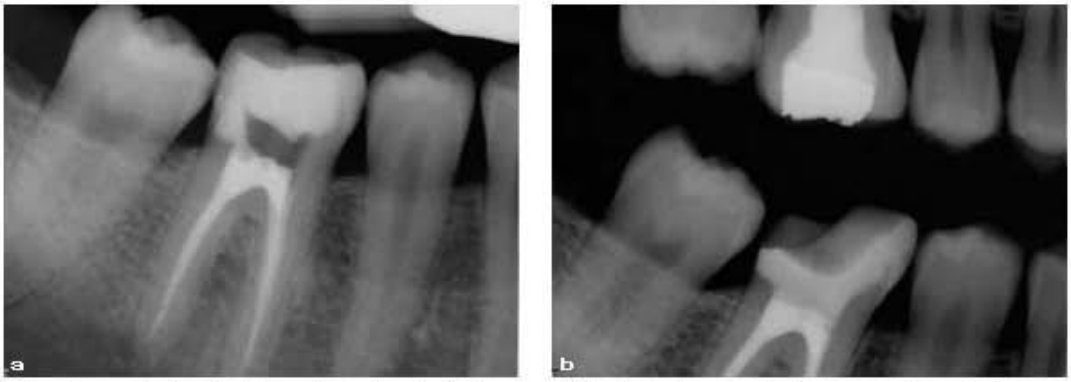
Subgingival interdental margins may be encountered when replacing large Class II restorations. The use of direct adhesive restorations for large defects does not represent an ideal solution, even when associated with shrinkage stress–reduction techniques (eg, slow-start curing, flowable liner, and incremental placement). As a result of the spontaneous postcuring that takes place over several days after composite resin insertion,[1] the dentin gingival seal may not be secure. Accordingly, because of their size, such defects usually require restoration with inlays/onlays, especially those fabricated using chairside computer-aided design/computer-assisted manufacturing (CAD/CAM).[2] Such cases generate significant technical and operative challenges during isolation of the operatory field using rubber dam, adhesive procedures, impression taking (traditional or optical), and adhesive luting. When not properly executed, these procedures may affect the longevity of the restoration and its relationship with marginal periodontal tissues.

There are various clinical approaches to such challenges.[3–5] The gingival margins can be surgically exposed by apical displacement of supporting tissues[5]; however, this may lead to attachment loss and anatomical complications such as the proximity of root concavities and furcations. Once exposed to the oral environment, the gingival margins can be difficult to maintain and may generate additional challenges.

Another approach, presented by Dietschi and Spreafico in 1998,[3] is to place a base of composite resin to coronally displace proximal margins underneath indirect bonded restorations (Fig 1). This procedure, known as deep margin elevation (DME) or coronal margin relocation, is performed under rubber dam isolation following the placement of a matrix. Today, the DME concept can be used in synergy with immediate dentin sealing (IDS) to improve the bond and marginal seal of indirect adhesive restorations.[6–9] In addition to the supragingival elevation of the margin, the adhesive composite resin base is used to seal the dentin, reinforce undermined cusps, fill undercuts, and provide the necessary geometry for inlay/onlay restorations.

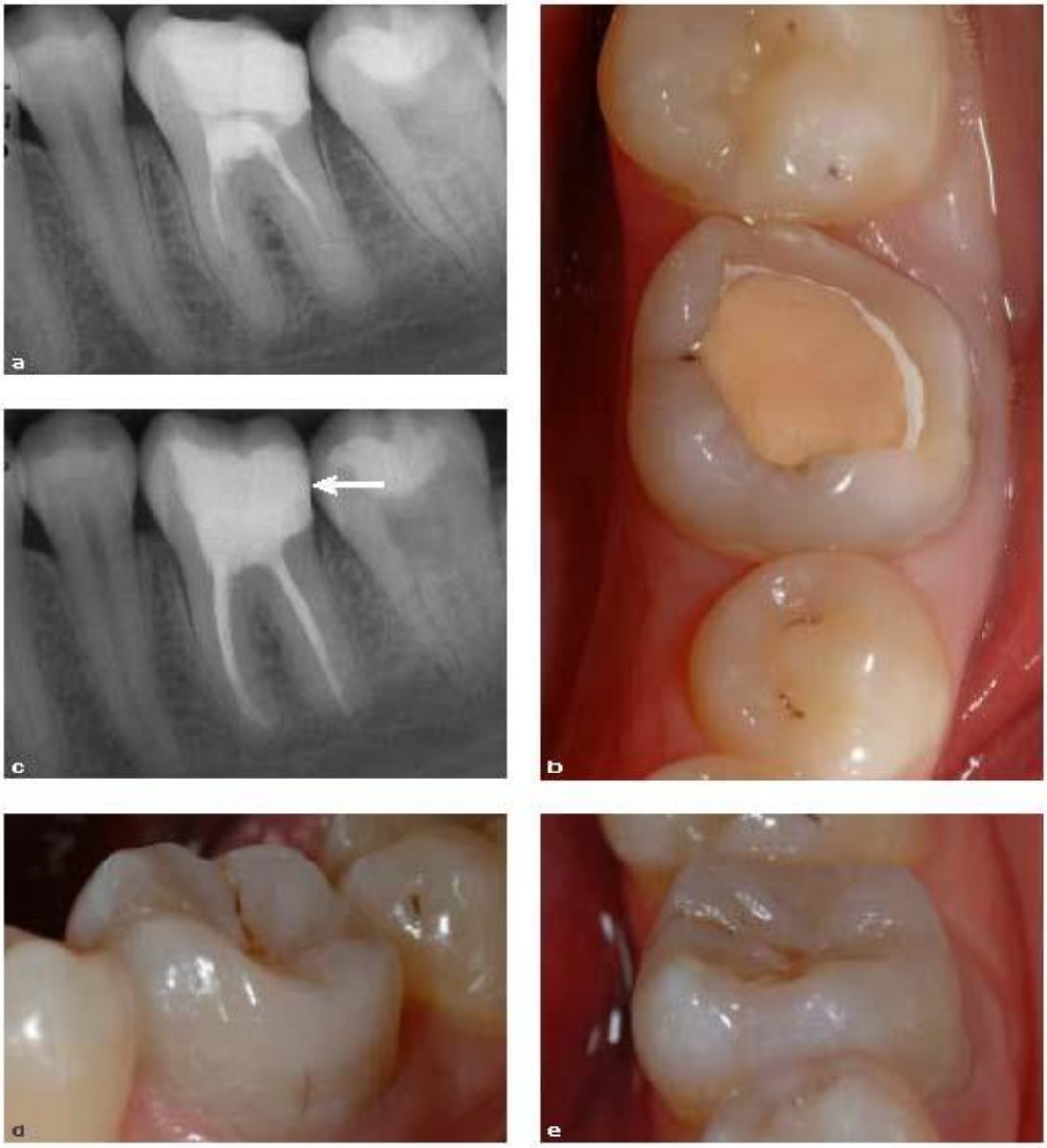


Figs 1a and 1b Radiographs taken *(a)* before and *(b)* after placement of a composite resin base to seal the dentin and elevate the distal margin of the mandibular first molar. Following elevation, the margin was easily accessible for final optical impressions and safe delivery of the definitive restoration under rubber dam.

THE DME TECHNIQUE

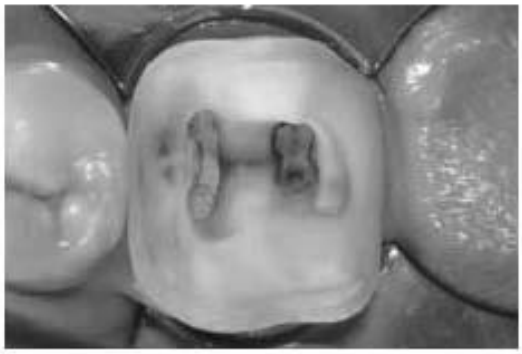
The DME concept applies to preparations for semi-direct and indirect adhesive inlay/onlay restorations, especially those fabricated using optical impressions and CAD/CAM, when the gingival margins cannot be isolated with rubber dam alone. Because excess luting composite resin needs to be eliminated prior to curing, there is a substantial risk of hemorrhaging or breaking of the seal necessary for proper isolation when dealing with subgingival margins (even under rubber dam). This is rarely a problem when cementing conventional restorations because excess cement (glass ionomer, zinc phosphate, etc) can be easily removed after setting. For inlays/onlays, this difficulty can be avoided by using DME or, in case of unsuccessful DME (persistent bleeding during and after the procedure or lack of marginal adaptation evident on radiographs), by performing surgical crown lengthening. Once again, the clinician must consider the risks of involving a furcation or root concavity before planning surgical crown lengthening. DME should be given priority when this risk is present.

DME is achieved by placing direct composite resin using a modified curved Tofflemire matrix to elevate the gingival margin to a level where it can be sealed with rubber dam during restoration delivery, allowing proper removal of excess luting composite resin before curing. DME should always be achieved directly after IDS, under rubber dam, and only if the margin can be isolated properly with a modified Tofflemire matrix. Otherwise, this technique is contraindicated. A bitewing radiograph should be taken to evaluate the adaptation of the composite resin in the gingival area (absence of gaps or overhangs) before proceeding with the final impression. Careful follow-up is also needed to evaluate soft tissue health and the potential need for surgical

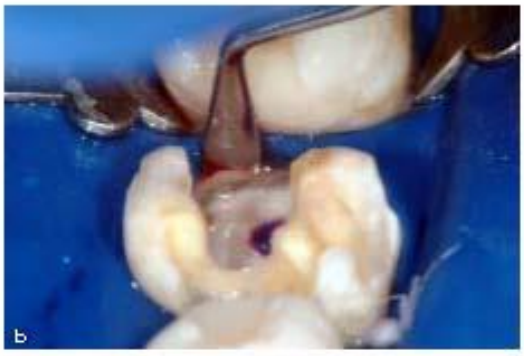


Figs 2a to 2e *(a)* Preoperative periapical radiograph of a clinical case. Margin elevation was used *(b)* before endodontic retreatment and *(c)* after adhesive luting of an indirect composite resin onlay (the arrow indicates the distal margin of the onlay). *(d and e)* The final postoperative results were successful.

intervention. Whenever possible, DME should be performed before endodontic treatment to benefit from the improved isolation during root canal therapy (Figs 2 and 3). Figure 4 shows a typical indication for the DME technique.



Figs 3a and 3b *(a)* Elevated distal margin used to facilitate endodontic retreatment. Final preparation was performed following placement of a glass-ionomer barrier and additional composite resin as a base. *(b)* Clinical photograph taken just before adhesive luting of the indirect ceramic onlay showing perfect isolation and ideal conditions for delivery.



Figs 4a and 4b Typical clinical situation demonstrating the difficulty of isolating the deep distal margin on the mandibular first molar due to *(a)* saliva and blood leakage as well as *(b)* rubber dam slippage over the margin. This situation is the ideal indication for DME.

Figs 4c and 4d *(c)* Curved matrix on the matrix holder. *(d)* The intense curvature allows convergence and a tight subgingival fit.

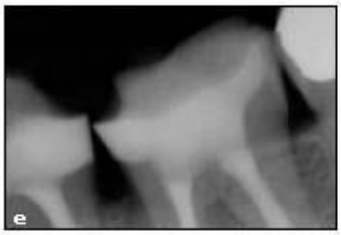


Fig 4e Radiograph showing the mesial margin of the mandibular left second molar elevated with a curved matrix. The distal margin of the left first molar was elevated with a regular matrix. Note the difference in emergence profiles.

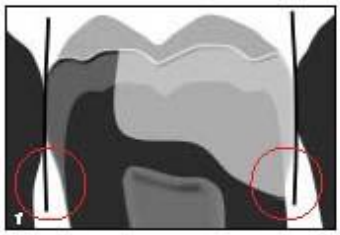


Fig 4f Traditional matrix at full height. Note the deficient gingival seal due to the high contour of the clinical crown.

Figs 4g and 4h Reduction of matrix height to a maximum of 3 mm.

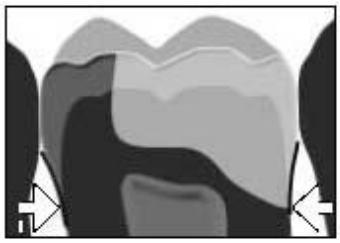
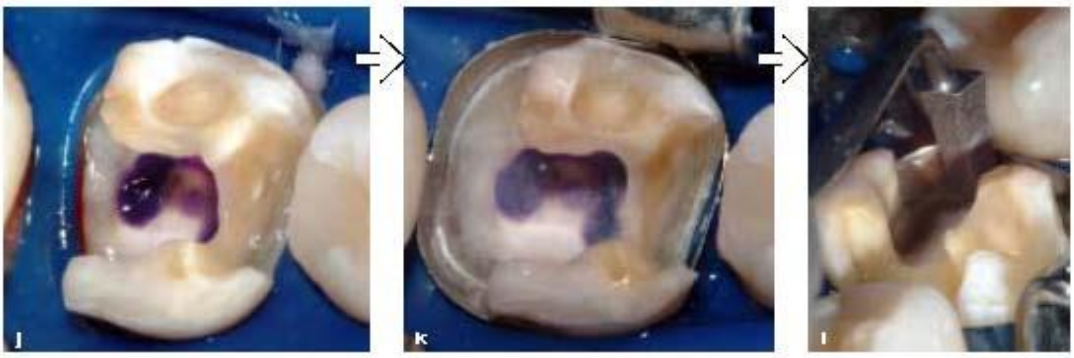
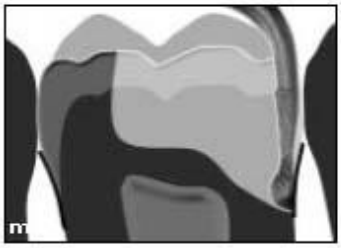
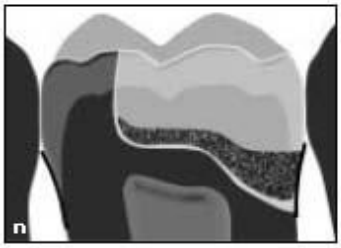


Fig 4i Curved matrix following adaptation. The marginal seal is secured.



Figs 4j to 4l Clinical situation *(j)* before and *(k)* after matrix placement and *(l)* margin refinishing (Prep Ceram Tip, KaVo)





Figs 4m and 4n *(m)* Margin refinishing (Hemisphere Tip, KaVo). *(n)* IDS and base applied.

The following elements are fundamental for successful DME:

1. A curved matrix (Greater Curve or similar "banana matrix") should be favored. A traditional matrix may allow the isolation and elevation of margins located above the cemento-enamel junction (CEJ); however, for margins located in the area of the CEJ, a traditional matrix will usually generate an insufficient gingival emergence profile and contour.
2. Sufficient buccal and lingual walls of the residual tooth structure must be present to support the matrix. Localized elevation is possible, but extended elevation in the buccal and lingual directions will usually be limited by matrix instability and collapse.
3. The matrix height should be reduced to 2 to 3 mm (slightly higher than the desired elevation). The narrowness of the matrix will allow it to slide subgingivally and seal the margin more efficiently. Typically, no wedging is possible.
4. For endodontically treated teeth, the clinician must ensure that successful root canal therapy has been achieved. Further, a glass-ionomer barrier should be placed to prevent access to the canals. DME can also be used to establish proper isolation prior to root canal therapy.
5. After placing the matrix, the gingival margin must be sealed by the matrix, and no gingival tissue or rubber dam should remain between the margin and matrix.
6. Prior to bonding, the margin should be gently re-prepared using a fine diamond bur or oscillating tips (eg, Hemisphere or Prep Ceram tips, KaVo) with abundant water spray. This will ensure the elimination of debris and other contamination of the dentin that may have occurred during matrix placement.
7. IDS[9] should be applied using a three-step, etch-and-rinse dentin adhesive (eg, Optibond FL, Kerr) to the preparation in the presence of the matrix, followed by placement of a composite resin base that will relocate the margin by approximately 2 mm (one to two increments). This part of the procedure is similar to that for a direct composite resin restoration.
8. Various types of composite resin can be used for elevation (traditional restorative or flowable). When a microhybrid or nanohybrid restorative material is used, it is recommended to preheat the material (Calset, AdDent) to facilitate placement and minimize the risk of interlayer gaps. Final polymerization through a layer of glycerin gel (air blocking) is recommended.
9. Once the margin is elevated, the preparation can be completed by careful elimination of excess and composite resin flash around the tooth using a no. 12 blade or a sickle scaler. Interdental flossing is used to check for the absence of overhangs and flash. It is also recommended to re-prepare all enamel margins to remove excess adhesive resin.
10. Finally, a bitewing radiograph should be taken to ensure that no excesses or gaps are present before proceeding to final preparation and impressions. It is interesting to note that the presence of a deep

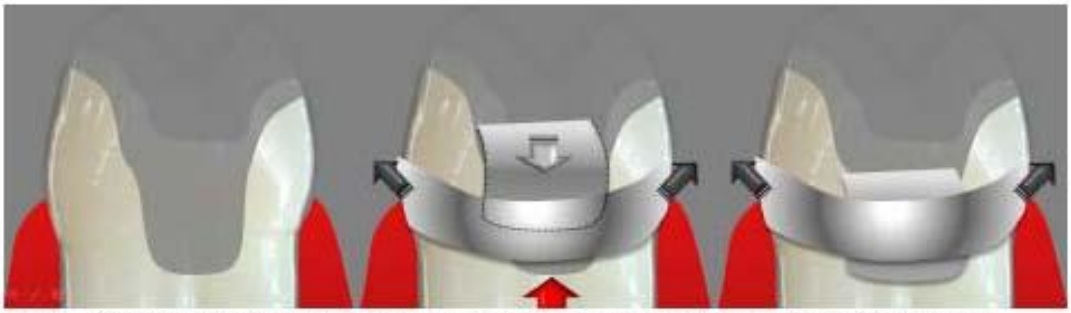
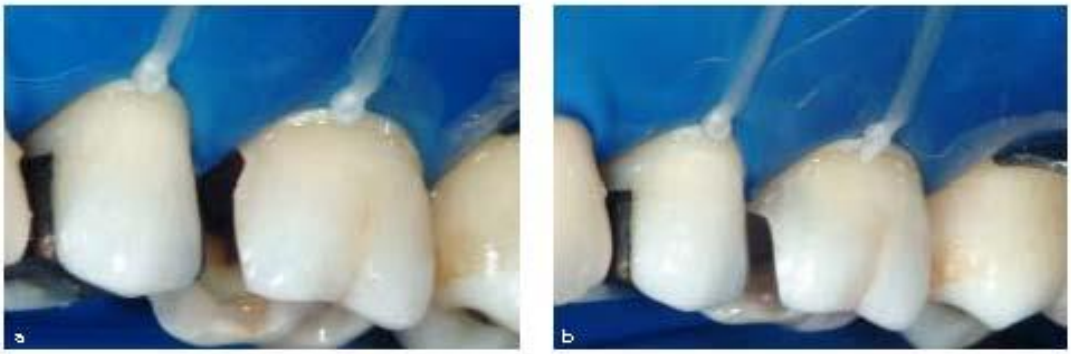


Fig 5 Matrix-in-a-matrix technique for an extremely deep but localized lesion *(left)* in which the curved Tofflemire matrix is placed and left slightly loose to slide in a sectioned rectangular piece of metal matrix deeper into the defect *(center)*. The Tofflemire matrix is then secured *(right)*.



Figs 6a and 6b *(a)* Deep margin associated with severe undercut. *(b)* Suppression of undercut by DME allows for a more conservative inlay preparation.

subgingival adhesive margin may not affect the periodontal status of the restored tooth.[10]

11. The matrix-in-a-matrix technique represents the final option in case of an extremely deep and localized lesion (Fig 5). This technique consists of sliding a sectioned fragment of metal matrix between the margin and existing matrix.

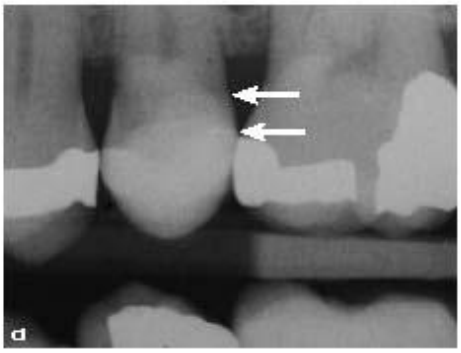
Margin relocation also permits the removal of severe undercuts from an existing amalgam preparation, allowing for a more conservative inlay preparation (Fig 6). Figure 7 shows the long-term follow-up of a sample case.

As when using the IDS technique, delivery of the restoration on an elevated margin requires careful cleaning of the existing composite resin base using airborne-particle abrasion followed by etching/rinsing (enamel) and application of adhesive resin.[9] Gresnigt et al[11] showed that placement of an indirect restoration on an existing and even aged composite resin restoration does not affect the longevity.

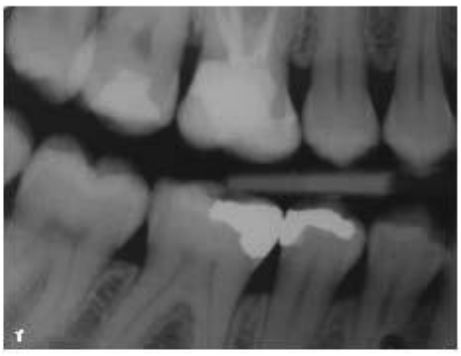
Figs 7a and 7b Buccal cusp fracture of the maxillary second premolar with a mesio-occlusodistal amalgam. *(a)* Amalgam removed. Note the secondary caries at the distal subgingival margin. *(b)* Composite resin base used for elevation of the distal margin and dentin protection.

DME and direct composite resin restorations

Although the DME technique was originally intended for semi-direct (including CAD/CAM) or indirect restorations, it may also represent a useful preliminary tool before placement of a large direct composite resin restoration. In such cases, DME may further facilitate the positioning of separation rings and generate improved contours and tight proximal contacts. For socioeconomic reasons, three-, four-, and five-surface direct composite resin restorations are increasingly used.[12] The use of IDS and DME in combination with a delayed placement technique[13] may improve the quality and performance of large direct restorations. As always, patient, operator, and material factors must be taken into account during treatment planning and execution.[14]



Figs 7c and 7d *(c)* Postoperative clinical view and *(d)* corresponding radiograph 9 years after treatment (top arrow indicates the tooth margin; bottom arrow indicates the elevated margin).



Figs 7e and 7f *(e)* Postoperative clinical view and *(f)* corresponding radiograph 12 years after treatment with DME and a Belleglass (Kerr) onlay.

CONCLUSIONS

More research is needed to validate the deep margin elevation technique. Nonetheless, this approach represents a useful option for patients who cannot afford more invasive procedures. Deep margin elevation conforms to the main goal of restorative dentistry: the conservation of tooth structure. This technique could have a major impact on digital dentistry due to its facilitation of optical impressions of the subgingival margins. Deep margin elevation may also facilitate the placement of large direct composite resin restorations.

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Clinical Operative Syllabus Overview

Semester	Summer/6	Fall/7	Spring/8	Summer/9	Fall/10	Spring/11	Graduation
Course #	7744L	7745L	7746L	8747L	8748L	8749L	
Credit hours	1	2	2	2	2	2	
Quality Evaluation							
Daily Clinic Evaluation (50%)	The Following 5 Criteria are Evaluated During Each Clinic Session: 1. Preparedness, Time Management and Patient Management 2. Ability to Provide an Appropriate, Evidenced-Based Rationale for Treatment *(includes planned treatment and each step in treatment provided in this clinic session)* 3. Psychomotor Abilitiy 4. Infection Control 5. Professionalism			Evaluation is based on whether a student: Exceeded the Expected Outcome Achieved the Expected Outcome Achieved an Acceptable Outcome with Modification/Intervention Did Not Meet the Expected Outcome			
Skills Assessments		Minimum of 3	Successful Completion of all 6				Successful Completion of all 6
Competency Evaluation				Minimum of 2	Minimum of 4	Successful Completion of all 6	Successful Completion of all 6
Aesthetic Requirement	1 Cerec (or 2 assists) and 1 Veneer or Diastema Closure (or 2 assists)			1 Cerec and 1 Veneer or Diastema Closure			Successful Completion of Jr. & Sr. Requirement
	Students must complete a minimum of one case in the same clinical classification prior to challenging the skills assessment. *Students must select the case and patient and declare the skills assessment or competency evaluation at the morning huddle.* *A grade of "2" in all categories is the minimum passing grade for skills assessments and competency evaluations.*						
Quantity Evaluation							
Breadth of Experience/RVUs	4 ≥600	≥2200	≥4100	≥7000	≥9500	≥12000	10,000
	3 400-599	1500-2199	3500-4099	5500-6999	8000-9499	10500-11999	
	2 300-399	1300-1499	3000-3499	5000-5499	7500-7999	10000-10499	
	1 <300	<1300	<3000	<5000	<7500	<10,000	

Semester Grade

Quality 50%

Quantity (RVUs): 50%

In addition, all skills assessments, competency assessments, and aesthetic requirements must be completed by semester 8 and 11 or an "E" grade will be issued.