

Consortium of Operative Dentistry Educators (CODE)



REGIONAL REPORTS FALL 2014

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

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THE CODE 2014 REGIONAL REPORTS IN PDF FORMAT MAY BE FOUND ON THE WEBSITE:

[HTTP://WWW.UNMC.EDU/CODE](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: *ComputerAssisted 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 2014 Region IV meeting at Midwestern University College of Dental Medicine-Illinois in Downer's Grove, IL. Dr. Marsha Babka 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. It was an opportunity for me to renew life-long friendships in the Great Lakes Region. I would like to take this opportunity to thank Marsha 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.

For the first time, CODE now operates under new Articles of Incorporation. This new formalized structure was necessary in order to shift the business from Nebraska to the State of Tennessee. Under these Articles, the Regional Directors serve as Board of Directors. As such, they were allowed to vote on the Articles and they were unanimously accepted by the newly formed Board of Directors. We still are under the direction of the Operative Section of ADEA, but the Articles allow us to conduct business as a non-profit organization. A copy of the Articles of Incorporation can be found on the C.O.D.E. website.

Thanks go to webmaster, Dr. William Johnson, for the timely website updates and enhancements. My appreciation also extends to the Regional Directors and the meeting hosts 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 second year without the assistance of Ms. Linda Diehl, Dr. William Johnson, Dr. Larry Haisch, and Ms. Wanda Patrick. Thank you, one and all.

Sincerely,

Edward J. DeSchepper, M.A.Ed., D.D.S., M.S.D.

A handwritten signature in cursive script, reading "Edward J. DeSchepper". The signature is fluid and elegant, with a prominent initial "E" and a long, sweeping underline.

Consortium of Operative Dentistry Educators (CODE)

Foreword – Edward J. DeSchepper, M.A.Ed., D.D.S., M.S.D.

National Director

DeSchepper ED (ed.) CODE Regional Annual Reports 2014. <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 compiled and distributed. As the result of the efforts of a committee chaired by Dr. Wolcott, the original concept was renewed in 1980. Its leadership had been transformed from the structure of a national coordinator and secretary to a standing subcommittee under the auspices and direction of the Section of Operative Dentistry of the AADS.

The Reaffirmation Years (1997 - 1998)

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

Reaffirmation of CODE official title (2003)

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

The Future of CODE

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

National Coordinators/Directors

1974 - 1982	Robert B. Walcott (UCLA)
1982 - 1986	Thomas A Garmen (Georgia)
1986 - 1989	Frank Miranda (Oklahoma)
1989 - 1998	Marc Gale (Florida)
1998 - 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 (and now also Board of Directors) 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 (Also, Board of Directors)
(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. Shalizeh "Shelly" A. Patel University of Texas Health Science Center Houston, TX	713-486-4269 Shalizeh.Patel@uth.tmc.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. Mary Baechle Virginia Commonwealth University School of Dentistry	(804) 828-7297 mbaechle@vcu.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

The National Agenda for 2014 was established after review of the suggestions contained in the reports of the 2013 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 an electronic copy of the report to the National Director. Electronic 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 26, 2015** from 5:00 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 Dentistry
875 Union Avenue, Suite S103
Memphis, TN 38163

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

2014 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. Curriculum

1. What method is used to update operative didactic and laboratory content and how often is the material reviewed?
2. What role does current literature play in the process above?
3. Who makes sure the process, above, occurs and who ensures the accuracy (dept. chair, curriculum committee, individual course director, etc.)?
4. What types of novel teaching methodologies other than (lectures, sage on the stage) are used at your school for teaching operative dentistry? Please include examples and results so far.
5. Does your school incorporate the use of a digital record (sample patient record) in the teaching of laboratory operative skills? If so, is there any noticeable difference, when the students start clinic?
6. What methods/exercises are used to help students to learn to treatment plan Operative Procedures
Prior to clinic? How often?

After commencing clinic?
7. How is your school incorporating critical thinking in the teaching of operative dentistry?

Please give examples, and degree of satisfaction from the results.

8. Is your school using a grading system or Pass/Fail system on clinical performance?

Do you distinguish between Pass and higher achievement on performance and if not, how do you handle applications to graduate programs for your students?

9. Do you think your students are receiving enough patient experiences in operative dentistry to be minimally competent? If not, what suggestions do you have to mitigate the shortage of patients?

Do any other disciplines in your school lack adequate experiences? What has your school done to mitigate the shortage of patients?

II. MATERIALS/TECHNIQUES AND DEVICES

1. Is your school incorporating the teaching of hard and soft tissue laser surgery?

If so, is this taught as an elective or part of core curriculum?

What discipline(s) teach(es) this course?

2. Does your school use digital imaging and analysis software to grade preparations/restorations?

If so, please comment on results in terms of repeatability and consistency as compared to human evaluators.

What do you think the future holds in regards to this type of evaluation?

3. Are you aware of any U.S. dental schools that have eliminated amalgam from their curriculum? If so, whom?
4. Do you disclose to students that they will be working with amalgam in dental school? If so, when? Prior to matriculation? Commencement of operative course?
5. Have you had issues with students refusing to work with the amalgam (or any other material) in your courses or in the clinic? If so, how was the issue handled?

III. CARIOLOGY

1. What method of caries detection and classification is used at your school?

Are you using the (ICDAS) International Caries Detection Assessment system:

0 Sound

1 First Visual change in enamel (after prolonged drying or in 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

2. How is the progression or arrestment of a carious lesion detected, and recorded at your school's clinic?

3. What criteria are used to determine if surgical intervention is necessary?

Are the criteria standardized and are faculty calibrated?

What strategies have been used to standardize and calibrate faculty?

IV. OTHER

V. 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. Brent Fung

Western University

Pomona, CA

Region I Annual Report Editor:

Dr. Oanh Le

UCSF

San Francisco, CA

CODE REGIONAL MEETING FORM

REGION: I (Pacific)

LOCATION INFORMATION FOR 2014 REGIONAL MEETING

University: Western University of Health Sciences College of Dental Medicine

Dates: September 25 & 26, 2014

Chairperson: Dr. Brent Fung

Phone # 909-469-8314

University: Western University

Fax #

Address: 309 E. Second St

E-mail bfung@westernu.edu

Pomona, CA 917766

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

Suggested Agenda Items for Next Year:

Do you feel your admission Committee does an adequate job of screening and accepting students who will succeed in dentistry?

Is the applicant's dexterity evaluated as part of the admissions process?

Has your Dental School accepted Student(s) who are not well suited to become a dentist?

How difficult is it for a student to be dismissed from your Dental School?

Does your Dental School facilitate career counseling and/or tuition refund for dismissed students?

Do your school teach cutting off BruxZir or Emax crowns that have been cemented/bonded to natural teeth?

Any schools teach air abrasion/co-jet techniques? If so where in the curriculum?

What changes in the % of amalgam being done in the clinic?

What changes in % of non-metal ceramic crowns vs. PFMs done in clinics?

Types of cements being used and where

-1) Metal-based

-2) Ceramics

-3) Post & Cores

-4) Veneers

Are students tuition insured?

Does your school facilitate the transfer of a dismissed student to nursing, pharmacy or other profession?

Are any schools considering removing amalgam from curriculum?

LOCATION INFORMATION FOR 2015 REGIONAL MEETING

University: Roseman University of Health Sciences, College of Dental Medicine

Dates: September 24-25, 2015

Chairperson: George F. Richards Phone # 1-801-878-1409

University: Roseman University Fax #

Address: 10894 South River Front Parkway E-mail grichards@roseman.edu

South Jordan, UT 84095

Please return all completed enclosures to;

Dr. Edward J. DeSchepper, National Director
UTHSC College of Dentistry
875 Union Avenue
Memphis, TN 38163

E-mail: edeschep@uthsc.edu
Phone: 901-448-7686
Fax: 901-448-1625

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
Ron Forde	LLUSD	909-528-7673		rforde@llu.edu
Dan Tan	LLUSD	909-558-4640		datan@llu.edu
Jessica Kim	LLUSD	909-558-8117		Jsuh05d@llu.edu

Viviane Haber	LLUSD	626-862-7017		Vhaber@llu.edu
Iris Choi	LLUSD	909-558-4640		ichoi@llu.edu
Nirvana Anosheh	UCSF	408-515-6967		nirvana@comcast.net
Oanh Le	UCSF	650-558-9253		Oanh.le@ucsf.edu
Raymond Tozzi	UNLV	702-774-2673		Raymond.tozzi@unlv.edu
Richard Walker	UNLV	702-774-2684		Richard.walker@unlv.edu
Bernie Hurlbut	UNLV	702-774-2687		Bernard.hurlbut@unlv.edu
Phil Buchanan	UOP	408-427-2552		jbuchanan@garlic.com
Eddie Sheh	USC	909-730-7012		sheh@usc.edu
Loris Abedi	USC	818-620-3906		labedi@usc.edu
Brent fung	Western U	909-469-8314		bfung@westernu.edu
Hubert Chan	Western U	909-469-8779		hchan@westernu.edu

George Richards	Roseman U	801-878-1409		grichards@roseman.edu
Robert Hasel	Western U	909-706-3846		rhasel@western.edu
Sandra Farah-Franco	Western U	909-706-3846		sfarahfranco@westernu.edu

Bertha Alarcon	Western U	323-240-2964		balarcon@westernu.edu
Klud Razoky	AsDoh	480-993-6173		krazoky@atsu.edu
Jay Morrow	Midwestern U	602-509-2141		jmorrow@midwestern.edu
J. Martin Anderson	U. Washington	206-390-4855		jma@u.washington.edu
Yen-Wei Chen	U. Washington	206-353-9563		ywchen@u.washington.edu
Michael Carlascio	OHSU	503-789-6424		carlascio@ohsu.edu
Bernard Kula	U of Alberta	780-953-5754		Kula@ualberta.ca
Karen Gardner By Skype	UBC			kgardner@dentistry.ubc.ca

2014 NATIONAL CODE AGENDA

REGION I

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

2014 NATIONAL CODE AGENDA

(Evidence cited where applicable) September 25-26, 2014 Report on the proceedings of CODE Region I

Dr. Ed DeSchepper Code Regional Annual Reports 2014

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

Region I School Abbreviations

UA	University of Alberta	ROSE	Roseman University -Utah
ASDOH	Arizona School of Dentistry	UOP	University of the Pacific
MWU	Midwestern 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
		OHSU	Oregon Health Science University

I. Curriculum

1. What method is used to update operative didactic and laboratory content and how often is the material reviewed?

UA Since we are a small program, this review is conducted in an ongoing, informal manner through group discussion involving all pre-clinical and clinical instructors.

ASDOH The students must submit module and faculty evaluations. We take this seriously and review any suggestions that the students submit. Regarding didactic, we introduce new topics that are suggested and approved by the curriculum committee. During the module, we take notes of daily operations and apply the required changes for the year after. We have a material and instrument committee that meets with clinical faculty four times a year for any suggestions to change any material for the preclinical module, which will benefit the clinic needs.

MWU Evidence Based Dentistry (EBD) Committee – Dr. Smith
CE courses by faculty
Reviewed by Clinical and Preclinical faculty on a routine basis.

UBC -literature review every summer
-attending Pacific Dental Conference
-surveying member schools on current “hot” topics

-updating from Summitt text as new issues become available

LLU Material is reviewed and updated as needed on an annual basis. Current from seminars, CE courses, colleagues, scientific journals and textbooks are used to update information. The textbook we use for Operative is “Fundamental of Operative Dentistry”.

UNLV It is up to the individual course directors to update the operative didactic and laboratory content. We have no scheduled formal review process. The Clinical Sciences curriculum may be reviewed on occasion, but never topic by topic, lecture by lecture.

ROSE Up to this year course directors have been responsible to evaluate their materials and update as needed. This year we have employed eCurriculum to assess curriculum. We believe that feedback will be a valuable tool in evaluating all of our curriculum, not just operative and restorative.

UOP The Department of Integrated Restorative Dental Sciences has a board of nine directors. New techniques/materials to be considered are brought first to the director of operative dentistry to be evaluated. The information will then be presented to the board for consideration. If approved implementation will take place.

UCSF At the end of the class we have a faculty meeting to discuss class issues i.e technology, techniques, and materials. Often time we make adjustment on what is being taught.

USC PowerPoint, Blackboard and PDF Courseware for different topics/ lecture. They are updated usually once a year. At this time, we are building a Restorative Handbook in e-book format. On Courseware, PDF files, Blackboard. It is usually reviewed once a year.

WUHS Operative didactic is taught by a few individuals who are key faculty in the pre-clinic. Scientific Review of the Literature occurs in order to ascertain if materials and methods should change, this takes place right before the material is presented in the curriculum. In addition, the Assistant Dean for Clinic Integration plays an important role when it comes to protocols and methods for procedures taught, as we attempt to align preclinic procedures with clinical procedure with the goal that protocols and materials are the same in both arenas.

UW The operative didactic and laboratory content are designed to prepare dental students for their 3rd year operative clerkship clinic and their 4th year general practice clinic. The operative didactic content is updated every year. Current literature is reviewed and implemented into the didactic content. The operative laboratory content is usually reviewed every other year. Modifications in the laboratory content are based upon changes in the didactic content.

2. What role does current literature play in the process above?

UA All instructors involved in this review process are responsible for reviewing current research and literature which are then considered in discussion and planning.

ASDOH Any new material added to the clinic should be supported by the literature and approved by the committee member. Discussions with the directors and the faculty who teaches the pre-clinical module are needed to make sure that it is introduced to the students during the pre-clinical modules.

MWU Literature Review in dental Simulation Clinic huddles; Papers significant
Second Year dental students, along with a faculty mentor, write a Critically-Appraised Topic (CAT) based on a clinically-oriented PICO question. Students search for three to five sources that represent the best available evidence from the operative and restorative dentistry literature, that apply to the PICO question. As part of the CAT process/format, students write a 250-word summary of their findings. Materials are reviewed by Clinical faculty to monitor trends in the field Both the Evidenced Based Dentistry Committee and the Instruments and Materials Committee review the literature to make sure we are above the Standard of Care in both teaching and practicing. This is all shared with all of the faculty.

UBC -major, lit review every summer. Current papers are incorporated into the applicable lectures and are listed as required readings for the final exam

LLU Current literature is one component of the informational sources utilized

UNLV The current literature is one of the main driving forces for updating lectures.

ROSE Operative curriculum is based primarily upon the most recent editions of “Sturdevant’s”, “Summet’s”, Rosensteel’s” and “Schillingburg’s” texts.

UOP Anyone who wants to change routines/materials must present supporting literature.

UCSF Some instructors supply their own publications or articles related to the topic. More often we use our Biomaterial PHD experts to consult with us.

USC We tried to attach the literature to the material, procedures and techniques we use as best as we could as required by CODA.

WUHS Current literature as mentioned in the previous response is very important to the process as are experts who are recognized in their field and the latest editions of Vital Sources textbooks.

UW The current literature serves as a foundation for the process. It provides evidence-based methodology to update the operative didactic and laboratory content.

3. Who makes sure the process, above, occurs and who ensures the accuracy (dept. chair, curriculum committee, individual course director, etc.)?

UA The Head of Restorative Dentistry reviews all findings of discussions and meetings and makes the decision as to whether implementation will occur.

ASDOH The course director makes sure that the materials are covered without an overlap or repetition from other modules. We do not have a department chair.

MWU Clinically Dr. Smith – EBD Committee
Monitoring is done by the Curriculum Committee, Academic Deans and faculty involved.
Dr. Carroll makes sure as well as Dr. Smith and Dr. Pashayan (Deans)

BC -course director

LLU The individual course director in communication with the associate faculty colleagues.

UNLV Individual course directors are responsible for both updating course content and accuracy of information. Course directors are considered the content experts. The department head is only involved when a change of personnel is required or funding for new a project is needed. The curriculum committee authorizes new courses, terminates courses, repositions courses or consolidates existing courses, but is not involved in evaluating course content.

ROSE Curriculum Committee along with the course director and the Co-Directors of Pre-Clinical Education

UOP The department chair and two vice-chairs

UCSF Course section leaders and course directors

USC The course directors updated their materials using PowerPoint/PDF format and post them on Blackboard during the course. Some materials are posted on the USC intranet as Courseware. The Restorative Handbook is currently being put together by two restorative faculty with input from the section co-chairs. The material eventually needs to be approved by the Chair of Restorative Sciences.

WUHS The Assistant Dean for Curriculum Integration, Assistant Dean for Dental Sciences Education, and Pre-clinic D1 & D2 Course Managers are all responsible for this process.

UW The individual course director proposes the update of the didactic and laboratory content. The operative course directors and the department chair review and discuss the content. An agreement is reached through group discussion.

4. What types of novel teaching methodologies other than (lectures, sage on the stage) are used at your school for teaching operative dentistry? Please include examples and results so far.

UA We have incorporated HD photos and videos into our computer-based exams. All exams are now done in this manner. This has allowed exams to be multi-dimensional particularly in respect to the timing and placement of restorative procedures and materials. Students have responded very positively to this format.

ASDOH We use demo videos, demos, recorded lectures, small group discussion, group assignments, and clinical scenarios. The students are expected to watch the videos before class which prepare them better for the class. The clinical scenarios encourage critical thinking and help the students build skills on how to chart and add clinical notes.

MWU Live demonstrations, e-grading self-assessment, video productions, PowerPoint/keynote

Small group demonstrations and rotations

Step by step demonstration – live and video

Project specific drawings and illustrations

One on one instruction and demonstrations by bench instructors

Clinical faculty will demonstrate clinical procedures.

Audience response systems

UBC -differentiated learning – designed as an online mini lesson for students that are ahead in the course. So far have developed “Color in Dentistry” and CEREC. Will next implement enamoplasty.

LLU Currently, still use the traditional teaching model (sage on the stage). A concurrent lab follows each lecture session. The IDP (International Dental Program) having a smaller group group discussions, literature review in addition to the lecture format.

Clinically, students cycle through four Operative study clubs, but plans are to shift the study focus to discuss case based treatment plans using Evidenced Based Dentistry.

UNLV Video recordings of operative procedures, live demonstrations with an ELMO, student portfolios in pre-clinic, student debates on controversial topics, student videos in cariology, student implant work-up and presentation and student presentations of their clinical cases are all utilized in the teaching of operative dentistry. It is difficult to measure the success of these methods of teaching, however, we feel the students gain most from the portfolios, debates, student videos and case presentations.

ROSE . We use lecture, live demonstration, one-on-mentoring – of course PowerPoint presentations with digital video. We are also looking at “Flip” techniques. We have used Turning Point for formative quizzes.

UOP *Standard Lecture Format (L)*- Dissemination of foundational knowledge

Simulation Lab Lecture (SLL)- Dissemination of lab based foundational knowledge when follow-along with materials would be helpful for understanding

Small Group Discussion (SGD)- Reinforcement of concepts. Integration of concepts into the “big picture.”

Lab Huddles (LH)- Reinforcement of lecture concepts that require further explanation or hands-on demonstration to a smaller group. Usually will occur in SIM clinic “group practices” (18 group practices)

Self-Study Modules (SSM)- Dissemination of fact-based information that is easily understood through reading and assessment quizzes. Typically would need follow-up for verification of understanding through seminar/discussion sessions or hands-on laboratory follow-up.

Station Learning (ST)- Similar to the OSCE style of testing, these stations could also be provided as part of the learning process for integrating didactic knowledge with hands-on.

Student Presentations (SP)- To reinforce previously learned concepts to their peers.

UCSF Portfolio project, international portfolio project with UBC, 3-D CAD/CAM portfolio, integrated video teaching methodology use of CAD/CAM technology.

USC Video

WUHS An adaptive learning platform called realize It from Ireland is being utilized in head & Neck Anatomy for the first time, in addition another platform called Qube is being used to teach Local anesthesia in an online module. Other novel methodologies, being utilized are small group/large group with radiology, and portfolio with operative and RPD.

UW On top of the regular lectures, articles are assigned to the students to review. The articles are related to the lecture topics. The students are divided into small groups to discuss, review and critique the articles. The students are expected to explore the subject area independently and interact by themselves. The faculty only acts as guides to occasionally advise and assist students.

We have implemented this new teaching methodology for two years. The students were somewhat resistant initially. In contrast to traditional lectures, sage on the stage, the faculty impart knowledge to the audience, they need to read, digest and think independently. However, after it became routine, students became accustomed to the process and began to explore the body of knowledge independently.

5. Does your school incorporate the use of a digital record (sample patient record) in the teaching of laboratory operative skills? If so, is there any noticeable difference, when the students start clinic?

UA No, we currently do not incorporate this into our program. Our course time has been cut considerably and while this is very worthwhile there is not time to address this.

ASDOH We create scenarios that require the students to treatment plan the scenario and Chart the findings on Dentrix. .

MWU Axium

Axium training in the second year with corresponding cases has had a tremendously positive impact on students matriculating into the Clinic.

Yes, Axium.

Digital records are created so the students can have a simulated experience with the Systems.

UBC EHR is in the 2 Operative simulation modules

-no because it is not really emphasized in sim and so students do not take it seriously. Plus not all sim courses incorporate EHR

LLU We are not using simulated patient records when teaching the introductory Operative I course to the D1 students. However, during the D2 clinic orientation, students are introduced to the Axium program using sample patient records. The IDP program is planning to incorporate sample records in the 3rd quarter this year for Operative I, II, III.

UNLV We use the training version of Axiom software for the DS2 “simulated patient care” courses. At this time, the students do not have access to a bank of radiographs there, and the practicals are different from the competencies in clinic. However, they are required to complete treatment notes each week and enter a treatment plan, as well as complete the initial exam codes. We have always done some form of this, and the students start seeing patients in clinics (mostly recall appts) this Fall, so I don’t think we have any experience of not doing it to compare. As a course director, this provides great documentation support for students who perform poorly. That is, students who fail practicals also are poor at their Axiom notes. When they appeal (or even sue), it is clear legal evidence of their deficiencies. As course director, I believe it supports a better preparation for clinic.

ROSE We are planning for that when we get a new digital record system late this fall or early next year. We believe it will definitely improve the students’ transition to the clinical situation

UOP Yes, we have noticed a smoother transition with the second year students as they enter the clinic and assume responsibilities of care for actual patients. They are more at ease with Axiom.

UCSF Not at this time, but will be added next year (patient record to coordinate with simulation-lab exercises)

USC No. We use simulated digital records for our treatment planning & periodontal courses.

WUHS Yes, we use student axiUm in the preclinic, by planning and completing procedures, students and faculty keep track of their progress and of numbers of procedures done. In addition, virtual patients were introduced first in FPD with the current junior class. We are planning on introducing virtual patients through axiUm for all procedures taught. We do think it has helped so far when students arrive in clinic.

UW We have not yet incorporated a digital sample record at our school.

6. What methods/exercises are used to help students to learn to treatment plan Operative Procedures? Prior to clinic? How often? After commencing clinic?

UA All lesson plans involve a treatment planning component. It is integrated into each lesson beginning in first year. When addressing a specific restorative procedure, there is some explanation of how this integrated into treatment planning and the delivery of treatment. Students are divided into teams and, during these team meetings, treatment planning is addressed and discussed.

ASDOH The treatment planning and medically complex module is taught in the second semester of the second year. The students are introduced to the treatment planning criteria that they will use in the clinic. The class is divided into four CCUs and they work directly with their CCU directors in treatment plan cases during the module. Each group will present to the rest of the class all the cases that treatment plan. Most of these cases include a patient with medical issue that was taught in the medically complex module. By May of the second year, the students start treatment planning their patients with the CCU directors and are completely in clinic by June 1st.

MWU Clinical Case Studies DENT 1617; SQ cases

Clinical Case course in the second year as well as sequential clinical cases.

Clinical Case presentations, Oral Exit Interviews, daily quizzes.

Treatment planning sessions with clinical faculty (prior to patient case); always.

Grand Rounds I and II are taught in the summer and fall of D4 year. Students are divided into groups of 6 and are assigned a case to diagnose and treatment plan. They present that case to the class and faculty as a group.

Treatment planning meetings prior to presentations/treatment

UBC None

Patient by patient basis.

LLU There is a separate course taught by the ODRP (Oral Diagnosis, Radiology and Pathology Dept) that introduces and teaches students about diagnosis and treatment planning sequences relative to the patients health, restorative needs and financial means.

Clinically, diagnosis and treatment planning of restorative procedures is reviewed by the covering primary faculty member. This is in conjunction with the whole treatment plan involving perio, endo, oral surgery.

Plans are in the works to begin treatment plan seminars (6-8 students) for complex cases based on diagnostic data gathered where students present and share their cases. Faculty from each discipline are also present in discussing and coordinating the treatment plans.

UNLV As discussed above, the use of Axium training in the DS2 simulated patient care course gives the students experience with entering caries and the treatment codes. Pt examples are included in instructional PowerPoints, which are uploaded into the campus Blackboard/WebCampus system, which they have access to from any computer.

They also are encouraged to start meeting with their faculty mentor, even to sit in on treatment planning sessions with their vertical students (assigned DS3 and DS4 students with same faculty mentor).

Each student is assigned a faculty mentor, along with a vertical student group. All treatment planning is done with the faculty mentor, except for oral surgery appointments, with specialist consultations as needed.

ROSE We are making an effort this year to begin case-based elements into all of the pre-clinic courses with a stream course the D2 year devoted almost entirely to case-based learning and performance. We presently teach a treatment planning course but are planning to utilize the electronic patient record to totally prepare the student for the clinic experience

Several case-based exercises are planned as well as grand round exercises

UOP Multiple comprehensive treatment planning sessions within the integrated course.

Oral final with treatment plan presentation and follow-up questions.

Final patient treatment planning and case presentation project.

Continue concept with *Integrated Preclinical Technique II* treatment planning sessions.

We've integrated our foundation sciences (anatomy, physiology and biochemistry) with our

clinical education in a progressive fashion as D.D.S. students move through their program. This strand delivers material from courses that previously stood alone. The first-year course, "Orientation to the Clinical Practice of General Dentistry," covers how to address patients, collect information and prepare to treat them. Students learn through lectures, seminars, clinical and case-based exercises on diagnostic sciences, clinic systems, communication and ethics. In the second-year course, "Application of Foundational Knowledge," learning shifts to treatment planning and delivery of care. Faculty are from a broad spectrum of basic science, clinical departments and practice backgrounds. Students focus on clinical dentistry as a whole rather than the individual disciplines that comprise much of the first-year experience. Students think beyond the "ideal" skills and protocols of first year to the application of skills to real patients in clinic. The third-year course is "Multidisciplinary Case Based Seminars" and covers themes involving all aspects of clinical dentistry. Students participate in small group seminars and give formal presentations to demonstrate an understanding of dental literature.

UCSF Every lecture or new classification of restorations taught start with a review of Biomaterial and clinical factors. Depending on Faculty coaches or row instructors

USC Treatment planning seminars are given in two stages:

Before clinic: Seminars are held for a trimester, in a small group format using mounted casts, PowerPoint digital records to treatment plan 4-5 cases.

Actual patient planning seminars are held where students brought in their actual patient cases with printed digital records, radiographs and mounted casts and present to a small group for discussion.

WUHS During the ODTXP module students engage in peer to peer, assessment and clinical at collection sessions. Then students are asked to interpret and diagnose their peers' radiographs and after having seen a few cases Tx Planned by faculty they are required, they Tx plan all operative procedures. In addition, with the introduction of more Virtual patients, students will be required to Tx plan operative procedures more often throughout the two years.

After commencing clinic students are immersed in comprehensive care clinic.

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After commencing clinic students are immersed in comprehensive care clinic.

7. How is your school incorporating critical thinking in the teaching of operative dentistry? Please give examples, and degree of satisfaction from the results.

UA Within our limited time-frame we incorporate student discussion at the beginning of each lecture related to previous lab experiences – what worked well, what didn't work well and why

and what could be done differently.

We use the simulated carious teeth and the students are instructed to prepare the tooth for restoration using their judgment and then a group discussion is held to determine the best solution. This works very well as it is challenging for students and the skills are transferable to the clinic.

ASDOH The school is incorporating critical thinking in the teaching of operative dentistry by using scenarios, OSCE exams, and a critical self-evaluation must be done before the work is checked by a faculty member. The students are given teeth #s only but a patient with a problem, they have to search for all information before they build their treatment plan.

Students gain skills and confidence when we use scenarios as they feel the challenge of treating a patient rather than teeth with #s. The OSCE helps the students to connect all the puzzles and take care of all the issues not the dental issue only.

MWU Clinical cases related to topics. Tests during Practicals

Case-based practicals, sequential clinical cases, quad exercises, clinical cases

Every practical exam

Second Year dental students, along with a faculty mentor, write a Critically-Appraised Topic (CAT) that can involve an operative dentistry PICO question. Critical thinking components of this educational experience include the student asking a clear, concise and focused question about a clinical dental problem, critically appraising the evidence they have located, and carefully considering the applicability of the evidence (source: UTHSC CATs Library cats.uthscsa.edu) By utilizing open discussion in Clinical Conference.

In the clinic it is primarily by discussing principles with students' chairside and ensuring that they evaluate each case/restorations with ADRA analysis.

Grand Rounds, treatment planning conference with faculty.

Active student self-assessment before, during and after procedures (as well as treatment plan development)

Prior to, during and after treatment, self-assessment with feedback

UBC -students are made fully aware of Bloom's Taxonomy and at the level of simulation they will be expected to move beyond memorization to comprehension, analysis and application. In analysis they are required to search the literature to support their conclusions in an evidence based approach. The International Peer Review on Diastemas.net forces them into critical thinking as they must justify their approach to a procedure but fully understand why another school may have a different approach.

-International Peer Review as discussed above

-advanced questions on final exams – some students get it, others just want to memorize

LLU See above response to question #6.

UNLV We try to present case-based problems in pre-clinic as much as possible, however, the real incorporation of critical thinking occurs in the clinic and during individual treatment planning sessions, as well as student projects.

The student debates on controversial topics, student implant work-up and presentation and the student presentations of their clinical cases require the most critical thinking by students and expose the student audience to the presenter's thought process. Guiding the students through the thought process in the clinic and treatment planning sessions are also valuable.

ROSE We have been directed by our dean to utilize case based protocols in all of our pre-clinic courses and are now developing a library of cases to use for these courses. To assess critical thinking we have implemented OSCE and Triple Jump Exams to assess student progress.

We are just beginning to incorporate this method and don't have any data at present.

UOP We have implemented the Pacific Dental Helix Curriculum, which places a strong focus on active learning and critical thinking by integrating across multiple disciplinary areas and using small- group case based learning as a signature pedagogy. Information is presented in a fashion that is timely relative to the learning situation at hand in a manner that students will better comprehend the given concept and how and why it is important to learn and understand. This pedagogy does not embrace the concept of stand-alone courses. The presentation of new concepts/ideas is the result of interaction of many courses.

We have introduced a family of "six virtual patients" that encompass all aspects of restorative dentistry into our pre-clin curriculum. Each "patient" has a list of learning objectives and associated procedures. Students will learn to manage the oral health needs of an entire family of diverse patients by gaining a true foundational understanding of the following restorative disciplines: Dental Anatomy, Cariology, Direct Restorative (Operative Dentistry), Indirect Restorative (Fixed Prosthodontics), Occlusion, Implants, Removable Prosthodontics and Local Anesthesia. No discipline stands alone, as concepts are introduced and built upon in context with each other and the patients. All disciplines are tied together under the universal approach of comprehensive, multidisciplinary patient care, and thoughtful, sound treatment planning is a key element of every patient case. Each patient integrates topics such as cariology, radiology, oral diagnosis and treatment planning and dental materials science and addresses our Dugoni core competencies. The patients represent a typical family encountered in private practice ranging from a child to a geriatric patient with diverse dental and medical histories.

The new curriculum was initiated last year. The results are experienced through interacting with the students as they enter the clinic. Our experience to date is positive, the students are knowledgeable in aspects of clinical dentistry as well as if not better than their predecessors. More time is needed to accurately evaluate outcomes of the new curriculum.

UCSF Have student perform an amalgam design exercise based on photos or caries on extracted teeth. Each scenario can be different.

-Our students self-assess and grade their own test cases.

Fair- Depends if students take it seriously or even remember.

USC Present scenarios to students during lecture and in the sim lab to allow students to come up with the proper outline and design of the restorations.

In the clinic, during daily work, especially in competency exams, students are required to propose the proper outline and design of the preparation and restoration using the cast, and/or diagnostic wax up. This is especially effective in the CAD-CAM course, where the students eventually prep, design and mill out their restoration.

In the clinic, the students are required to present their case and are graded for case presentation at the beginning of the session.

Not satisfied. One of the problems is always faculty calibration. We will be very happy if we are able to get all faculty to be 100% on the same page.

WUHS We are utilizing multiple opportunities for peer to peer assessment, and self-assessment. In addition we are using a e Portfolio Diastemas web platform to promote self-reflection and scientific inquiry. Also using virtual patients to allow students opportunities to problem solve.

Both students and faculty are extremely satisfied with the results obtained from both methods.

UW The students are encouraged to ask the questions and challenge the knowledge imparted by our faculty. Also, as described in the Q4, an updated literature review related to the course topics is also designed to improve students' critical thinking skills. They not only read the articles but also, more importantly, critique the study designs, statistical methods, results and conclusions of the articles.

After we incorporated more critical thinking practices into teaching methodologies, we found students became accustomed to thinking independently. They learned how to explore the body of knowledge on their own and screen the obtained information.

We believe that teaching students to continue acquire knowledge independently is more important than merely teaching the students a set of current operative dentistry practices.

8. Is your school using a grading system or Pass/Fail system on clinical performance? handle applications to graduate programs for your students?

UA We use a four-point grading system (Exceptional, Good, Acceptable and Unacceptable).

Our four-point grading system allows for differentiation in achievement to be recognized. A numerical value is assigned to each descriptor and, at the end of term, which is converted into a numeric grade.

ASDOH Pass/ Fail , we are a competency based assessment.

Yes we do give HP. Also we provide the students with their GPA which mainly reflects

the first two years and recommendation letters.

MWU Grading

Grading and pass/fail depending on the course.

Grades are given for clinical procedures. Competencies are on a pass/fail basis.

Everyday grades for clinical performance are a graded system. Clinical competency procedures are Pass/Fail.

Grading and pass/fail only on competency.

Daily grades clinically (on a scale of 1-5); Pass/Fail for competencies

Scale 1-5 except clinical competencies

On achievements, students are passed on a grading system.

We do make a distinction between Pass and superior performance.

No, grading criteria, pass/fail only on competency.

UBC Grading system

N/A

LLU Daily clinical procedures are essentially Pass/Fail. Competencies and simulated board exams are graded on a scale of 10 with 8-10 being satisfactory, but no grade is issued. Students who fail an exam have to remediate and re-take the exam.

We don't qualify achievement levels, but do have an Honors Program based on the number of procedures done, interviews, scholarly activities, practical exams, and academic standing.

UNLV Daily treatment clinical performance is graded; Excellent, Pass, or Needs Improvement. The semester clinical course grades are: A,B,C or F.

The semester clinical course grade is determined by a combination of clinical production (60%), mentor grade (40%), and Competencies. Clinical production is point based, where every procedure has a corresponding point total. There are A, B, C, and F thresholds of point levels with corresponding numerical values. The quality of clinical treatment has no impact on the clinical production grade. The mentor grade is determined largely by professionalism/preparedness, treatment planning ability, quality of treatment and attendance. Lack of attendance will negatively affect the final course grade. In addition, students must successfully complete the required competencies to progress to the next year. The team faculty meet at mid-semester and at the end of the semester to determine the mentor grade.

ROSE Our school is "Pass/Fail" in all disciplines including clinic.

This is the first year we have been faced with this issue and we presently

UOP Pacific uses a grading system. No *pass / fail* concept used

N/A

UCSF Pass/ Fail system with or without honors.

Honors with letters of commendation

USC We use a grading system, a one page grading sheet for every procedure, from treatment planning, perio to most of the restorative procedures. 70 is the passing grade for our daily evaluation and competency exams. We are currently trying to implement a critical error function on those grading sheets. If the student make any of the critical errors, the exam will be an automatic failure regardless of the grade.

We have a daily evaluation digitally on Axium for most of the procedures we do from treatment planning, perio, operative & fixed, implant & removable. Our competency exams will be digital soon. Students, faculty or staff can pull out the record at anytime to review the number and grades.

WUHS No
N/A

UW We use the grading system on Axium, a clinical software program.

No responses

9. Do you think your students are receiving enough patient experiences in operative dentistry to be minimally competent? If not, what suggestions do you have to mitigate the shortage of patients?

Do any other disciplines in your school lack adequate experiences? What has your school done to mitigate the shortage of patients?

UA No, they do not. I believe more outreach programs could be accessed to provide a wider range of patient experiences – this would not only increase number of patients available but also a younger demographic.

All of them. There have been some attempts to recruit patients but to date these measures have not been very effective.

ASDOH Yes, the students have enough patient experience. We do not have a shortage of patients, as we have 6000 clinical hours besides the D4 ICSP rotation where the students get tremendous experience working at community health centers. Some of the external sites allow students to see up to eight patients in a day.

Endodontics could be one of the disciplines that the students do not have many patients, but they manage to finish their competencies.

MWU Yes
Yes they do

I think that in all other areas we have a good exposure to experiences. Endo was a problem, but the fee drop eliminated that. They could always use more removable but plenty of operative, crown and bridge, endo and oral surgery, perio and pedo now.

UBC yes
If not, what suggestions do you have to mitigate the shortage of patients? No

Do any other disciplines in your school lack adequate experiences? No
What has your school done to mitigate the shortage of patients? N/A

LLU Yes, we feel students are receiving sufficient patient experiences in operative dentistry. Each student is required to accomplish a minimum number of procedures before attempting a competency exam for that particular restoration.

The pre-doctoral students have a shortage of patients requiring endodontic procedures, fixed and removable prosthesis. The IDP program, however, has no shortage of removable procedures.

UNLV Yes, students receive enough experiences to be minimally competent in operative dentistry.

We lack adequate experiences in restoring implants and the use of digital impressions. We have just received ten CEREC units, however, implementation has yet to occur. With no graduate programs in periodontics or oral surgery restoring implants remains a problem.

ROSE We are concerned about this being a new school and are presently faced with what we consider a shortage of patients. We have implemented in clinic typodont exercises which are evaluated as if it were a patient for those students who have broken or cancelled patients. We are also looking into other exercises such as OSCE's to fill in some areas that may be lacking qualified to enter practice.

UOP Yes

Removable Pros is our biggest challenge. Pacific uses the program "*Homeless connect*" to bring in edentulous patients.

UCSF No increase clinic and increase experience

Yes- Endodontic and Fixed Prosthodontic

WUHS We think that our students do receive adequate experience in most operative procedures for composites, less for amalgam, however they make up for it at the community outreach clinics. Also, we noted that complex build ups are not as readily available for students.

Other disciplines are in Endo, RPD, and complete dentures, have been somewhat lacking, and we have administered clinical OSCEs and planning for an RPD portfolio assessment. We would also like to see more crowns/onlays.

UW Overall, our students have had sufficient experience in operative dentistry, but not all the aspects. For instance, there are fewer and fewer patients who chose amalgam fillings as a restorative option. There is also a lack of gold inlay/onlay cases, mainly because of insurance coverage.

Other disciplines also are experiencing the same problem. For instance, more and more patients are choosing implant restorations rather than traditional bridge work or removable partial dentures. In the fields that are truly short of patients, we would consider adjusting the quantity of the requirement. It is true that our students will be lacking in some aspects of training, but to a certain degree, that lack reflects current trends in clinical demand.

II. MATERIALS/TECHNIQUES AND DEVICES

1. Is your school incorporating the teaching of hard and soft tissue laser surgery?

If so, is this taught as an elective or part of core curriculum?

What discipline(s) teach(es) this course?

UA No – we don't currently incorporate this into our program.

ASDOH The laser module is part of the curriculum. It is a three day module and is taught during the second year. The faculty who teaches the module has a certificate in laser and experience of using the laser for many years. Students are taught the didactic knowledge about laser and get hands on experience of soft and hard tissue laser surgery. In the clinic, the students are encouraged to use laser and almost all the students will have an experience with the soft tissue laser. There is no requirement or competency required as part of graduation. We have faculty on the clinic floor that are comfortable using the laser and encourage the students to use it.

MWU Yes- we have had hard tissue procedures but we backed off due to lack of experience. We will continue to monitor and try to reinstate. Soft tissue only for now. The program is just beginning.

If so, is this taught as an elective or part of core curriculum?

Core curriculum

Yes, 2nd year students

What discipline(s) teach(es) this course?

Pre-clinical faculty and Perio faculty

UBC YES, soft tissue diode laser surgery

If so, is this taught as an elective or part of core curriculum? It's taught chair-side in ICC

What discipline(s) teach(es) this course? Integrated Clinical Care

LLU Not at this time. We used to have an elective course with the Waterlase, but not currently. Only used on soft tissue procedures. The school has not kept up with the certification and the units are hence not available. Clinically, we still use the Picasso laser

unit for soft tissue contouring and reduction done by a primary faculty member only.

UNLV Yes

If so, is this taught as an elective or part of core curriculum?

What discipline(s) teach(es) this course?

Clinical Sciences

Part of the curriculum

ROSE Not at this time.

UOP No hard tissue laser surgery is used

Soft tissue laser surgery is used for gingivectomies and esthetic contouring.

If so, is this taught as an elective or part of core curriculum?

Elective

What discipline(s) teach(es) this course?

Perio and Recon

UCSF Yes

If so, is this taught as an elective or part of core curriculum?

Elective

What discipline(s) teach(es) this course?

Preventive Restorative Dental Sciences

USC No

If so, is this taught as an elective or part of core curriculum? No

What discipline(s) teach(es) this course? Maybe Perio

WUHS No

If so, is this taught as an elective or part of core curriculum? N/A

What discipline(s) teach(es) this course? Periodontics

UW No

2. Does your school use digital imaging and analysis software to grade preparations/restorations?

UA Yes, we use it for grading fixed restoration preparations.

ASDOH No

MWU Compare, Planscan
Yes

UBC No

LLU No we don't but may in the future

UNLV No

ROSE We are beginning to use E4D Compare – we are starting with the dental anatomy course with plan to expand to other courses in the future.

UOP No

UCSF No (Subjective) – we are looking into this right now for Prep check

USC No

WUHS We plan on integrating Compare by E4D into our preclinic curriculum. We plan on integrating it into all phases of preclinical curriculum, from day one with wax ups and later with all operative procedures. It should help students develop their self-assessment skills. If so, please comment on results in terms of repeatability and consistency as compared to human evaluators.

UW No, but we are considering implementing that system in the future

If so, please comment on results in terms of repeatability and consistency as compared to human evaluators.

UA We don't use it in operative dentistry so I am unaware of the results.

ASDOH No response

MWU More objective- but we have not refined it to accurately reflect the grade we want to give. We will be working with this very closely.

UBC No

LLU No response

UNLV No response

ROSE No data available at this time but we are optimistic.

UOP No response

UCSF No response

USC No response

WUHS No response

UW No response

What do you think the future holds in regards to this type of evaluation?

UA I think it has wonderful potential because of its objectivity but cost is prohibitive for our program.

ASDOH We prefer to have consistency and possibility of digital grading as human grading could be very subjective

MWU I think this IS the future.

UBC The need for multiple expensive machines seems to be prohibitive.

LLU More consistency with grading without the “human” factor.

UNLV Promising integration into our SimLab courses.

ROSE We have high hopes for this.

UOP Very promising

UCSF Will happen

USC Anything is possible if someone could come up with the proper system and software.

WUHS This type of evaluation is very valuable, in fact we believe it can transition to the clinic to help the new clinical student self-assess and later as practitioners they would continue to use it prior to scanning their final preps

UW Digital imaging and analysis software are the future of evaluation techniques. They provide more objective methods to grade students work. Also, they save manpower, particularly at the shortage of faculty.

3. Are you aware of any U.S. dental schools that have eliminated amalgam from their curriculum? If so, whom?

UA To the best of my knowledge it has been eliminated from Western and Stills in Mesa, Arizona.

ASDOH No, I am not aware of any U.S. dental schools that have eliminated amalgam from their curriculum.

MWU Don't Know

UBC No

LLU Not aware of any US school. We still teach amalgam procedures in addition to composite and glass ionomers.

UNLV As of the last CODE meeting, USC and tentatively UOP.

ROSE None known at this time.

UOP No Amalgam usage has declined in our clinic. Currently very few amalgam restorations are placed.

UCSF As of the 2013 CODE meeting, USC.

WUHS We are unaware of that as of now.

UW We are not aware of it.

4. Do you disclose to students that they will be working with amalgam in dental school? If so, when? Prior to matriculation? Commencement of operative course?

UA Prior to beginning the course, we disclose that we will be using it and discuss the advantages and disadvantages and the risks of this and all restorative materials.

ASDOH No, we do not disclose to students that they will be working with amalgam in dental school.

MWU Yes to all.

UBC Amalgam is presented during the introduction to Operative in the first semester of 2nd year.

LLU At the introduction to the Operative course but not before.

UNLV Spring of their 1st year in Operative Simlab

ROSE I know of no formal notification. If in the interview with me they ask I answer. I have had no negative comments from interviewing students or matriculated students.

UOP No

UCSF Yes- Commencement of Operative course

USC No. We start teaching amalgam from the first trimester of the freshmen year.

WUHS We do not disclose to students, we teach them proper protocols of manipulation, trituration and dispensation of amalgam scraps. Our protocol does to allow for students to drill out amalgam from their typodont teeth

UW Our students are informed that they will learn and work with amalgam both in pre-clinic and clinic scenarios after the commencement of their operative courses.

5. Have you had issues with students refusing to work with the amalgam (or any other material) in your courses or in the clinic? If so, how was the issue handled?

UA We have had no issues – no students have refused to work with the material.

ASDOH No, we have not had any issues with students refusing to work with any materials. This is part of the curriculum.

MWU No

UBC No

LLU No issues (so far).

UNLV None

ROSE Only one that I am aware of. With counseling he performed the exercises in the sim lab. I am not aware there is a problem in the clinic. However, very few amalgams are treatment planned and the team leaders to whom I have posed this question have all indicated that students have a strong leaning towards composites.

UOP No

UCSF None

USC No. We have one student who refuse to work with PMMA due to allergic reaction.

WUHS We have not had an issue with students refusing to work with amalgam at all. Some faculty are hesitant to teach in the amalgam lab. However we have tested the mercury level in the lab adjacent to some students who were condensing amalgam and the mercury level was below the PEL.

UW Students have not refused to work with amalgam so far. We have had students question the necessity of learning to work with amalgam because they are aware that there is less demand from patients.

III. CARIOLOGY

1. What method of caries detection and classification is used at your school?

Are you using the (ICDAS) International Caries Detection Assessment system:

- 0 Sound**
- 1 First Visual change in enamel (after prolonged drying or in 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**

UA We use the ICDAS which is coordinated by the oral diagnosis coordinator.

ASDOH No we don't but planning to include it this spring in D1 operative module

MWU ICDAS

E1, E2, D1, D2 classification. Caries detect, radiographs, clinical assessment and Microlux Trans-illuminator

UBC An in-house developed modification of CAMBRA based on the literature of Young & Featherstone (our CRA document could be submitted to CODE)

LLU We follow the CAMBRA technique of classifying high, medium and low caries risk. Students are exposed to the caries dye detection, but clinically most detection is done visually, radiographically, and tactile detection. Our dental hygiene students are shown how to use the Diagnodent in their sealant course, mainly to be familiar with it in the event an employing dentist uses it.

UNLV We do not utilize any digital imaging fiber-optic or laser transillumination caries detection systems. Classification is based on caries penetration into enamel (white spot

lesions) or infected/affected penetration into dentin.

NO. This system is presented to student in the Fall of their 2nd year in Cariology. It is not used by all faculty.

ROSE Visual, radiographic, explorer, caries indicator

UOP ICDAS / Radiographic D1, D2, E1, E2, E3

UCSF We are using the WHO (World Health Organization) explore and x-rays radiographically we use the E1, E2,D1,D2, D3 interpretation system.

USC Primary radiograph, explorer, visual inspection and caries detector.

WUHS We use the WHO probe for detection and diagnosis as a result of ICDAS caries classification clinically, and radiographically we use the E1,E2,D1,D2,D3 interpretation system. We do have caries detecting solution in the clinic but it is not relied upon heavily, also we teach ultraconservative caries removal technique.

UW We are using traditional visual and tactile methods with the aid of radiographs and disclosure solutions.

The caries classification we used is based upon the severity of caries lesions:

E1 lesions (outer third of enamel) E2 lesions (inner third of enamel)

D1 lesions (outer third of dentin) D2 lesions (middle third of dentin) D3 lesions (inner third of dentin)

2. How is the progression or arrestment of a carious lesion detected, and recorded at your school's clinic?

UA We use radiographs and clinical examination and all information is recorded on Axium.

ASDOH Visual and radiographic.

MWU Radiographically E1, E2, D1, D2, D3 clinical appearance
According to latest information provided by Rella Christensen, caries can't be arrested.

UBC In the Electronic Oral Health Record (EOHR = Romexis software) as incipient (enamel only) or dentinal involvement with colour-coding (pink or red). Supporting radiographs and photographs are also stored in the EOHR, as well as any supporting comments. The CRA form is also uploaded as an electronic attachment to the patient record.

LLU During diagnosis, proximal caries are radiographically classified as E1, E2, D1, D2 and D3 lesions. Based on the patient's caries risk, appropriate treatment modalities are applied using the medical and the surgical model as appropriate. Radiographs are updated

annually or at the recall visit.

UNLV Neither progression nor arrestment are recorded in Axiom at UNLV. Carious lesion detection is evaluated at the intraoral clinical exam under faculty supervision and during radiographic interpretation with the student's faculty mentor.

ROSE Visually, radiographically, and recorded on patient's chart for follow-up at future appointments

UOP Not easy to do in the clinical setting

UCSF Follow up with radiographs and explorer

USC We do not have a way to track this due to the limitation of Axiom documentation.

WUHS Progression and arrestment of caries lesion is noted in the Tx History notes. It is encouraged and recommended for all E1/E2 lesions.

UW The progression of carious lesions is detected and recorded by the severity of carious lesions: E1, E2, D1, D2 and D3.

3. What criteria are used to determine if surgical intervention is necessary?

UA The presence of cavitation is used as the primary criterion for intervention.

ASDOH Once it reaches the DEJ

MWU Radiographically into dentin, stick with explorer (tug back)

UBC Primarily, clinical evidence of cavitation of the caries lesion, without the use of the sharp end of the explorer.

LLU Depending on the patient's risk factor (high, moderate, low), the E1 and E2 lesions are treated using the MI paste (Recaldent). D1, D2, and D3 lesions are treated surgically. This is typically influenced by individual instructors' biases.

UNLV Cavitation

ROSE Tactile with explorer, radiographic, obvious visual

UOP Cavitation / Radiographic E1 / CAMBRA / age and medical status of the patient

UCSF Visual/Radiographs

USC We do not surgically treat caries unless they pass the DEJ

WUHS Criteria used for surgical intervention: Assessment of the activity and extent of the lesion in conjunction with the CRA for the patient. If the lesion activity is arrested, surgical intervention occurs only if esthetics or plaque control are a concern. If the lesion is active and or and ICDAS 3 or more or a D1/D2 or more, then surgical intervention occurs, at a minimum a PRR is done on the occlusal lesions that are ICDAS 3.

UW For the E1 and E2 carious lesions, usually non-operative treatment is applied.
If the carious lesion is cavitated and dentin is involved, the surgical intervention is necessary.

Are the criteria standardized and are faculty calibrated?

UA Yes, criteria is reviewed on an on-going basis and we make every effort to calibrate the instructors Through formalized monthly calibration meetings.

ASDOH Yes, that is what we teach in the pre-clinical curriculum too. We have formed several committee who are reviewing our clinical guideline and going through a huge calibration process just to make sure that all the faculty and the external faculty are calibrated.

MWU Probably, grading rubrics for preparations including caries removal- I would never say all dentists can be standardized in this regard.

UBC The criteria are standardized/consistently taught to students, but the faculty, especially the part-time instructors in patient clinics, are not necessarily all calibrated, even though information is circulated to them regularly on the teaching that students receive.

LLU Essentially, no.

UNLV Neither progression nor arrestment are recorded in Axiom at UNLV. Carious lesion detection is evaluated at the intraoral clinical exam under faculty supervision and during radiographic interpretation with the student's faculty mentor.

ROSE Have a difference of opinion here by different team leaders. Some indicated that calibration is good, other that calibration is lacking.

UOP Calibration occurs during preparation for the boards

UCSF No

USC Calibration is always a problem, especially when we have many part-time volunteer faculty in the clinic.

WUHS Faculty calibration has been completed in the past however it must be done continually over the years.

UW Faculties who teach mainly in operative course are calibrated, but not all the clinical faculty are calibrated.

What strategies have been used to standardize and calibrate faculty?

UA At the monthly meetings, cases are presented and discussed in an attempt to standardize all instructors and faculty.

ASDOH It is part of faculty development. We are putting new guide lines for current faculty and new hire. The suggestion is that the faculty need to go through training and calibration every year.

MWU Calibration sessions prior to Mock Board Exam.
Treatment planning and diagnosis sessions following criteria established by the regional boards. Review of clinical cases, grading exercises, treatment planning exercises, board standards.

UBC A “Question of the Week” or a clinical scenario is circulated electronically to all teaching faculty in patient clinics and all students. Students are asked to research or recall their learning on a scenario or method and be prepared to discuss it in the pre-clinic “huddle”. Instructors have the answer key circulated to them before the pre-clinic huddle/discussion. The answer key can include references, photos, etc. for education purposes for instructors.

LLU Not all faculty are calibrated to a standardized criteria and this needs to be done with regards to diagnosis of carious lesions.

UNLV This is a work in progress

ROSE We are in the process of having faculty calibration meetings and training sessions– slow process

UOP Use of PowerPoint to show radiographic examples

UCSF Intersession seminars, community clinic calibration Kit (Preps and Grades) for faculty off-site

USC We try to have one big calibration meeting every trimester, most of the time during the finals week. We also try to have one small calibration meeting a month during clinical precession. But it has been difficult, especially when accreditation is coming up next year.

WUHS We have routine faculty development sessions scheduled throughout the year. Calibration topics of interest are presented. In addition we have a faculty calibration standards team that is responsible for researching protocols and standards for the purposes of making recommendations for calibration protocols.

UW Faculties are all invited to attend the lectures at the operative dentistry course. The carious assessment, detection and treatment approaches are updated at the faculty retreat meeting, usually twice a year.

IV. OTHER

UA None

ASDOH None

MWU None

UBC None

LLU None

UNLV None

ROSE At our last meeting we briefly discussed biomimetics. I believe USC may be at the forefront of teaching those techniques. Are any other school emphasizing that methodology and if so what is being taught. Also, are any schools teaching or emphasizing “Immediate Dentin Sealing – IDS” in conjunction with ceramic inlays/onlays?

UOP None

UCSF None

USC None

WUHS None

UW None

V. 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. Gary Hildebrandt
University of Minnesota
Minneapolis, MN

Region II Annual Report Editor:

Dr. Gary Hildebrandt
University of Minnesota
Minneapolis, MN

CODE REGIONAL MEETING FORM

REGION: 2 (Midwest)

LOCATION INFORMATION FOR 2014 REGIONAL MEETING

University: University of Minnesota School of Dentistry

Dates: September 18-20th

Chairperson: Dr. Gary Hildebrandt

Phone # (612)625-5130

University: University of Minnesota

Fax # (612)625-7440

Address: 8-450 Moos Tower
515 Delaware St. SE

E-mail Hilde014@umn.edu

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

Suggested Agenda Items for Next Year:

Are faculty or students evaluated or rewarded based on production at your school? Or should they?

What needs to be done to insure "operative dentistry" maintains an identity as its own discipline? What should be included in its identity?

What is being taught and what is the future of gold as a restorative material in dental schools?

Could a student graduate from your school and never experience caries removal? (i.e. only experienced replacement of defective restorations)

How does your school manage rampant caries patients?

Does your school still host a traditional clinical boards exam or is it considering moving away from the process towards a non-patient based exam? What alternatives are being considered?

What efforts do you make to give all students a uniform experience in clinic?

LOCATION INFORMATION FOR 2015 REGIONAL MEETING

University: Iowa

Dates: TBD

Chairperson: Deborah Cobb

Phone # 319-330-2766

University: Iowa

Fax #

Address:

E-mail deborah.cobb@uiowa.edu

Please return all completed enclosures to;

Dr. Edward J. DeSchepper, National Director
UTHSC College of Dentistry
875 Union Avenue
Memphis, TN 38163

E-mail: edeschep@uthsc.edu
Phone: 901-448-7686
Fax: 901-448-1625

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: 2
(Midwest) 2014 University of
Minnesota

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**2014 NATIONAL CODE AGENDA REGION II
SUMMARY RESPONSES TO NATIONAL AGENDA**

(Editor Note: Questions condensed for printing purposes)

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

No Summary Responses Submitted

2014 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. Curriculum

1. What method is used to update operative didactic and laboratory content and how often is the material reviewed?

COLO: Material is reviewed annually, before start of pre-clinical operative courses.

IOWA: Material reviewed yearly by course director and updated as needed.
Follow department guidelines “Best Practices in Operative Dentistry” based on current evidence. Discuss and reach faculty consensus. Base our clinical teaching and practice on these.
(guidelines are reviewed/ updated every few years)

MARQ: Periodic updates based on subject matter.

MINN: As is probably the case in most dental schools, faculty are hired into the division/department based on their expertise—and they provide the curriculum and keep it up-to-date as a part of their every day interests, research, scholarship, and publication. At the University of Minnesota, the Division of Operative Dentistry includes full time faculty members that are leaders and content experts in some aspect of the field of Operative Dentistry, and they contribute to that aspect of the curriculum that lies within their field of expertise.

	Expertise	Curriculum responsibilities
Gary Stafford	Evidence based practice	Dept Chair – Adv Restorative
Abena	Gen Dent	Course Director – Preservation and Restoration

Full time faculty?

	Expertise	Curriculum Responsibilities
David DVO RAK, DDS, MA	MA in Education Interest in Teaching Methods	Collaboration on Educational Methods, Standardization of Evaluators & Remediation
Gary HILD EBRA NDT, DDS, MS	MS Restorative Dentistry Research in Cariology Active General Clinical Practice	Director of Division Course Director 1 st Pre-Clinical Course Course Director Clinical Courses
Tom LARS ON, DDS, MSD	MS Restorative Dentistry Scholarship in Operative Clinically Relevant Lit Review Retired General Clinical Practice	Lectures on current topics in pre-clinical courses
Ignatius LEE, DDS, MS	MS Restorative Dentistry Research in Cariology Active General Clinical Practice (with emphasis on cast gold)	Course Director 3rd Pre-Clinical Course

Jorge PERDI GÃO, DDS, MS, PhD	MS Restorative Dentistry Doctorate in Dental Materials International Reputation for Research on Bonding & Esthetic Restorations	Course Director New Materials Course Lectures on current topics in pre-clinical courses
Craig PHAIR, DDS, MS	MS Restorative Dentistry Interest in Traditional Restorative Methods	Course Director Psychomotor Skills Course Course Director 2nd Pre-Clinical Course
Omar ZIDAN, PhD, MS	Doctorate & MS Restorative Dentistry Scholarly Activities on Digital Technologies (CAD/CAM, digital impressions) & Evidence- Based Clinical Practice Active General Clinical Practice	Course Director Evidence-Based Dentistry Course Course Director CEREC Course Course Director New Materials Course
Michael Madden, DDS	General Dentistry	Course Director Oral Anatomy

UMKC: -Code meeting

-operative articles from dental journals

-up to course directors, not a lot of updating on a year to year basis

-curriculum committee also oversees

SIU: The content is reviewed and updated yearly by the course directors.

2. What role does current literature play in the process above?

COLO: We review current literature and discuss what changes need to be implemented in our curriculum.

IOWA: Review of current literature to support practice guidelines.

MARQ: Current literature plays a significant role in updating operative didactic and laboratory content, in both lectures and in rounds/grand rounds programs.

MINN: The term “current literature” is a buzzword for up-to-date information. Where the information falls within the scope of our faculty experts, incorporation into the curriculum is seamless and without delay. When new knowledge is produced in areas that are not directly under the auspices of one of the faculty members, then some delay can be anticipated while the published studies are recognized, discussed, validated, and incorporated into the curriculum. The recognition of relevant new knowledge relies on a faculty that is engaged in the literature and has interests that are broad enough in scope to cover all subject areas within and surrounding the discipline. This would include pedagogical research.

Here is an example of new relevant information making its way into the curriculum in this less direct manner. Research in the area of photoelastics came to light in the Division of Biomaterials that indicated sharp internal line angles acted as stress concentrators. Though none of the Operative Dentistry faculty members were aware of this research, the information was communicated between Divisions. The Division then convened a meeting to review the relevant literature. It was decided to make alterations in the curriculum to accommodate this new information, *to wit*, the straight plane fissure bur (#56) was replaced with the straight rounded fissure bur (#245) and hand instrument refinement of internal line angles was discouraged. Impetus for considering and discussing the information came from the relevant course director and division director.

UMKC: -up to course directors- expected to keep up to date
-research department that we keep up to date, many faculty members involved- incorporated into courses
-Course during the first year incorporating critical thinking and dental literature, also research projects during 3rd year- either lit review or own research.)

SIU: Current literature is reviewed by course directors and applied to course content through evidenced based dentistry practices.

3. Who makes sure the process, above, occurs and who ensures the accuracy (dept. chair, curriculum committee, individual course director, etc.)?

COLO: Chair of Division of Operative dentistry and course directors.

IOWA: Topic content expert(s) review literature in area and update clinical guidelines.
Full time faculty discuss and arrive at consensus, Dept. Chair oversees the process.
Best Practices are on our website and disseminated to all faculty, full and part time, students and available school-wide.

MARQ: Individual course director.

MINN: First-line of defense against the teaching of outdated information are the individual course directors. Oversight of course directors includes, locally, the division director and department chair,

and more distantly, the associate dean for academic affairs, the educational policy committee, and the institutional effectiveness committee.

The University of Minnesota is in the middle of Strategic Planning and the search for a new Associate Dean for Academic Affairs, so these described protocols and management schemes may change.

UMKC: -Course Director and section head

-currently looking for new Restorative Department head- associate deans (clinical and communications) currently sharing responsibilities

SIU: The courses are reviewed by the curriculum committee by section on a 7 year cycle in conjunction with accreditation.

4. What types of novel teaching methodologies other than (lectures, sage on the stage) are used at your school for teaching operative dentistry? Please include examples and results so far.

COLO: Audience Response System is used during some lectures.

IOWA: Audience Response System (clickers) for interactive learning.

Results: good interaction between students and instructors opening up further discussions.

Discussion of pre-assigned readings, case-based seminars, PBL.

Sirona Prep Check and E4D Compare in pre-clinical Dental Anatomy and Operative for self-evaluation and grading.

Results: still in early stages but results look promising.

Team Based Learning - Evidence Based Dentistry: the students received an Oper case and they have to create a PICO question with a team of 5-6 students, this promotes critical thinking, group interaction, EBD (they have to do their 5 steps EBD analysis) and a group presentation two weeks after of their EBD analysis and final clinical application.

Self-Assessment in the Clinic before the faculty do their evaluation. This promotes again critical thinking and interaction with the faculty.

MARQ: Live demonstrations

Recorded demonstrations

Model preparations

Digital microscope magnification

Methodologies received favorably by students.

MINN:

A) Virtual Reality Clinic

First year dental students are introduced to cavity preparations on teeth in a virtual reality course called "Introduction to Psychomotor Skills Development" (Course Director: Craig Phair). This course precedes the traditional pre-clinical laboratory sequence and is designed to initiate

development of cognitive motor and mirror skills in preparation for the coming pre-clinical laboratory projects.

The twenty DentSim units [DenX, Israel], housed in a separate room, utilize the same upper torso mannequins, typodonts, and cheek shrouds as in the main sequence pre-clinical lab. Students prepare several different intracoronal cavity preparations while LEDs on the mannequin and handpiece track every movement of the handpiece down to tenths of a millimeter. The computer displays on a chairside monitor in a virtual 3-dimensional environment the work as it is accomplished. Discrepancies from ideal are noted in color. Project scores are delivered immediately. The preparation, as viewed on the computer monitor, can be zoomed in and out, rotated, cross-sectioned, measured, and the movements that led to the final preparation reviewed in detail.

The claim is that this computer assisted course “jump starts” development of psychomotor skills that are integral to the clinical practice of restorative dentistry. Early expectations were that students would be more effective in the main-sequence pre-clinical course and that either quality would notably improve or students would be ready earlier to enter patient clinics. Objective measures of student performance following the initiation of the Psychomotor Skills Development course have not shown significant change beyond the level of variation normally seen within and between classes. There is some anecdotal evidence that the course improves student self-confidence and comfort-level in the pre-clinical sequence of courses.

Many students are excited by this technology and it may be a lure for candidates searching for dental schools to apply to. However, research on the use of this technology has demonstrated wide-ranging numbers of prepared teeth needed to acquire a certain level of skill (Welk A, et al. Int J Comput Dent 2008;11(1):17-40). This suggests that the student population is not all equally adept at, or benefited by, computer-assisted simulation. A major impediment to further development of DentSim clinical simulation is the difficulty involved in making changes to preparation-design standards against which the computer measures student performance.

B) Small Group Activities: Literature Search for Evidence-Based Answers to Clinical Questions

During the junior year, students take a course titled “Current concepts in Operative Dentistry: an Evidence-Based Approach” (DDS6439 Operative Dentistry IV, course director Omar Zidan). A major portion of the course involves a required research project in which students are expected to seek answers to clinical questions based on the available evidence. Students work in teams to formulate search strategies, run searches, read and evaluate scientific, observational and descriptive literature. Students are expected to be critical regarding the availability and the quality of knowledge related to the clinical topic. Students working in teams are expected to articulate their findings and understanding in a written paper and an oral presentation. The papers and the presentations are the collective work of each team—reflecting the collective effort of the team. Students are expected to fulfill a role within their team and present a part of the team presentation. Teams are expected to integrate their findings into a clinical case—demonstrating the transfer of the experience gained into daily clinical activities, decisions, and judgments. Following the presentation and publication of the paper to the class, the class participates in a discussion of the material on a class blog.

C) Experiment in Self-Paced Pre-Clinical Curriculum

Background. In 2013, an attempt was made to make the first course in the pre-clinical sequence self-paced (DDS6434-6435 Operative Dentistry I, course director Gary Hildebrandt). The hypothesis was that if students were allowed to work ahead according to their abilities, then the good students would complete the course early. As the good students left the course, the struggling students would find the ratio of faculty-to-students increasing, allowing for more instructor contact. To be self-paced required that all lectures be recorded and available online. Online lectures would give students more flexibility with their schedules so they could watch them when it was most convenient.

Methods. In preparation for the experiment, a grant was procured and help from the University Office of Education was sought to record all lectures and PowerPoint slides and post them on the course Moodle site. Students had the opportunity to meet with the course director for 6 optional Q&A sessions. Quizzes, tests, and practical exams were the same as in previous years. An exit survey was given to assess self-reported student behavior and opinion. Random audits were conducted during lab time to assess student preparation for the day's work. Also bench instructors were queried regarding their perspective on the project.

Results. All students completed the course on time and student assessment, formative and summative, was close to that historically seen in the course. Audits of student preparedness for laboratory periods found, in general, about one third of the students brought course manuals or printed copies of the online manual to lab, about one third had tablets or laptops with material from course Moodle site displayed, and one third had no sign of preparation for the day's project. (Historically, all students had brought their laboratory manuals to lab.) The course faculty, in general, felt the students were less prepared for each laboratory session than were previous classes that followed the traditional lock-step lecture & lab format. In the exit survey, 30% of students admitted to not viewing the lecture or PowerPoint material before each lab period. The majority of those (70%) who did view the material prior to lab, did so a day or more ahead of time. (Historically, the lecture covering the day's laboratory project was held from 1-2pm, followed immediately by lab from 2-5pm.) When asked if they preferred online lectures or live lectures in a lecture hall, students were split—48% preferring online, 37% traditional lecture, and 15% having no strong preference. When asked if they were as prepared for lab with the Moodle presentations as they would have been with regular live lectures, 34% said “No.” Interestingly, students tended to stick to the laboratory schedule. No one worked ahead. When students completed a project before the end of the scheduled lab period, rather than work ahead, they tended to leave lab early.

Conclusion. In spite of the hype about the new technology, many students are comfortable with, and actually prefer, the lecture format. Students value face-to-face contact with course directors and real-time Q&A. Students value structure in a course with achievable objectives and valid measures of performance. When left to their own motivation, a significant portion of the class failed to prepare for each lab session, or prepared too far in advance. In spite of the possibility of working ahead, students preferred to follow the “minimal pacing” described for completing the course on time. The self-paced pre-clinical course did not work as well as the traditional lock-step methods in achieving the educational objectives of the Division.

D) Peripatetic Faculty Tutor

Dr. David Dvorak fills a unique role in the pre-clinical curriculum. In the pre-clinical laboratory, students are organized into 9-10 students on a bench, with one supervising instructor that is consistent from day to day. Dr. Dvorak is not assigned to any specific bench, but has the freedom to work with any student at any of the 11 benches in the pre-clinical laboratory. He uses his educational intuition to identify students who are struggling and, via the Socratic method, assesses their willingness to accept his assistance, helps them identify their specific difficulties, and steers them toward solutions. Dr. Dvorak has a unique temperament (approachable, nurturing, non-threatening) and set of skills (an experienced dentist with a masters degree in education). Students tend to respond very favorably to his role in the laboratory setting. Using the Socratic method helps students think critically. We have found that his activities improve student learning attitudes and self-confidence. We have found it difficult to develop metrics to measure his effect on the class, but it seems that he helps improve work quality of the bottom performers and inspires their confidence. Not many people could do what Dr. Dvorak is capable of doing.

UMKC: -short videos on iPads for each lab procedure using criteria from grade sheet to watch in lab, and to calibrate faculty
-“flipping the classroom” depending on instructor
-Intro to Clinical Decision Making in first year, Ethics seminar in third year (follow up to 1st year class) (NOT specific to operative)
-Clickers in lecture for interaction

SIU: Laboratory procedures on extracted teeth – always positive outcome and feedback
Application of dental software – just initiated, hope for better transition into clinic application
Self-assessment – results unclear, system lacks structure
Prep-check – purchased but has not been applied yet

5. Does your school incorporate the use of a digital record (sample patient record) in the teaching of laboratory operative skills? If so, is there any noticeable difference, when the students start clinic?

COLO: Not yet. We use AxiUm in Transition Clinic and on clinic floors.

IOWA: Axiom I Codes (Institution) are incorporated into Sophomore Pre-clinic exercises

MARQ: No.

MINN: No.

UMKC: Not as of today, but switching to different program (Axiom) so may incorporate once that program is running smoothly

SIU: Yes, first introduction was last year with technical difficulties therefore minimally used but hope to increase use this coming spring semester.

6. What methods/exercises are used to help students to learn to treatment plan Operative Procedures

Prior to clinic? How often?

After commencing clinic?

COLO: These topics are covered in Pre-clinical Operative, Cariology, Transition Clinic and Treatment Planning courses. Treatment planning courses are 2nd, 3rd and 4th year of our dental school.

IOWA: Prior to clinic? How often?

PBL patient cases D1, D2,

Treatment planning lectures, D2, D3

Chairside faculty mentoring

Pre-test and post test, before and after ICDAS e-learning program training

After commencing clinic?

Oral Diagnosis Clerkship

Discipline focused treatment planning

PBL seminars

Treatment planning seminars

MARO: Prior to clinic: Skills Exam – video tape of a treatment plan presentation with a simulated patient – D2 year.

After commencing clinic:

Summer Dental Rounds treatment Planning presentations – D3/D4 years

Interactions with Group Leaders in D3/D4 years

Treatment Planning Basic Skills Assessment

MINN: Treatment planning is a course housed within the Division of Comprehensive Care.

Foundational knowledge for this course is developed in the Operative Division preclinical courses—including caries lesion detection, diagnosis, risk assessment, and treatment decisions. Also restorative options for cavitated lesions are discussed both in pre-clinical Operative Dentistry and in courses on Biomaterials.

The Operative Division has only one didactic course during the students' clinical years (Operative Dentistry IV). In this course advanced topics are explored regarding treatment decisions and restorative options

UMKC: Prior to clinic? It's incorporated into didactic classes, but up to course director. No specific class. After commencing clinic? During bridge course and throughout summer course- interactive and led by Team Coordinators.

SIU: Prior to clinic?

Students treatment plan the mounted extracted teeth in the spring year 2 course.

The treatment of the extracted teeth is divided into 4 quadrants during 4 different laboratory sessions of the spring year 2 course.

After commencing clinic?

Students are scheduled for treatment planning rotations in the third and fourth year. There is also a year 3 didactic course in treatment planning in which evidence based approach and critical thinking issues are applied to cases given to students to treatment plan and present.

7. How is your school incorporating critical thinking in the teaching of operative dentistry? Please give examples, and degree of satisfaction from the results.

COLO: We give students clinical scenarios and ask them to design the cavity preparation based on what they were given.

IOWA: Self-evaluation is a component of pre-clinical and clinical Operative Dentistry.

Critical thinking is Integrated into clinical evaluation. Students must answer questions related to critical thinking: What went well, What were the challenges and what could be improved?

Component of the PBL curriculum, EBD

Cased-based seminars

Degree of satisfaction from the results: Self-evaluation of each criteria in clinical setting was not successful. New approach of answering questions hopefully better

MARO: Acquisition, evaluation and integration of biomedical science knowledge to facilitate an evidence-based approach to the diagnosis and management of oral health care.

MINN: In the pre-clinical setting, students are taught the principles and rationale behind each type of prepared cavity and restoration design. After several step-by-step exercises in the simulation clinic (lab) for each cavity design, students are presented with a new location in the dental arch and asked to prepare a similar cavity and restoration following the principles taught, but without the step-by-step instructions, diagrams, or photographs. They are required to adapt their understanding of the principles to this new situation.

Dr. Dvorak's efforts as the peripatetic tutor, as described earlier, involves the Socratic method and inspires critical thinking in the students involved.

In the clinic, supervising faculty are encouraged to not simply answer student questions, but often ask the student what they think first. Although the primary reason for doing so is so that the instructor can gauge the student's level of understanding of important concepts in clinical care, these questions also have the effect of inspiring critical thinking.

In Operative Dentistry IV (Junior year), students are required to choose a clinically relevant question and search the literature for evidence-based answers. They develop a summary of their efforts and report back to the class. (see I.4.B. above)

UMKC: -not in operative dentistry as much- more associated with other courses, esp EBD course
-in treatment planning
-minimally invasive dentistry
-morning messages and department meetings to educate faculty

SIU: The year 3 operative course develops critical thinking skills by assigning each student a topic related to operative dentistry or material science, requiring review of the literature on the topic, then presenting the information to the class for evaluation.

The year 1 Evidenced Based Dentistry course objectives are to use evidence, critical thinking, and get them on the path to life-long learning. Students are given topics and critically appraise articles and debate current issues in dentistry – including operative.

Please give examples, and degree of satisfaction from the results:

Examples of topics used in the operative course are: composite versus amalgam wear, curing lights, cavity disinfectants, ceramic crowns, prefabricated vs. cast posts, etc.

The results of this format have been positive. The course timing in the curriculum, subject matters, and evaluation method develop critical thinking individually through literature review and as a group through classroom discussion.

Examples of topics used in the evidenced based dentistry course are: amalgam vs composite, Class I and Class II criteria for determining whether to use amalgam and composite, Cad-Cam vs lab process crown and inlays, etc.

8. Is your school using a grading system or Pass/Fail system on clinical performance? Do you distinguish between Pass and higher achievement in performance and if not, how do you handle applications to graduate programs for your students?

COLO: We have it mixed. Most courses are Graded, but we do have 3 clinical courses that are Pass/Fail. Pass/fail courses are very small part of all courses. Most courses are graded.

IOWA: Pass/Fail in Sophomore Operative clinic.

Grades in Junior (D3) clinic and competencies in D3 are pass/fail, Daily evaluations are in a A-F grad scale
Do you distinguish between Pass and higher achievement in performance and if not, how do you handle applications to graduate programs for your students? Yes (N=Needs Improvement, M=Meets expectations, S=Surpasses expectations)

MARQ: Grading system for Basic Skills Examination

Pass/Fail for routine patient care

Do you distinguish between Pass and higher achievement? No.

MINN: A recent survey of student clinicians at University of Minnesota School of Dentistry found that a majority of students favored PASS/FAIL to grades in clinic. The minority who did not, were

very concerned about eliminating grades for two reasons: 1) Many were planning to apply to specialty or grad programs and felt the clinic grades were important to document their level of clinical skill and accomplishment. 2) Those who did very well in clinic wanted the grade, both to reflect their accomplishment, and because the high number of credit hours assigned to clinic courses gave the grade a high impact on their overall GPA.

It was decided to continue assigning grades in clinic in order to acknowledge the high achievers. Other options that were explored (favored by the administration) included PASS/FAIL/HIGH-PASS. This really is a three point nominal scale that is not much different from A-B-C grading. Another option was using P/F along with congratulatory letters or certificates for high achievers. We felt the letter or certificate provided inadequate recognition to the student because it did not influence the student's GPA or class standing.

UMKC: -P/F, but with feedback in clinic

Do you distinguish between Pass and higher achievement? -No

-We know subjectively and it is reflected in faculty evaluations (usually twice per semester) and discussed with students via Patient Care Coordinator

SIU: Grading systems.

9. Do you think your students are receiving enough patient experiences in operative dentistry to be minimally competent? If not, what suggestions do you have to mitigate the shortage of patients?

Do any other disciplines in your school lack adequate experiences? What has your school done to mitigate the shortage of patients?

COLO: Yes.

IOWA: Yes, in Operative Dentistry, but would benefit from more clinical experience, Supplement with Manikin exercises and assisting other students

Do any other disciplines in your school lack adequate experiences? What has your school done to mitigate the shortage of patients? Yes, especially fixed and removable Prosth, including implant restoration

Reduced clinical requirements, team up on cases, manikin exercises (FPD third year)

MARQ: Yes.

Do any other disciplines in your school lack adequate experiences? What has your school done to mitigate the shortage of patients? Endodontics – recent changes with interactions between predoctoral and graduate endodontic programs have increased student experiences.

MINN: Yes, as measured by pass-rates of the three competency exams and the live-patient Board-licensing exam.

There have been concerns that students have insufficient experiences in clinic with some prosthodontics procedures: complete dentures, removable partial dentures, fixed bridges, and implants. Some solutions include sharing patients (FD), mannequin simulation (fixed bridges), professional patients (FD), and increasing general recruitment efforts and attempts to recruit patients from specific sites (nursing homes), and increasing time spent in outreach.

UMKC: -Yes.

-No shortage of patients

Do any other disciplines in your school lack adequate experiences? What has your school done to mitigate the shortage of patients?

-Endo, FPD's- due to cost

-also, many patients come to UMKC for implants = not FPD

-Encourage students to help in emergency chair to be available for endo tx

SIU: Yes.

Do any other disciplines in your school lack adequate experiences? Not to my knowledge.

II. MATERIALS/TECHNIQUES AND DEVICES

1. Is your school incorporating the teaching of hard and soft tissue laser surgery?

If so, is this taught as an elective or part of core curriculum?

What discipline(s) teach(es) this course?

COLO: Soft tissue laser is taught in Perio Department.

IOWA: Lecture on use of soft tissue laser to D3 students.

Lecture and certification for soft tissue (Diode) laser use at postdoctoral level.

Is this taught as an elective or part of core curriculum? D3 lecture –core curriculum, post-doc training part of core curriculum per dept.

What discipline(s) teach(es) this course? Operative Dentistry adjunct faculty (Dr. Swett) is certified as laser instructor. He provides 2 day didactic/hands-on course for faculty and postdoctoral students (Endo, Perio, Operative, Prosth, Ortho) to become certified for independent use of Diode laser. Institutional requirement.

MARQ: No.

MINN: No.

UMKC: -No

-Grad perio department does teach laser surgery

SIU: No.

2. Does your school use digital imaging and analysis software to grade preparations/restorations?

If so, please comment on results in terms of repeatability and consistency as compared to human evaluators.

What do you think the future holds in regards to this type of evaluation?

COLO: We do not use imaging to grade preparations/restorations at this stage.

IOWA: Just starting with E4D Prep Check and E4D Compare in Dental Anatomy (wax-ups), pre-clinical Operative (preps) and Prosth (crown prep).

Please comment on results in terms of repeatability and consistency as compared to human evaluators. Good repeatability within the system (>90%). Modest correlation between digital and instructor grading.

What do you think the future holds in regards to this type of evaluation? It will continue to evolve, and needs to be continuously evaluated for evidence in repeatability, reliability and correlation with visual feedback and grading from instructors.

MARO: No.

What do you think the future holds in regards to this type of evaluation? This type of evaluation can significantly alter the teaching and assessment of restorative dentistry.

MINN: The DentSim system used in the Introduction to Psychomotor Skills Development course has digital imaging analysis as an integral part of the system. This system is used at the very beginning of the pre-clinical sequence of courses to jump-start student manual skill development and to introduce postural, patient positioning, and mirror skills.

Digital imaging software is used in clinic for digital impressions and CAD/CAM restorations. It is not used, per se, for evaluation and grading.

Digital imaging analysis software is an example of a tool that provides truly objective evaluation of student products. One disadvantage of such evaluation tools is that they tend to focus on cavity preparations and do not help with evaluation of finished restorations. Perhaps the biggest deterrent to development and implementation of digital evaluation instruments is that they only provide one small aspect of what the experienced dental instructor is capable of providing. The instructor not only evaluates the student's product, they also evaluate the process as the student is working in real time. They use observation and intuition to identify the causes for suboptimal performance. And they use their vast experience to tailor suggestions for improvement. The human instructor's evaluation may be somewhat more subjective, but this difference is vastly outweighed by the intuitive detection of causes of student difficulty and the tailored suggestions for improvement.

Rather than invest in digital evaluation technology, resources would be better spent on implementing methods for improving instructor objectivity and reliability (standardization).

UMKC: -Not yet

What do you think the future holds in regards to this type of evaluation? -Hopeful that this helps greatly in near-perfect calibration

SIU: Yes.

Please comment on results in terms of repeatability and consistency as compared to human evaluators: The software was just purchased in 2014; no outcomes to assess at this time.

What do you think the future holds in regards to this type of evaluation? Digital analysis will be a positive tool to assist students in self-assessment but cannot replace human evaluators due to the artistic element of the profession.

3. Are you aware of any U.S. dental schools that have eliminated amalgam from their curriculum? If so, whom?

COLO: No response.

IOWA: Not aware of any.

MARQ: No.

MINN: No.

UMKC: No.

SIU: No.

4. Do you disclose to students that they will be working with amalgam in dental school? If so, when? Prior to matriculation? Commencement of operative course?

COLO: Students know they will be using Amalgam in Dental school. This is covered first day of Pre-Clinical Operative Course.

IOWA: Yes, beginning of pre-clinical Operative.

MARQ: Yes – course descriptions reference amalgam use.

We believe, it is understood by students from the time they apply. It is mentioned of course in the Introductory Biomaterials courses and the first Operative Dentistry pre-clinical course.

UMKC: -Yes, not prior to matriculation, but prior to operative lab

-In operative course

SIU: Not to my knowledge. Disclosure has never been an issue.

5. Have you had issues with students refusing to work with the amalgam (or any other material) in your courses or in the clinic? If so, how was the issue handled?

COLO: No.

IOWA: No.

MARQ: No.

MINN: No.

UMKC: No.

SIU: No.

III. CARIOLOGY

**1. What method of caries detection and classification is used at your school?
Are you using the (ICDAS) International Caries Detection Assessment system:**

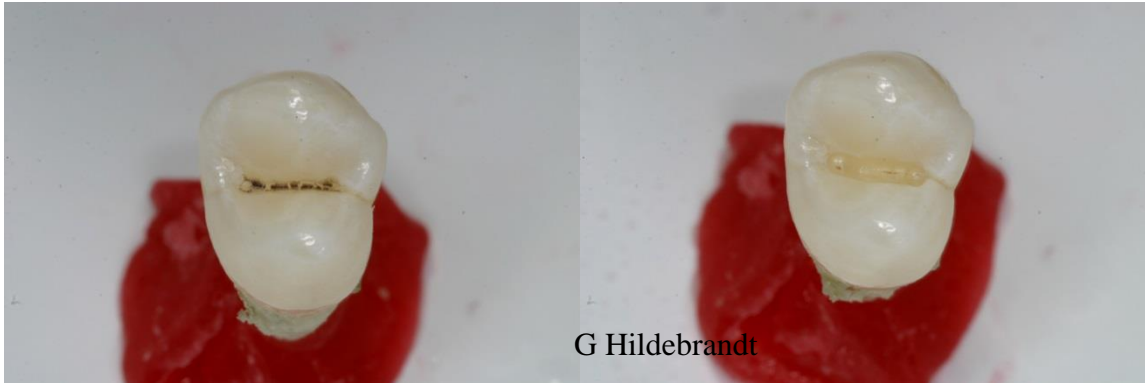
- 0 Sound
- 1 First Visual change in enamel (after prolonged drying or in the confines of a pit or fissure)
- 2 Distinct Visual change in enamel
- 3 Localized enamel breakdown (without clinical visual signs of dentinal involvement)
- 4 Underlying dark shadow from dentin
- 5 Distinct Cavity with visible dentin
- 6 Extensive Distinct Cavity with Visible Dentin

COLO: We teach ICDAS in Cariology courses. We do not have these codes on clinic floors. On AxiUm we use: Active Incipient, Inactive Incipient, Moderate and Severe.

IOWA: We are teaching ICDAS from D1-D4 in didactic courses and the students do the ICDAS e-learning program in (ICDAS.org) however we don't have the codes in AxiUm, but have Incipient active or arrested, primary caries lesion, secondary or recurrent caries lesion, etc... for axium. We are in the process of implementing the codes in AxiUm.

MARQ: Radiographic, visual, tactile –sound, incipient, cavitated, arrested, Students are exposed to ICDAS in pediatric dentistry lectures.

MINN: ICDAS is a system developed in 2002 to divide visual examination into 6 levels of pathologic change. The ICDAS system described is for pit & fissure caries. The hope was that visual caries detection would improve by defining finer gradations and developing more pre-cavitation stages. Such a system should allow better monitoring of early lesion progression.



The problem with pit & fissure caries is that the earliest stages of the lesion can be hidden deep within the invaginated tooth structure and not visible to the outside world. In 2012, a study was conducted to evaluate ICDAS (Diniz MB, et al. *JADA* 2012; 143:339-350). 105 teeth were evaluated intraorally prior to extraction and then again histologically after extraction. They reported high sensitivity and moderate specificity in detecting early pit & fissure caries. They reported poorer performance at detecting caries lesions that extended into dentin—a problem that has also been documented for traditional visual examination without ICDAS.

Occlusal Caries (N=105)	Sensitivity	Specificity
Identify enamel lesions	93%	60%
Identify lesions into dentin	52%	77%

Because of the extra time and resources that must be committed to changing the curriculum and training the faculty to assume this graduated detection system, we have not done so. The benefits do not seem to outweigh the cost at present.

Our method of caries detection and classification is descriptive. Caries lesions are described as incipient, cavitated or arrested; active or inactive; coronal or root caries; primary, secondary, recurrent, or residual; or pit & fissure or smooth surface. Patterns of caries lesions within the dentition can also suggest the presence of certain etiologic factors. We continue to employ the GV Black classification scheme for lesion location (Class I, II, III, and V). (Note: We teach that incipient caries lesions within pits & fissures are not clinically detectable—as shown in the photographs above.)

UMKC: -Enamel E1, E2; Dentin D1, D2, D3

-in CMS (computer system) incipient, moderate, severe where moderate

Are you using the (ICDAS) International Caries Detection Assessment system: Not Yet

SIU: Methods of caries detection include visual, tactile, transillumination, radiographic and the use of caries detection dyes in limited applications.

Informal classifications used in teaching include cavitated, non-cavitated, active, arrested, incipient, recurrent, infected dentin, affected dentin.

Are you using the (ICDAS) International Caries Detection Assessment system: No.

2. How is the progression or arrestment of a carious lesion detected, and recorded at your school's clinic?

COLO: We update charting on AxiUm, though we have Active/Inactive only for incipient caries lesions. For Moderate and Severe caries lesions we make notes, attached to the tooth.

IOWA: In AxiUm, we have arrested or active caries lesion (incipient) and primary caries lesion or recurrent caries lesion but not the progression codes from ICDAS.

MARQ: Recorded as incipient, arrested or active.

MINN: This question implies that an active and an inactive lesion would be treated differently. The distinction between these two forms of lesion are made in the two traditional ways: 1) careful inspection of the appearance and firmness of the lesion, and 2) evaluating the lesion at two different points in time to assess change in size. This determination can be helped by caries risk assessment—which will suggest a level of overall disease activity.

Active incipient lesions are the sort that will be monitored over time and will suggest the institution of fairly aggressive caries control strategies. Inactive incipient lesions will also be monitored over time and only restored when an esthetic concern to the patient.

Cavitated lesions, whether active or inactive, will be restored. The exception may be on the root surface. Some moderate lesions on root surfaces can be maintained (perhaps with recontouring) if they are judged to be inactive. But, in general, the decision to restore caries lesions beyond the incipient stage is made without regard to the activity status of the lesion.

UMKC: -Incipient and other conditions on diagnosis computer software
-do not identify active and arrested- but will once we get AxiUm software

SIU: The progression or arrestment is detected by the same methods as initial detection: visual, tactile, transillumination, radiographic, etc.

The caries are recorded by indicating a watch or note in the chart if incipient or by restorative treatment plan as needed.

3. What criteria are used to determine if surgical intervention is necessary?

Are the criteria standardized and are faculty calibrated?

What strategies have been used to standardize and calibrate faculty?

COLO: Cavitation and lesion activity. We do have calibration sessions regularly, hard to say all faculty is calibrated. We have calibration sessions every week on different topics, 5 times a week. One topic is covered for all 5 days to make sure all faculty can attend.

IOWA: Mainly the criteria recommended by ICDAS and ICCMS where caries risk assessment in combination with the stage of the caries lesion plays an important role in determining the surgical or non-surgical approach to manage the lesion.

We do use therapeutic sealants on active occlusal caries lesion ICDAS code 1-2 and remineralization agents when interproximal lesions are in enamel up to the DEJ.

Surgical intervention is considered when ICDAS codes are 3-6 and moderate-high risk patients. And when interproximal lesions go beyond the DEJ.

Fissurotomies are determined by the risk assessment of the patient. Location of the lesion and stage of the lesion.

Are the criteria standardized and are faculty calibrated? Criteria is standardized for our operative faculty and mostly calibrated, however not throughout the school. This is something that we are constantly addressing and trying to make changes

What strategies have been used to standardize and calibrate faculty? In the past we have done in service seminars to other departments and calibration within our department with a pre-test and post-test before and after ICDAS training. We are starting to implement vignettes (case based calibration) in our yearly in service for our department.

But we still have ways to go.....

MARO: Depth of lesion into enamel/extension to dentin, visual, tactile, patient symptoms, radiographic, integration with Caries Risk Assessment.

Are the criteria standardized and are faculty calibrated? Yes, although challenging due to abundance of part-time faculty.

What strategies have been used to standardize and calibrate faculty? Annual faculty meetings, clinical floor calibration with group leaders

MINN: For smooth surface caries, involvement of the dentin has been widely agreed upon as the minimum level at which surgical treatment is indicated (Restorative Treatment Thresholds for Interproximal Primary Caries Based on Radiographic Images. Gordan V et al. *Gen Dent* 2009). If

caries risk is high, then the surgical threshold may be moved up to the E2 level. Similarly, pit & fissure caries is treated surgically only when there is evidence of dentin involvement (Restorative Treatment Thresholds Occlusal Caries Lesions. Gordan V, et al. *JADA* 2010; 141:171-184). Such evidence may involve shadows through the overlying enamel, cavitation of surrounding enamel, or radiolucencies on the BW radiographs.

For replacement of defective restorations, the criteria are a bit more murky (Restorative Treatment Thresholds Defective Restorations. Gordan V, et al. *Op Dent* 2009; 34:664-673). Restorations exhibiting marginal leakage, marginal ditching, or discoloration, without direct evidence of carious dentin, are often replaced because it is feared that carious dentin may be hidden underneath.

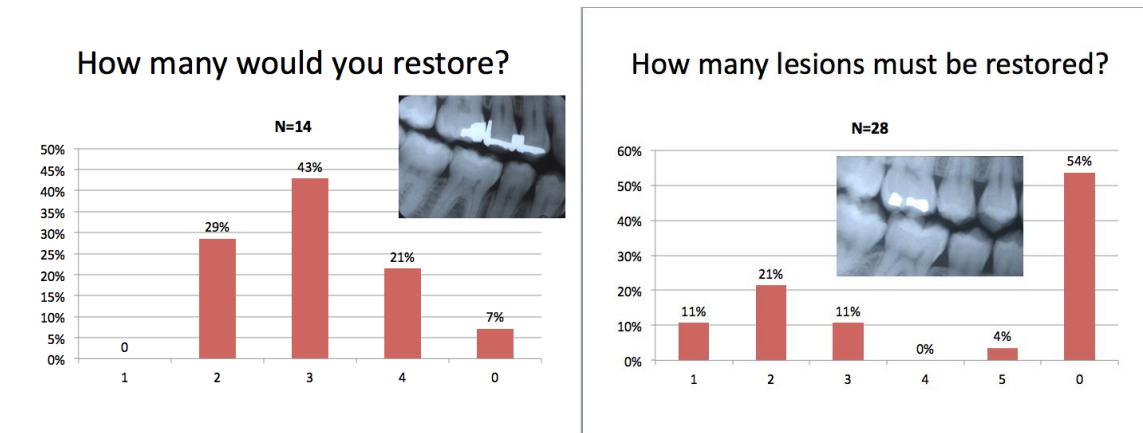
However, this connection does not appear to be supported by the evidence.

- *The caries status of occlusal amalgam restorations with marginal defects.* Kidd EA, O'Hara JW. *J Dent Res* 1990 69:1275-7. No difference in the incidence of secondary caries on cavity wall between sound and defective occlusal amalgam margins
- *Validity of staining and marginal ditching as criteria for diagnosis of secondary caries around occlusal amalgam restorations: an in vitro study.* Magalhães CS, et al. *Brazilian Dental J* 2009 20:307-13. Marginal ditching and staining were not valid criteria for the diagnosis of secondary caries around occlusal amalgam restorations.
- *Influence of microleakage, surface roughness and biofilm control on secondary caries formation around composite resin restorations: an in situ evaluation.* *J Appl Oral Sci* 2009 17:61-5. Microleakage and surface roughness around composite restorations did not influence caries lesion formation. Biofilm control may prevent enamel demineralization.
- *Prediction of secondary caries around tooth-colored restorations: a clinical and microbiological study.* Kidd, et al. *J Dent Res* 1996; 75:1942-6. Marginal ditching and staining around tooth-colored restorations are not indicative of the presence of secondary caries below the margin.
- *Micromorphological evaluation of posterior composite restorations—a 10-year report.* Gaengler P, et al. *J Oral Rehabil* 2004; 991-1000. Imperfections in marginal integrity of posterior composite restorations do not increase the risk for developing secondary caries.

Students are currently taught that replacement decisions should not be based on the quality of the margin alone. Instead, replacement decisions should be based on other indications of pathology (e.g., shadows through surrounding enamel or radiographic evidence of decay) or other patient risk factors.

We have attempted to standardize the clinical and pre-clinical faculty on surgical thresholds. We have found a considerable amount of variation in willingness to restore enamel-only proximal lesions that are near the dentoenamel junction—and have found that in-service training can improve agreement.

The following two histograms illustrate the variability in making treatment decisions on enamel-only lesions by faculty (Feb. 2012). The graph on the left is prior to in-service standardization, the graph on the right is afterward.



UMKC: -radiographs- entering DEJ, but still subjective to overseeing dentist and double checked during treatment planning session

Are the criteria standardized and are faculty calibrated? -We try, but not perfectly by any means

What strategies have been used to standardize and calibrate faculty? -At least weekly inservice lectures (not always pertaining to cariology)

SIU: Cavitation, radiographic presentation to DEJ, caries index of patient, loss of enamel translucency, shadowing, etc.

Are the criteria standardized and are faculty calibrated? There is no written standardized criterion to determine when surgical intervention is necessary due to the multifactorial nature of the process.

Yes, faculty are calibrated.

What strategies have been used to standardize and calibrate faculty? Faculty are calibrated by attending, reviewing, and teaching the pre-clinical course curriculum each year in lectures and laboratory and also through competency exams in which two faculty members must evaluate each step in the procedure and agree upon treatment for the patient and a grade for the student.

IV. OTHER

V. 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.

Respectfully prepared and submitted by Gary Hildebrandt, Director, Division of Operative Dentistry, University of Minnesota School of Dentistry. 9/15/14

No Regional Agenda Items Submitted

Consortium of Operative Dentistry Educators (CODE)



REGION III (SOUTH MIDWEST) ANNUAL REPORTS

Region III Director:

Dr. Shalizeh A. Patel

University of Texas – Houston

Houston, TX

Region III Annual Meeting Host:

Dr. Terry Fruits

Oklahoma College of Dentistry

Oklahoma City, OK

Region III Annual Report Editor:

Dr. Terry Fruits

Oklahoma College of Dentistry

Oklahoma City, OK

CODE REGIONAL MEETING FORM

REGION: 3 ()

LOCATION INFORMATION FOR 2014 REGIONAL MEETING

University: University of Oklahoma Health Sciences Center, College of Dentistry

Dates: October 22-24, 2014

Chairperson: Dr. Terry Fruits

Phone # 405-271-5735

University: Oklahoma College of Dentistry

Fax # 405-271-3006

Address: 1201 N. Stonewall

E-mail terry-fruits@ouhsc.edu

Oklahoma City, OK. 73117

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

Suggested Agenda Items for Next Year:

LOCATION INFORMATION FOR 2015 REGIONAL MEETING

University: University of Tennessee School of Dentistry

Dates: TBD

Chairperson: Janet Harrison

Phone # 901-448-6692

University: University of Tennessee

Fax # 901-448-1294

Address:

E-mail jharri35@uthsc.edu

Please return all completed enclosures to;

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CODE REGIONAL ATTENDEES FORM**REGION: 3 ()**

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**2014 NATIONAL CODE AGENDA REGION
III
SUMMARY RESPONSES TO NATIONAL AGENDA**

(Editor Note: Questions condensed for printing purposes)

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

No Summary Responses Submitted

2014 NATIONAL CODE AGENDA

(Evidence cited where applicable)

September 27-28, 2014

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		

2014 NATIONAL CODE AGENDA

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

I. Curriculum

1. What method is used to update operative didactic and laboratory content and how often is the material reviewed?

Baylor College of Dentistry

Operative courses are reviewed annually by the course director. Laboratory manuals and lectures are updated according to the current available evidence.

University of Texas - Houston

Primarily ongoing and periodic review by course directors. In the past 3-4 years, beneficial updates have been made to our two pre-clinic operative courses on a semester to semester basis.

LSU Dental School

Prior to the start of the academic year every July, course outlines are reviewed by course directors and Operative Division Head in January and submitted to the Associate Dean of Academic Affairs and Curriculum and the Director of Curriculum for their review and approval in March. The Operative Division has a review and calibration in June prior to the start of the academic year in July with each course director giving a presentation.

University of Mississippi

No formal method, but updated as new material is discovered and reviewed by course coordinators.

University of Oklahoma

The operative didactic and laboratory content is reviewed annually. We have extensive manuals for our two preclinical courses (1st course- 500 pages; 2nd course 200 pages). These manuals are revised, as needed, each year prior to printing. The content is revised if there is compelling evidence that a change will have a significant impact on the quality of the dental care provided by our students in our clinics.

University of Tennessee

The course director informally surveys students and faculty participating in the course upon its completion. The chair then reviews these findings and suggestions for changes and based upon these and course grades in conjunction with official annual course reviews by students and the curriculum committee, will recommend course updates. For example, the restorative department has meetings of the core operative faculty to discuss updates, curricular changes, materials changes etc. at least once a semester.

University of Texas - San Antonio

Lecturers are responsible for updating the material that they present each year. Drs. Troendle, Connor, Bartoloni and Roberts are responsible for overall course content and meet on an ad lib basis for review. Each laboratory session is critiqued by faculty and revised as needed. Students participate in a review of the

curriculum at the end of the Junior Didactic Course that covers all Operative Dentistry courses preclinical, clinical and didactic. This evaluation is also used to improve content and conduct of the courses.

2. What role does current literature play in the process above?

Baylor College of Dentistry

Evidence Based Dentistry is highly regarded at Baylor. Directors are encouraged to review literature in updating courses. Current textbooks are also consulted as a source.

University of Texas - Houston

Lecture content is updated with the current literature each time a lecture is given. Overall scientific trends in cariology, biomaterials, and technique drive emphasis for the operative curriculum as well.

LSU Dental School

Current literature plays a minimal role in the D1 and D2 courses. In the D3 course (Advanced Operative Dentistry) literature comprises half the didactic course. Literature review topics and articles are selected to provide more depth in student's knowledge of Operative dentistry.

University of Mississippi

Changes occur when backed by science.

University of Oklahoma

We try to update the materials that we teach based on new information from both professional journals and any revisions to our course textbook (Summitt's Fundamentals of Operative Dentistry).

University of Tennessee

It is recommended that the course director update literature cites and reading assignments annually. In department meetings held at least twice a semester new methods and materials seen in the literature are discussed and considered for adoption. A similar process occurs at least once a semester with the core operative faculty and in the "instrument committee" which handles instruments, materials and supplies for preclinical activities and in the clinic committee which does the same for clinical activities.

University of Texas - San Antonio

Changes in materials and devices precipitate changes in instructional content. For instance, the addition of the Garrison and V3 rings for composite matricing, the addition of etching agent with benzalkonium chloride to inhibit Matrix Metalloproteases, and selection of the Valo light based on the light distribution and spectrum.

3. Who makes sure the process, above, occurs and who ensures the accuracy (dept. chair, curriculum committee, individual course director, etc.)?

Baylor College of Dentistry

The curriculum committee reviews the course syllabi annually, but the responsibility for accuracy is left to the course director.

University of Texas - Houston

Individual course director makes adjustments and updates to course (including content), with eventual vetting of syllabus changes by a curriculum committee (although curriculum committee does not necessarily evaluate for accuracy).

LSU Dental School

Course directors for D3 course. Division Head for Operative Division. Minimal involvement of Department Head or Curriculum Committee.

University of Mississippi

Any of the above, but other faculty can suggest changes, but ultimately done by course coordinator.

University of Oklahoma

The course director is the main person responsible for updating their materials. Any member of the department can submit a recommendation for a change to the curriculum in our courses, which is then reviewed and discussed by the faculty in our department prior to acting on that recommendation. The individual recommending the change is responsible for supplying the reasoning and/or evidence that would support the change.

University of Tennessee

Typically, as the content specialists, the course directors are responsible for the process above with review by the chair annually. The curriculum committee reviews the Blackboard content of the courses to ensure timeliness and accuracy of syllabi and schedules on a rotation of every 3 years. If any particular course and/or faculty member receives formal student annual reviews below a 2 (on a scale of 1-4 or 5), a subcommittee of the curriculum committee initiates a review of the course wherein a class representative must collect specific information from the class as to the exact “problems” in a course and the faculty member must respond to these “allegations”. These responses are given to the subcommittee to review and to vet any potentially inflammatory remarks. A report with suggestions, if any, for change is presented to the Curriculum Committee. After deliberation, any decisions about the report and its contents are sent to the course director, their chair and the Dean. The chair is then responsible for follow through with the course director to implement changes, if any.

University of Texas - San Antonio

Dr. Troendle has been placed in charge of training in preclinical and clinical courses in direct restoration of teeth. Dr Summitt, who is now part time at 50%, remains in an advisory capacity.

- 4. What types of novel teaching methodologies other than (lectures, sage on the stage) are used at your school for teaching operative dentistry? Please include examples and results so far.**

Baylor College of Dentistry

Most operative courses are taught by conventional lecture presentations. Videos demonstrating procedures and live demonstrations are also used. Virtual patients are used in pre-clinical operative labs and are discussed in the next question.

University of Texas - Houston

Prominent non-lecture methodologies include:

1. E-portfolio presentations: in the second semester of operative, students must create an online reflective presentation of three of their laboratory practicals. These are presented in front of classmates and faculty, with an emphasis on reflection.
2. Evidence-based Clinical Queries: in the second semester of operative, students are divided into groups. Each group is given a general topic of interest regarding operative/cariology. The groups must formulate a PICO question, do a literature search, and present their findings/conclusion to the class. The emphasis is on utilizing the evidence-base to answer a practical clinical question.
3. Laboratory Handouts: for both semesters of operative, every laboratory exercise (twice weekly for two semesters) is presented in a handout format. This includes detailed step-by-step photographs and captions. These handouts are published in.pdf format on Blackboard and are accessible anytime. Students use the simulator computer screens to recall the handouts to guide their work in real-time during laboratory sessions.
4. Technique Videos: a series of operative preparation/restoration videos have been produced by members of the operative team. Three have been peer-reviewed and published on MedEdPORTAL. An educational study regarding efficacy was conducted in Spring 2014. Initial results suggest that when a technique video is viewed prior to performing an operative procedure for the very first time, comprehension of concepts regarding preparation/restoration is greatly improved.

LSU Dental School

The D1 course uses videos as part of the curriculum. Videos are given to the students to load on to their computers. They can review videos while practicing in lab after school hours.

University of Mississippi

Traditional methods, but prep check in future.

University of Oklahoma

We incorporate online video lectures and online videos of procedures. We have combination lecture and lab procedures during which procedures are broken down into segments in which the techniques and materials are discussed and demonstrated, stressing the theory behind the actual procedure. After the demonstration of each step for the procedure, the students complete that step in the lab project or procedure.

We also incorporate case based projects in the laboratory that require the students to review health histories, radiographs, and clinical signs and symptoms. Students must diagnose dental problems, identify any health problems that might affect the dental procedure, and recommend a course of action to address the dental problem. The students then complete the preparation on teeth with embedded caries, and decide what pulp protection would be appropriate for the described situation.

University of Tennessee

In the composite resin course use of (1) laminated photos with the use of washable color markers and forms to map teeth for placement of different shades of composite for characterization, (2) the assessment forms to help students with evidence based criteria (discrimination, recognition, error analysis) and (3) treatment planning problem solving for esthetic cases.

Use of teaching videos from youtube.com that other instructors/schools/private practice dentist/ and dental companies have composed to show to classes as a reinforcement of the literature being taught.

As examples, the following video in Tooth Morphology from youtube to reinforce “Maxillary Central Incisor Anatomy” below

<https://www.youtube.com/watch?v=YXCxq44HNtA>

For Operative, use of the videos for Class 1,2,3, Caries indicator solution technique, Complete removal of decay, etc.... as long as they are available on youtube...

<http://www.youtube.com/watch?v=E7v-zQ1ol-w&featur>

<http://www.kavo.com/Default.aspx?navid=552872&oid=009&lid=Us&rid=552887>

The D-1's get to observe prep designs, and placement of dental materials such as bases and liners in “Intro to Clinical Practice” while rotating within the Group Leader Program. This could be looked upon as evidence based reinforcement for Operative Pre-Clinical Courses.

The D-2's observe and actually get to be “hands on” within “Intro to Clinical Practice”, which once again can be looked upon as evidence base reinforcement for Operative Pre-Clinical Courses. They are allowed to actually place liners and bases, and do minimally invasive treatment.

The D3 and D4 student had access to a study club elective course that addresses Advanced Esthetics including new techniques and materials and even business practices. This includes a photography workshop, taking intraoral photos on each other, hands on practice with cone beam technology and a poster presentation competition among D3 and D4 students for the best esthetic case and the winner will have an expense paid trip to the AACD annual scientific meeting and International Poster Competition in San Francisco.

In 2013 the Dental School purchased a mannequin (Marc® Patient Simulator, BlueLight Analytics Inc, Halifax, NS), which allows the student to see how to cure composite resin properly and how well they have done curing the composite. It also is allowing for some research on the different curing lights and different composite materials.

University of Texas - San Antonio

This year we are doing a run through of the curriculum changes that will occur when the new clinical building is opened in July of 2015. All course directors of third year didactic courses were instructed to decrease student contact hours by one half but no changes in the course content. For the Junior course this meant a reduction from 27 hours to 13. We used Blackboard to make reading assignments from Summitt's Textbook, Powerpoint presentations for review, articles and videos are assigned for reading or watching. A worksheet accompanies the assignment and the students are required to submit it by the day the lecture would have been given. A written quiz is handed out the next time the students are in lecture covering the material. Thus far students are handing in the worksheets and progress is satisfactory. I'll know more at the end of the year.

- 5. Does your school incorporate the use of a digital record (sample patient record) in the teaching of laboratory operative skills? If so, is there any noticeable difference, when the students start clinic?**

Baylor College of Dentistry

In the fall of the D2 year, groups of students are given virtual patient scenarios with a given chief complaint, health history and radiograph which they then use to treatment plan an appropriate restoration for the patient. Once the treatment is planned, the student completes that treatment on the typodont on the simulation head, has the instructor evaluate the treatment and write the appropriate progress note. Students and instructors then discuss the whole procedure in a group meeting.

Digital (EHR) records in axiUm Trainer are used in the spring semester of the D2 year. A virtual patient record with radiographs uploaded to MiPACS was created for use in our introduction to clinical practice clinical simulation course. The radiographs correlate with carious lesions on typodont teeth and the proposed treatment for the virtual patient. The students input vital signs and update the patient medical history. During the course of treatment of the virtual patient in the spring semester, changes to the patient health history and/or current medications are introduced requiring the students to update the changes as appropriate in axiUm. The students also write a progress note for each simulated clinic session which the faculty member reviews and approves with a swipe in much the same manner as they will in the clinical setting. At this time we only have anecdotal evidence that the students are now more comfortable navigating the EHR earlier in the D3 year.

University of Texas - Houston

For the preclinical operative courses, no. During the “clinical” years, students have to return to the simulation clinic to engage in virtual patient management – this utilizes the digital record. No data on effect on clinical performance.

LSU Dental School

No, not in Operative. Oral Diagnosis Division uses the AxiUm digital record for teaching oral diagnosis and treatment planning prior to any clinical treatment. They incorporate an AxiUm Digital record exercise (sample patient record and a “live patient” exercise on a fellow classmate) in late Freshman year. They will also complete an “Exit Exam” on a current school patient.

University of Mississippi

Yes, we have a test (teaching) data base of our patient records. Not confident it makes a big difference.

University of Oklahoma

We have not incorporated digital records into our preclinical lab courses.

University of Tennessee

The DentSim (computer assisted manikins) units incorporate a digital patient record with x-rays, patient history etc. which help the student in learning treatment planning skills.

In the preclinical Oral Diagnosis lab, students treatment plan each other, using radiographs and models as well oral exams and place all this information along with a treatment plan (with 3 different options) into the AxiUm EPR.

In our Intro to Clinic course, the D1 and D2 students gain exposure to on site treatment planning and then input into the EPR in AxiUm when assisting D3 and D4 students in clinic.

University of Texas - San Antonio

Yes, we do a mock patient with radiographic interpretation, an entry of code and treatment note, and simulated health history. I don't know if we can draw a straight line between this exercise and improvement.

**6. What methods/exercises are used to help students to learn to treatment plan Operative Procedures
Prior to clinic? How often?
After commencing clinic?**

Baylor College of Dentistry

Prior to Clinic

As previously discussed, in our course Introduction to Clinical Practice which is given in the fall semester of the D2 year, students begin to learn to use axiUm in preparation for patient treatment in the D3/D4 years. The students are given a clinical scenario for a virtual operative patient with a given medical and dental history presenting with carious lesions on various teeth. The students then treatment plan and sequence the restorations in axiUm.

In the spring semester in the clinical simulation portion of the course, the students provide the operative treatment for the virtual patient as sequenced. They treat their typodonts in the simulation units as their patients and design the appropriate preparation for the ivory teeth with simulated caries. Each student completes six operative procedures during this course in which modified infection control protocols are followed. The students write progress notes in the axiUm training module and receive swipes for vital signs, start checks and for the completed procedures.

Additionally, in our fall D2 pre-clinical operative course, the students work through three virtual patient clinical scenarios presenting with various carious lesions and must treatment plan for the appropriate restoration and then treat the lesion appropriately.

After Commencing Clinic –

In the summer and fall of the D3 year, the didactic course in Clinical Operative Dentistry addresses treatment planning in a number of lectures. Additionally, in the D3 spring semester, students have five small group treatment planning seminars in which a prepared patient case is presented with medical and dental histories provided as well as patient photographs, radiographs and diagnostic casts. These cases involve multiple disciplines rather than operative alone. The students identify the patient's chief complaint and develop a problem list; they break up into four small groups then discuss the case and formulate two treatment plans, one which is budget friendly and one which would be ideal if there were no financial restrictions. The groups reassemble and present their treatment plans and answer questions from the faculty moderator and other students.

In the summer of the D4 year, the students have an intense six week treatment planning course based on Treatment Planning in Dentistry by Stefanac and Nesbit. This course incorporates all disciplines including operative dentistry.

University of Texas - Houston

Prior to Clinic –

Abstractly throughout lectures for operative courses. There is one lecture in the first semester of operative dentistry that touches upon general treatment planning concepts. There are at least two lectures in the second semester of operative that are specifically devoted to detection, diagnosis, and treatment planning for caries. An introduction to clinic course during the second year also includes a segment on treatment planning.

After Commencing Clinic –

Visual ICDAS and interproximal caries detection, diagnosis, and treatment planning guides are available for access in the electronic health records (Axiom). Additionally, there are a series of treatment planning lectures/presentations during the third year, which will include an operative component.

LSU Dental School

Prior to Clinic –

Freshman Year - Op1: minimal exposure in operative lectures, two caries lab exercises. OD: see question 5 answer. A Cariology lecture series is also presented.

Sophomore Year - Op2: 1 lecture that reviews preparations and some treatment planning, caries lab exercise. Cariology is re-addressed prior to Operative Clinic.

After Commencing Clinic –

Junior Year - Op3: Literature review on repair of restorations, longevity of direct restorations.

Senior clinic: treatment planning discussed in morning huddle. This is usually done by reviewing student cases.

University of Mississippi

Prior to Clinic –

Yes, in depth, admission process with treatment planning with other disciplines.

After Commencing Clinic –

Yes, (9801, 9804) and new treatment plan with new providers.

University of Oklahoma

Prior to Clinic –

In the fall semester of their first year, the students are enrolled in a Radiographic Interpretation/Technique course through the Oral Diagnosis Department. In this course, students are provided extensive training and practice in diagnosing radiographs and identifying surfaces of the teeth that need treatment.

During the spring semester of their first year and the fall semester of their second year, students participate the Operative Dentistry Preclinic I and II lecture/lab courses. In these courses, they are instructed via reading assignments and slide presentations on the clinical and radiographic diagnosis of caries, along with the thought process in selecting appropriate treatments and materials for various clinical scenarios. Toward the end of their second preclinical course, they participate in several simulation patients in the preclinic lab projects. During these simulations, they are provided radiographs, caries risk assessments, health history, and written notes on signs and symptoms described by the simulated patient. They are required to diagnose caries and treatment plan the restorative treatment for those teeth. They will then complete treatment on one or two of those teeth during each of those preclinical lab sessions.

After Commencing Clinic –

Our students are introduced to treatment planning clinically during their second year in a course directed by the Oral Diagnosis department. Their initial efforts involve a course during their summer session in which they work up an adult preventive care patient, who is not expected to have many restorative needs. This allows them to learn to collect clinical and historical data from the patient and enter that into the patient's records. They can perform a prophylaxis on this initial patient. The next course, in the fall of their second year, is also directed by the Oral Diagnosis department, and is called Patient Contact. During this course, the Operative department provides faculty coverage to assist the students in learning to diagnose caries, and also create an

operative treatment plan. This process usually involves the student initially diagnosing the caries and creating a tentative treatment plan for the operative procedures. Then, the instructor will review the radiographs with the student, discussing the radiographic findings as they relate to the operative treatment plan with the student. The instructor then examines the patient (with the student assisting at chair-side), and reviews the entire treatment plan with the student and finalizes the plan.

University of Tennessee

Prior to Clinic –

In Patient Evaluation, they are shown via a PowerPoint in lecture and on the AxiUm site basic treatment planning. They also have a series of readings in their course manual on the topic. In Patient Evaluation lab, they have a comprehensive exercise on charting and developing best care, cost modified care, and maintenance care treatment plans on a phantom patient.

In addition, students are divided into groups of 10 or less to discuss complex medical histories of standardized patients with attending faculty.

After Commencing Clinic –

In Oral Diagnosis clinic, faculty work with students to put together a tentative treatment plan on each patient they work up before they go to their clinic group, where the treatment plans are finalized by their group leaders (GL).

In the groups, each GL has a morning “huddle” from 8-9am where patient treatment for each student’s patient is discussed and justified using evidence gleaned from exams, records, texts, literature etc.

In operative and biomaterials lectures, use of specific methods and materials and indications/contraindications for determining best practices of restoration are considered and discussed.

University of Texas - San Antonio

Prior to Clinic –

We have several lectures that emphasize treatment planning including information on ICDAS, non-surgical management, radiographic diagnosis, restoration vs. repair, prognosis of teeth, soft tissue management and others. We also have a rotation through a treatment planning course.

After Commencing Clinic –

Students must make and present a complex patient that requires them to photograph, do a diagnostic mounting, come up with and defend different treatment plans and to discuss the materials and devices that they will use. They have made one presentation and will make another in the spring semester.

7. How is your school incorporating critical thinking in the teaching of operative dentistry? (Please give examples)

Baylor College of Dentistry

In pre-clinical operative lab, faculty ask the students for a self-evaluation of their efforts before appraising the students’ work. For pre-clinical lab practicals, a written self-evaluation of the procedure is required.

In D3 clinical operative, instructors ask the students to self-evaluate their preparations or restorations. Faculty try to follow the “Bookends Strategy for Clinical Teaching” recommended by the Academy for Academic Leadership:

Before the patient encounter, the faculty asks the student:

1. What do you plan to do and how did you develop this plan?
2. How and why did you rule out alternative treatments?
3. What are the advantages of this approach over others?
4. Ask priming and anticipatory guidance question in the form of “what if” to encourage students to think ahead and anticipate potential problems and solutions

After the patient encounter, debrief the student by asking reflection and self-assessment questions such as:

1. What is the most important thing you learned today?
2. What could we do differently next time?
3. Review specific trouble spots with the student

In the D3 comprehensive care program, evidence based dentistry is part of our program. In our small group meetings in the fall semester, a small group of students is assigned a clinically relevant topic to research and report to the rest of the group each week. Each topic usually stimulates a good discussion among the students and faculty group leaders. In the spring semester of the D3 year, the treatment planning seminars stimulate critical thinking and discussion among the students.

Based upon the student course evaluations, the students appreciate the virtual patient exercises and treatment planning seminars and comment that they were both instructive and thought provoking. The faculty involved in the courses believe that these exercises are very worthwhile in engaging the students in critical thinking; these exercises require the students to take information they have learned and apply it rather than simply restating the information on a written examination.

University of Texas - Houston

Evidence-based Clinical Queries (see above) and case-based final didactic exam in the pre-clinic.

Virtual patients and PICO evidence-based Grand Rounds (presented by students) during clinical years.

LSU Dental School

Critical thinking is part of the literature reviews in the D3 course (Advanced Operative). A group of students, reviews selected articles on an operative topic and then presents the articles to the class. Faculty act as moderators/mentors and provide summation of teaching points if not done by students.

Students appear to be more involved (awake) with this format of teaching. This is the second year of literature reviews. First year there were no questions on final from the reviews. This year there will be questions on the final exam.

University of Mississippi

Class and clinic / exam and clinic

Results are better as basic sciences and clinical faculty work together.

University of Oklahoma

The term “critical thinking” seems fairly nebulous, and can be interpreted in many ways. We feel that we require our students to use “critical thinking” during every procedure that they attempt in our clinical and preclinical courses. We encourage our students to think critically by requiring them to share their thought processes during treatment planning, and during restorative procedures, from their initiation through their completion. We require students to use reflective critical thinking during each preclinical and clinical procedure by having them evaluate their own work prior to having the instructor evaluate the procedure. As mentioned previously, we have incorporated case simulation projects in our preclinical courses to require students to gather and analyze information to develop a plan of treatment for patients. In regard to our satisfaction with our efforts to encourage our students to “think critically”, we believe that we are achieving this to the extent that our time and manpower will allow at this time. We are sure that there is still some room for improvement.

University of Tennessee

For D1 and D2 students, during lectures, after material is shown on slides and discussed by lecturer, during the same class period, specific questions are asked that require the students to use the information they have just been given to then determine what course of treatment should be followed for the given situation. This is done for a full class and sometimes only a few students participate with the answers but hopefully the others will learn from them in this mass setting. In the future we are hoping to break the class of 90 down into smaller groups for more participatory discussions.

In preclinical labs and in clinic, faculty “on the floor” ask questions of students individually—helping to “lead” them into thinking through restorative situations.

In addition, when the GLs have their morning clinical huddles they will also “lead” their smaller groups of students through a discussion of actual patients to be treated and when and why and with what methods and materials, etc.

We also have a couple of more formal smaller group settings whereby students discuss treatment for a standardized patient, using models, radiographs, charting, photos etc. This occurs in a D2 composite resin preclinical lab and in a D4 “clinic rounds” course in a classroom setting.

Students are required to perform self-assessments on specific forms for all of their graded practical exams in labs and timed clinical competency exams.

We are developing other courses that will be more specific to practical teaching of critical thinking using various forms of evidence.

University of Texas - San Antonio

(Please give examples, and degree of satisfaction from the results.)

In the preclinical course we have prepared teeth with artificial caries that constitute a puzzle that the students have not seen. We try to make clinical examinations focus on clinical cases and application of principles that they learned.

The clinical course in Restorative Dentistry has three skills assessments where students are required to make decisions and to perform under pressure. The skills assessments are photographed and evaluated for technical performance.

**8. Is your school using a grading system or Pass/Fail system on clinical performance?
Do you distinguish between Pass and higher achievement an performance and if not, how do you handle applications to graduate programs for your students?**

Baylor College of Dentistry

Grading system or Pass/Fail system? –

We use a grading system on clinical performance rather than a Pass/Fail system.

Distinguish between Pass and higher achievement? -

Not applicable.

University of Texas - Houston

Grading system or Pass/Fail system? –

Grading system (1-2 not clinically acceptable, 3-5 clinically acceptable)

Distinguish between Pass and higher achievement? -

N/A

LSU Dental School

Grading system or Pass/Fail system? –

Grading system

Distinguish between Pass and higher achievement? -

N/A

University of Mississippi

Grading system or Pass/Fail system? –

Yes, Rubrics on competencies.

Distinguish between Pass and higher achievement?

All cumulative grades and attendance (faculty recommendation?)

University of Oklahoma

Grading system or Pass/Fail system? –

We currently utilize a grading system to evaluate the clinical performance of our students. We try to concentrate on calibrating our faculty first and foremost on criteria based on what is considered a clinically acceptable outcome and what is not. Beyond that, we do provide a range of scores for those procedures that fall into the clinically acceptable category (Excellent, Good, Acceptable). The courses are graded based on the average of the grade for the procedures, and each procedure is also weighted on the basis of its difficulty.

Distinguish between Pass and higher achievement?

N/A

University of Tennessee

Grading system or Pass/Fail system? –

We use Pass/Fail for our clinical competency exams only as they are meant only to prove competency; however for daily clinical grading and all grading in labs we use a grading system.

Distinguish between Pass and higher achievement? - N/A

University of Texas - San Antonio

Grading system or Pass/Fail system? –

The Pass/Fail system of evaluating student performance was proposed by the administration but rejected by the faculty as unworkable. Proponents for grades argued that students are motivated by grades and will devote more effort to a graded assignment than to a non-graded one.

Distinguish between Pass and higher achievement? –

N/A

9. Do you think your students are receiving enough patient experiences in operative dentistry to be minimally competent? If not, what suggestions do you have to mitigate the shortage of patients?

Do any other disciplines in your school lack adequate experiences? What has your school done to mitigate the shortage of patients?

Baylor College of Dentistry

Yes, our students are receiving enough patient experiences in operative dentistry to be deemed at least minimally competent. In the D3 year, students treat their patients comprehensively but a minimum number of essential experiences in operative dentistry are required as follows:

1 Cl II amalgam (D2150, D2160, D2161)

1 Cl II composite (D2392, D2393, D2394)

6 other Cl II restorations (amalgam, composite or Cl II buildups of final restoration quality**)

(D2150, D2160, D2161, D2392, D2393, D2394, D2950A, D2954A, D6972A, D6973A)

1 Cl III composite (D2331, D2332, D2335)

1 Cl II amalgam Progress Exam (D2150.Z, D2160.Z, D2161.Z)

1 Cl II composite Progress Exam (D2392.Z, D2393.Z, D2394.Z)

1 Cl III composite Progress Exam (D2331.Z, D2332.Z, D2335.Z)

40 miscellaneous points earned according to the following schedule:

-One-one surface restoration/one cleanout of tooth deemed unrestorable and extracted at same appointment/one sedative restoration* (IRM or Fuji IX) – 1 point

(D1352 (PRR), D2140, D2330, D2391, D2940 (Sedative Restoration), D2999A (Op. c/out-ext))

-One-two surface Cl I, Cl II, Cl III, Cl IV restoration – 2 points

University of Oklahoma

The students complete an adequate amount of clinical experiences. However, the adequacy of the number of specific types of clinical experiences may be less than ideal. For example, some students may graduate with relative little experience in Class II resin restorations, and others may have an overabundance of those experiences. With our new system that essentially stipulates that the students will complete the treatment presented to them in their assigned patient family, it can be difficult to assure a balanced clinical experience for all students.

Do any other disciplines in your school lack adequate experiences?

Our Endodontic department seems to lack adequate cases that are deemed appropriate for our undergraduate students. Our Fixed Prosthodontic department is also lacking the ability to control the numbers of specific types of procedures completed by each student.

University of Tennessee

Yes

Do any other disciplines in your school lack adequate experiences?

Ortho has minimal clinical experience—observation in the grad clinic and some laboratory exercises have been the extent of D-3 experience until this fall.

We have addressed this by adding the D-4 clinical elective in orthodontics. We have 4 students enrolled and currently have 2-3 patients. To recruit patients for the undergrad clinical experience, we are using the screening process in grad ortho to identify patients who could benefit from limited treatment. Below is the course description:

Course description: This course series will be primarily clinical in nature. It is designed to provide select dental students with an advanced knowledge in the diagnosis and treatment of orthodontic problems and a hands-on experience in treating clinical cases that require limited orthodontic intervention. Typical cases will include (1) minor dental crowding or spacing with a harmonious soft tissue profile and balanced occlusion and (2) cases that require limited orthodontic intervention in preparation for additional dental treatment such as creating space for a dental implant. The supervising faculty will select cases that meet the restrictions of limited treatment and are thus eligible for treatment in this class. This course series will be offered starting Winter/Spring of D-3 and will continue in Summer/Fall of D-4 (ORTH 306) and Winter/Spring of D-4 (ORTH 307). Students that elect to register for this course series must attend all three courses. This course (ORTH 305), is the first course in the series, it will build on the basic orthodontic knowledge developed during ORTH 301, 302 and will be offered concurrently with ORTH 304. During this course, students will learn how to take good quality orthodontic records, analyze the collected record, diagnose orthodontic problems and develop a treatment plan that addresses the patient concerns. Additionally, students are encouraged to start treatment of some limited orthodontic cases after the approval of the course instructor and under his direct supervision. Each D-3 student participating in this class will be paired with a D-4 student taking ORTH 307. D-3 students are expected to assist D-4 students in the clinical management of patients.

In Oral Surgery, the students get a minimum of 55 surgical experiences as primary surgeon during their 2 years in clinic. Patient availability is not an issue, and I feel our students leave with a good grasp of uncomplicated ambulatory oral surgery.

In Endodontics, UT has some of the highest requirements for Endo in the country.

But, yes, they do have a shortage of patients. While every year students manage to accomplish this, we do not know what the future holds.

In the Pediatric Dentistry Department, yes the students do get good patient experiences, but could see more patients.

II. MATERIALS/TECHNIQUES AND DEVICES

1. Is your school incorporating the teaching of hard and soft tissue laser surgery?

If so, is this taught as an elective or part of core curriculum?

What discipline(s) teach(es) this course?

Baylor College of Dentistry

Yes, one lecture covers all types of laser usage. However, there is no clinical teaching experiences using lasers due to time constraints and burdensome regulations.

The laser lecture is part of the core curriculum and attendance is required.

The laser lecture is presented by the 4th year General Dentistry faculty.

University of Texas - Houston

Yes

Started as an elective, now part of the core curriculum (4th year DDS)

Because laser experts are restorative/operative faculty, these faculty teach the course.

LSU Dental School

Yes

Diode Laser and Electro surgery is taught (with a lab exercise).

(taught by) Prosthodontic Department with help from the Operative Division.

University of Mississippi

Yes, mostly soft. Hard tissue no except presently exploring hard laser to remove monolithic zirconium

If so, is this taught as an elective or part of core curriculum?

Didactic and in clinic as needed.

Rapidly changing.

What discipline(s) teach(es) this course? Operative.

University of Oklahoma

The department of Periodontics covers a little about hard and soft tissue lasers in the in the Fall DS3 Periodontal course. It is covered under the topic "Advances in Periodontal Treatment", and the focus is to

update students on the current state of knowledge in the use of lasers to treat periodontal disease. We have a soft tissue laser in grad perio that is used occasionally for frenectomies, gingivoplasty, etc.

University of Tennessee

Yes, soft tissue laser surgery is taught as part of the core curriculum at the College of Dentistry (CoD), University of Tennessee Health Science Center (UTHSC). Soft tissue laser surgery is taught primarily by the Periodontics Department. Also, there is an overview of the clinical applications of lasers presented in our Esthetics Dentistry Course (D2 year) including a laboratory which gives students the opportunity to operate clinical lasers. There is a one day elective laser course taught to the D4s. Many of the Restorative Dentistry Department and Group Leader faculty were trained on the use of hard tissue lasers this past summer.

University of Texas - San Antonio

No, not in the predoctoral clinic.

2. Does your school use digital imaging and analysis software to grade preparations/restorations?

If so, please comment on results in terms of repeatability and consistency as compared to human evaluators.

What do you think the future holds in regards to this type of evaluation?

Baylor College of Dentistry

No. However, Dental Anatomy has used digital imaging to grade practical exams.

When this technique used in Dental Anatomy was compared to instructor grading of the same projects, results were very similar with the instructor grades being about 3 points lower than the digital grades.

This type of digital evaluation will probably be used more as refinement of the software improves. However, there can be no substitute for student-instructor interaction.

University of Texas - Houston

N/A

Potential. We are interested in learning more, especially as Compare is investigated.

LSU Dental School

No: There are plans to upgrade the preclinical lab and that will include simulation units

University of Mississippi

not yet.

What do you think the future holds in regards to this type of evaluation?

Great

University of Oklahoma

Not as of yet. We are looking at various systems to bring into our school for this purpose.

University of Tennessee

No, not routinely in all operative dentistry courses. However, there are two exceptions. D1 students begin their dental education at COD, UTHSC by cutting tooth preparations in our DentSim Laboratory. Their preparations on typodont teeth mounted in mannequin heads are digitally imaged and analyzed. The other situation in which digital imaging is used is during CAD/CAM procedures. Preparations are evaluated digitally during those teaching cases. There is no use of analysis software.

University of Texas - San Antonio

No

3. Are you aware of any U.S. dental schools that have eliminated amalgam from their curriculum? If so, whom?

Baylor College of Dentistry

Not aware of any.

University of Texas - Houston

We have heard that NYU eliminated amalgam; consultation with an operative faculty member at NYU clarified that dental amalgam is still taught in the pre-clinic, and it is available in the clinic when composite would not be possible (ie. isolation).

LSU Dental School

No, only rumors that it has been eliminated.

University of Mississippi

No

University of Oklahoma

We have heard rumors of New York University discontinuing the use of amalgam, otherwise we are not aware of any schools who have eliminated amalgam entirely from their curriculum.

University of Tennessee

Yes, New York University no longer teaches dental amalgam.

University of Texas - San Antonio

No.

4. Do you disclose to students that they will be working with amalgam in dental school? If so, when? Prior to matriculation? Commencement of operative course?

Baylor College of Dentistry

No formal discussion with students concerning the use of amalgam is held. They do get lectures on amalgam safety considerations and are expected to comply with instructions.

University of Texas - Houston

Not sure that this is an issue. Not aware of any formal “disclosure.” During the overview of the first semester operative course it is mentioned that amalgam will be covered. Course syllabi are posted online for all courses during a given semester, so information regarding amalgam usage is available for those who look.

LSU Dental School

Use of amalgam is listed in the LSUSD Curriculum catalogue that is available to potential students. It is also in the D1 syllabus for operative dentistry only once they have started the course.

University of Mississippi

Yes, but not before admissions

University of Oklahoma

The students know that they are working with amalgam when it is introduced in the first year dental materials and preclinical operative courses.

University of Tennessee

Yes, D1 students are first introduced to dental amalgam in the Biomaterials Course approximately one month after they have begun dental school. Students are told they will be using dental amalgam in operative dentistry technique courses and in the clinic. A separate lecture in Biomaterials covers the topic of amalgam safety.

University of Texas - San Antonio

No

5. Have you had issues with students refusing to work with the amalgam (or any other material) in your courses or in the clinic? If so, how was the issue handled?

Baylor College of Dentistry

No students have yet refused to work with amalgam. No studies have yet proven any connection between dental amalgam and human health problems

University of Texas - Houston

No.

LSU Dental School

There have been no issues with any materials.

University of Mississippi

No.

University of Oklahoma

No, we have not faced this issue. This would probably be handled by informing the student that we utilize this material because we feel that, in many instances, its use is in the best interest of our patient's oral health. We will not compromise our patient care for a student's personal opinion concerning the material.

University of Tennessee

No

University of Texas - San Antonio

No one has refused up to this point.

III. CARIOLOGY

1. What method of caries detection and classification is used at your school?

Are you using the (ICDAS) International Caries Detection Assessment system:

- 0 Sound
- 1 First Visual change in enamel (after prolonged drying or in 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

Baylor College of Dentistry

The ICDAS system is used at our institution.

University of Texas - Houston

ICDAS

LSU Dental School

Risk assessment is completed on all patients. Forms are in AXIUM. Low, moderate, high scale is used.

Digital x-rays are used in the school (quality is poor due to old monitors).

Diagnodent is available but almost never used.

Visualization with headlight (transillumination)

Explorer (light probing is taught)

Students receive cariology lectures in Oral Diagnosis in first year and then a lecture in D2 Operative course and D3 Operative course.

Not using ICDAS system

University of Mississippi

We have not implemented the official ICDAS system in our pre-clinical or clinical areas. We look for visual changes on the surfaces of the teeth, for obvious signs of enamel breakdown, obvious shadows and all the other signs of cavitation or decalcification. We also use an explorer to evaluate whether a possible decay area is soft or hard. Some faculty will use caries detection solutions.

University of Oklahoma

Yes, we teach the ICDAS system for pit and fissure caries. All though we discuss it in our lectures, we do not necessarily utilize the ICDAS numeration system in our clinics. We mainly emphasize the visual cues indicating the progress of caries, and the corresponding treatment options for each stage.

If the above questions is referring to:

Detection of pit and fissure caries – We teach the use of a clinical examination based on use of visual magnification on a clean, dry tooth. We also obviously check the radiographs for indication of caries into the dentin.

-Detection of proximal smooth surface caries. – Primarily bitewing radiographs in conjunction with clinical examination based on use of visual magnification on a clean, dry tooth. We classify them based on their progress into enamel or dentin.

- Detection of other smooth surface caries - We teach the use of a clinical examination based on use of visual magnification on a clean, dry tooth. We also obviously check the radiographs for indication of caries. Again, we mainly emphasize the visual cues indicating the progress of caries, and the corresponding treatment options for each stage.

University of Tennessee

Caries is detected by the traditional method of using the explorer, current x-rays, and clinical examination of the patient. We also utilize Sable Seek as an adjunct to aid in detecting remaining caries. G.V. Black's classification system is utilized within our pre-clinical and clinical teaching methodologies for classification purposes. We do not use the (ICDAS) International Caries Detection Assessment system. We use a system called "Caries Risk Assessment" which is a modification of the (CAMBRA) Caries Management by Risk Assessment system. This caries risk assessment form located on AxiUm is utilized for all patients receiving treatment.

University of Texas - San Antonio

Dr. Ben Amechi is our instructor in Cariology. He also teaches in the Restorative Dentistry Laboratory Course and attends the lectures. He was involved among the creators of ICDAS and is a strong proponent of the technology. The ICDAS system is presented in the sophomore lecture course in a lecture on caries detection and assessment. It has not made its way into the clinical record but progress is being made toward that goal.

2. How is the progression or arrestment of a carious lesion detected, and recorded at your school's clinic?

Baylor College of Dentistry

In our axiUm system under “Conditions and Findings” we code incipient decay as C3002, primary decay as C3001, and secondary decay as C3003. Arrested decay is coded as C9400 watch with a progress note describing the arrested decay.

University of Texas - Houston

No formal method of documentation, although follow up informally with radiographs and clinical exam.

LSU Dental School

Recorded in patient treatment notes. Most patients seen at LSU tend to be high caries risk. Once treatment is completed, patients are exited from the program. This leads to minimal follow-up unless patient gets rescreened to become a patient again.

University of Mississippi

If the lesions is identified as a monitor, it is listed in the progress note and charted on the electronic hard tissue exam chart as a monitor. Concern is whether students or faculty pay enough attention to a monitor. All patients are re-evaluated after our phase I therapy, extractions, endodontics, basic fillings and non-surgical periodontal therapy. If there are any areas determined to be carious, the patient is not approved for phase II therapy.

University of Oklahoma

This is mainly accomplished with reevaluations of completed patients with an exam and x-rays. In theory we stress periodic recall exams and radiographs as needed based on the patient’s Caries Risk Assessment. However in practice, periodic evaluations for progression or arrestment of carious lesions have not been managed or organized well with our clinical management system as of yet. We rely heavily on the required case complete re-evaluation examinations.

University of Tennessee

An examination along with x-rays is always necessary for the detection of caries as stated above. In some cases, a visual assessment can be made, but must be reinforced/supported by up-to-date x-rays.

For a child or an adolescent recall patient with clinical caries or at increased risk for caries has posterior bitewing exam at 6-12 month intervals if proximal surfaces cannot be examined visually or with a probe. The progression or arrestment of the carious lesion (if any) will be documented within the patient charting and photen notes on the AxiUm system.

For an adult recall patient with clinical caries or at increased risk for caries has posterior bitewing exam at 6-18 month intervals. The progression or arrestment of the carious lesion (if any) will be documented within the patient charting and photen notes on the AxiUm system.

We strive to provide timely comprehensive care to all of our patients, thus if a noted carious lesion progresses any further, it is usually do to the patient not being compliant with his/her scheduled appointments in order to treat the lesion before it develops into a more advanced stage. Yet, because of the recent implementation of the Group Leader Comprehensive System within our clinical teaching program, our patients are now more efficiently tracked. Alerts such as flags are included on the AxiUm system to inform the student-doctor and faculty of any medical, financial, caries prone and/or caries risk rating of the patient.

University of Texas - San Antonio

By description only.

3. What criteria are used to determine if surgical intervention is necessary?

Are the criteria standardized and are faculty calibrated?

What strategies have been used to standardize and calibrate faculty?

Baylor College of Dentistry

ICDAS codes 4, 5 and 6 require surgical intervention with definitive restorations. In some cases a tooth presenting with an ICDAS code 3 evaluation will receive a PRR.

The D3 clinical operative faculty have participated in ICDAS calibration sessions. Our institution periodically holds faculty seminars to calibrate faculty on a number of topics including the ICDAS system.

Faculty retreats, mini-retreats, and seminars with guest speakers have been used to standardize and calibrate faculty. Last year, various topics of interest to the faculty were identified and faculty from various departments reported on how their department handled the issue and presented the evidence supporting their protocols. Questions posed by the faculty in attendance usually stimulate lively discussion following the presentations.

University of Texas - Houston

Pit-and-fissure: 0 no treatment or sealant

1-2 sealant

3 preventive resin restoration

4-6 traditional operative intervention

Interproximal*: E1-E2 remineralization strategies

D1 depends on risk factors and clinical presentation

D2-D3 traditional operative intervention, favoring box/slot preparations when possible. In all interproximal cases, if direct access to lesion demonstrates no cavitation, remineralization strategies employed.

Criteria is standardized and available on the electronic health record (see attachments). Pre-clinic operative faculty well calibrated. Clinical faculty have been informed, calibration is a work-in-progress.

As noted earlier, standards are available in simple visual format in the electronic patient record. Multiple calibration sessions have occurred with clinical faculty, led by pre-clinic content experts.

LSU Dental School

Caries has progressed into the dentin on radiographs, opaqueness of enamel, transillumination. There are always at least 2 faculty in Operative clinic to review questionable treatment plans.

There is no standard policy for surgical treatment. There is also no limitation on use of materials (composite versus amalgam). There is a significant difference between operative treatment planned in OD and the Operative instructors. Variability also exists between Operative faculty members and D4 Team Leaders.

There is a calibration exercise for faculty before the new academic year (not mandatory)

University of Mississippi

The criteria is different for each individual faculty. We do not have formal training sessions to calibrate the faculty. We have not used any strategies up to the present.

University of Oklahoma

Criteria for surgical intervention for pit and fissure caries

- localized decalcification or enamel breakdown in the pit or fissure, or
- underlying “shadow” of brownish or grayish color beneath the enamel, or
- Cavitation or “frank open lesion”

Criteria for surgical intervention for proximal smooth surface caries

- caries observed on radiographs extending into the dentin, or
- clinical observation of cavitated lesion on proximal surface or
- underlying “shadow” of brownish or grayish color beneath the enamel

Criteria for surgical intervention for other smooth surface caries

- clinical observation of a cavitated caries lesion

We standardize our criteria and calibrate the faculty to the best of our abilities.

We provide the faculty with the same information that we provide to the students in regard to caries diagnosis and treatment planning. This includes the current preferred methods of detection, our current philosophies for determining the restorative or non-restorative treatment needs of our patients, and the lecture slides illustrating the criteria that we use to determine the need to intervene surgically.

University of Tennessee

We follow the evidence-based criteria stated in Sturdevant’s Operative Dentistry Book for cavitated lesions, and noncavitated lesions. A cavitated surface must be restored, while a demineralized noncavitated surface can be treated only by antimicrobial and fluoride agents under watch until next 6 month appointment. If a pit or fissure is not cavitated, but at risk, then it should be sealed.

For (ADEX) American Board of Dental Examiners purposes, which is administered through (SRTA) Southern Regional Testing Agency, the following guideline is indicated for necessary surgical intervention: A “cavitated” lesion must be radiographically or clinically located at the DEJ.

For Pit and Fissure Caries Treatment Decision Making

Noncavitated (caries-free):

- No radiolucency below occlusal enamel
- Deep grooves may be present
- Superficial staining may be present in grooves

- Mechanical binding of explorer may occur

Cavitated (diseased):

- Chalkiness of enamel on walls and base of pit or fissure
- Softening at the base of a pit or fissure
- Brown-gray discoloration under enamel adjacent to pit or fissure
- Radiolucency below occlusal enamel

For Proximal Caries Treatment Decision Making

Noncavitated (caries-free):

- Surface intact: use of an explorer to judge surface must be done with caution because excessive force can cause penetration of intact surface over demineralized enamel
- Opacity of proximal enamel may be present
- Marginal ridge is not discolored
- Opaque area may be seen in enamel by translucination

Cavitated:

- Surface broken, detectable visually or tactilely; temporary mechanical separation of the teeth may aid diagnosis
- Marginal ridge may be discolored
- Opaque area in dentin on translucination
- Radiolucency is present

Are the criteria standardized and are faculty calibrated?

This criteria is standardized and our departmental faculty are calibrated which is an on-going process.

What strategies have been used to standardize and calibrate faculty?

All Core-Operative Faculty are required to go through an annual calibration seminar/process which entails having to teach/observe the pre-clinical lectures and labs to ensure that what is being taught pre-clinically is transferred to the clinics efficiently and effectively. Annual mock board prep calibration is conducted as well within our departmental faculty to facilitate administering the SRTA/ADEX exam. Within the Department of Restorative Dentistry, all faculty has a calibration seminar with our Chair and various other departmental faculty through pre-clinical labs and PowerPoint presentations to ensure we are all calibrated before entering the clinics. All faculty are still held accountable for using their best clinical judgment for administering comprehensive clinical care to all patients.

University of Texas - San Antonio

Cavitation of the enamel surface is the most reliable method of determining the need for restoration. We also take into account caries risk.

Yes, a calibration exercise is conducted each year of individuals who will grade skills assessments.

(What strategies have been used to standardize and calibrate faculty?)

Lecture, review of skills assessment photos, and discussion

IV. OTHER

V. 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.

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. Marsha Babka MID
University
Downers Grove, IL

Region IV Annual Report Editor:
Dr. Marsha Babka MID
University
Downers Grove, IL

CODE REGIONAL MEETING FORM

REGION: IV Great Lakes

LOCATION INFORMATION FOR 2014 REGIONAL MEETING

University:	Midwestern University College of Dental Medicine Illinois		
Dates:	October 16 – October 17, 2014		
Chairperson:	Marsha Babka	Phone #	630-515-7476
University:	Midwestern University	Fax #	630-515-7290
Address:	555 31 st 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:

Follow up on schools that use digital imaging for student project grading – how has this progressed? Has E4D compare software or Sirona's prep check been used more widely.

What student assessments (performance / competency examinations) are required. Who grades / evaluates the performance exam? All faculty or selected faculty? What types of calibration exercises are used for faculty? What are remediation policies for failed assessments?

What esthetic procedures are taught in pre clinics? Who teaches (what department)? What procedures are taught in preclinic? Are esthetic procedures taught in an integrated course or in separate courses?

What is the philosophy of caries excavation and removal prior to restoration placement? Is anyone teaching stepwise caries removal? Leaving carious dentin and relying upon a good seal with the restoration?

Is infiltration of proximal caries with resin taught in preclinics or clinically? Is this treatment being provided in the clinics as a treatment option?

What are the materials and selection criteria for material for complex posterior restorations? How often are onlays provided as treatment vs full crowns?

LOCATION INFORMATION FOR 2015 REGIONAL MEETING

University:	Indiana University		
Dates:	TBD		
Chairperson:	Marsha Babka	Phone #	630-515-7476
University:	Midwestern University	Fax #	630-515-7290
Address:	555 31 st St. Downers Grove, IL 60515	E-mail	mbabka@midwestern.edu

Please return all completed enclosures to;

Dr. Edward J. DeSchepper, National Director E-mail: edeschep@uthsc.edu
UTHSC College of Dentistry Phone: 901-448-7686
875 Union Avenue Fax: 901-448-1625
Memphis, TN 38163

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
Marsha Babka	Midwestern University College of Dental Medicine	630-515-7476	630-515-7290	mbabka@midwestern.edu
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Ron deAngelis	University of Pittsburgh	412-648-0079		rjd43@pitt.edu
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Courtney Lamb	UIC College of Dentistry	312-413-2836	312-996-3535	clamb@uic.edu
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Camila Sabatini	University of Buffalo School of Dental Medicine	716-829-6343	716-829-2440	cs252@buffalo.edu
Daisy Salazar	UIC College of Dentistry	312-996-3758	312-996-3535	dsalazar@uic.edu
Adriana Semprum-Clavier	UIC College of Dentistry	312-996-1811	312-996-3535	asemprum@uic.edu
Edward DeSchepper	National Director CODE University of Tennessee	901-488-7686	901-448-1625	edeschep@uthsc.edu

2014 NATIONAL CODE AGENDA - SUMMARY RESPONSES

*(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. Curriculum

1. What method is used to update operative didactic and laboratory content and how often is the material reviewed?

All of the schools reported that didactic and laboratory content was evaluated. The method evaluation varied - where one school relied upon an advisory committee and at the other end of the spectrum the reviews relied upon feedback from course faculty and students. The time intervals varied between ongoing reviews to a formal external review once per five year period

2. What role does current literature play in the process above?

Current literature played an important role in all of the schools review and update of course content. Most schools reported that the course director or content person was responsible for updating course content based upon literature. Evidence based dentistry was also incorporated into the curriculum and the course itself.

3. Who makes sure the process, above, occurs and who ensures the accuracy (dept. chair, curriculum committee, individual course director, etc.)?

Most schools reported that course content review was the responsibility of the course director. One school reported that the responsibility belonged to an advisory committee. The curriculum committees seemed to be responsible for time allotment and to insure that there isn't redundancy in the curriculum and not updating course content.

Most schools have a separate materials review by a committee to keep current with material selection for pre clinic and clinics.

4. What types of novel teaching methodologies other than (lectures, sage on the stage) are used at your school for teaching operative dentistry? Please include examples and results so far.

All of the schools reported an increase in the use of online course material. All schools are incorporating small group discussions - and case based sessions. The use of videos is also being used in most schools.

5. Does your school incorporate the use of a digital record (sample patient record) in the teaching of laboratory operative skills? If so, is there any noticeable difference, when the students start clinic?

Most schools used a sample patient record in preclinics to varying degrees. One school is introducing the students to the electronic record in a separate course. At the other end of the spectrum another school incorporates a small population of patients that present for multiple treatments within the course, where the student treatment plans, provides the treatment and makes treatment notes for a complete introduction to the manner patients are treated in clinics.

6. What methods/exercises are used to help students to learn to treatment plan Operative Procedures

Prior to clinic? How often?

All of the schools reported that they taught treatment planning. Treatment planning usually was in late D1 year or more commonly in D2 year.

All of the schools used a case based approach to treatment planning.

Treatment planning

After commencing clinic?

All schools reported that there was additional treatment planning in the after students enter the Clinics (D3 and D4 year) Some schools had additional courses: advanced treatment planning or treatment planning specific to types of cases such as special needs or replacement of missing teeth. Other schools used a seminar or case presentation method for additional treatment planning.

**7. How is your school incorporating critical thinking in the teaching of operative dentistry?
Please give examples, and degree of satisfaction from the results.**

All schools incorporate evidence based dentistry into the curriculum. Most schools incorporate evidence based dentistry projects related to operative dentistry in treatment planning, caries management strategies, repair vs replacement of restorations

Case presentations and grand rounds were also widely used for the development and assessment of critical thinking skills

8. Is your school using a grading system or Pass/Fail system on clinical performance?

Schools are not using a pass / fail system for course grades. Course grades are based upon a variety of measures that included production and competency examinations. Some schools use a hybrid system where individual competencies or procedures receive a pass / fail type of grade or feedback only, but the course receives a grade

Do you distinguish between Pass and higher achievement an performance and if not, how do you handle applications to graduate programs for your students?

Not applicable since schools are giving a grade for the courses.

9. Do you think your students are receiving enough patient experiences in operative dentistry to be minimally competent? If not, what suggestions do you have to mitigate the shortage of patients?

All schools reported that students were receiving enough patient experiences in operative dentistry.

Do any other disciplines in your school lack adequate experiences? What has your school done to mitigate the shortage of patients?

The most common reported shortage is in fixed prosthodontic cases. Endodontics was another discipline that some schools were lacking. Removable prosthodontics was also mentioned.

The shortages were being addressed by additional procedures using typodonts. Extramural rotation sites also provided additional experiences for students.

II. MATERIALS/TECHNIQUES AND DEVICES

1. Is your school incorporating the teaching of hard and soft tissue laser surgery?

Some schools are teaching laser surgery - but it is didactic only - not clinically?

What discipline(s) teach(es) this course?

Restorative and surgery are the disciplines that teach this content

2. Does your school use digital imaging and analysis software to grade preparations/restorations?

Although a few schools have programs for imaging and analysis - no schools are using the programs for grading yet. The schools that have the programs are using it for feedback or faculty calibration only

If so, please comment on results in terms of repeatability and consistency as compared to human evaluators.

Not applicable

What do you think the future holds in regards to this type of evaluation?

All of the schools reported that the use of analysis software has great potential for feedback and grading which will minimize - if not eliminate - subjectivity.

3. Are you aware of any U.S. dental schools that have eliminated amalgam from their curriculum? If so, whom?

No one was aware of any US dental school that has eliminated amalgam completely from the curriculum

4. Do you disclose to students that they will be working with amalgam in dental school? If so, when? Prior to matriculation? Commencement of operative course?

Only one school discloses the use of amalgam in the curriculum to students during the interview process. Most schools do not disclose the use of amalgam.

5. Have you had issues with students refusing to work with the amalgam (or any other material) in your courses or in the clinic? If so, how was the issue handled?

One school reported an incident of a student refusing to use amalgam. That school now includes sessions prior to the use of amalgam, where evidence and proper handling techniques are discussed.

III. CARIOLOGY

1. What method of caries detection and classification is used at your school?

Schools report using visual, radiographic and the use of a blunt explorer as the usual methods for caries detection.

Are you using the (ICDAS) International Caries Detection Assessment system:

0 Sound

1 First Visual change in enamel (after prolonged drying or in 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

Although the ICDAS classification is taught in all of the schools, only one school is using ICDAS in the patient electronic record.

2. How is the progression or arrestment of a carious lesion detected, and recorded at your school's clinic?

Schools are detected at periodic recall appointments using the same caries detection methods. Caries activity is also documented

3. What criteria are used to determine if surgical intervention is necessary?

Schools use a cavitation as the rationale for surgical intervention (operative procedures).

Are the criteria standardized and are faculty calibrated?

All schools reported that although faculty are calibrated as best as possible – there is still a need for additional standardization among faculty.

4. What strategies have been used to standardize and calibrate faculty?

Some of the strategies for faculty calibration include written philosophy documents and faculty in service sessions.

IV. OTHER

There was not a formal agenda for additional topics. However there was a lengthy discussion about the admissions process in the schools and the progress of students through the curriculum.

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.

Region IV (Great Lakes) School Abbreviations

CW	Case Western	PITT	Pittsburgh
DM	Detroit Mercy	BUF	SUNY Buffalo
IU	Indiana	UIC	Illinois
MI	Michigan	WVU	West Virginia
MWU	Midwestern	WO	Western Ontario
OS	Ohio State		

2014 NATIONAL CODE AGENDA – INDIVIDUAL RESPONSES

*(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. Curriculum

1. What method is used to update operative didactic and laboratory content and how often is the material reviewed?

CW No response

DM No response

IU IUSD does not have any formal requirements for updating operative course material. Each of the course directors monitor their own material and make changes with voluntary input from the other full time faculty. Changes are suggested and then discussed. Material is generally reviewed on a yearly basis.

MI Course content is reviewed and updated annually as needed by the Course Director(s) with input from adjunct faculty (both faculty who instruct in the preclinic courses and clinic faculty) and the Discipline Coordinator for Restorative Dentistry. Major changes go through approval by the Curriculum Committee and the Associate Dean of Academic Affairs.

Approximately six “Lunch and Learn” topical discussions are scheduled each year where faculty present topics of interest (and often controversy) and are discussed by faculty in attendance to help determine what we should be teaching. Adjunct faculty retreats also provide a venue for discussing curriculum changes. The School of Dentistry has undergone a comprehensive curriculum reform over the past several years where course content and sequencing has been reviewed and revised. This was overseen by the Curriculum Committee but also had multiple sub-committees and focus groups who were tasked to look at specific aspects of the curriculum.

The school is currently in the process of getting all syllabi posted online with search features using keywords so that faculty can search for which courses are teaching different topics to know who else is teaching a topic and what they are teaching. The goal is to ensure that all necessary topics are covered at an appropriate student level, are sequenced appropriately, and eliminate unnecessary repetition (or provide appropriate reinforcement) as needed.

The Materials, Instruments, Fees and Forms committee reviews and approves changes in materials and instruments used in both preclinic and clinic. Every effort is made to use the same materials and instruments in both preclinic and clinic.

MWU There are monthly curriculum meetings where the course content, logistics are discussed. Course evaluations are considered in updating the course content. The materials committee reviews materials that are proposed for incorporation into a course or clinic. There is a plan for review of all materials used in the clinic and preclinic. Within a 5 year period all materials are or will be reviewed.

OS No response

PITT Internal reviews of the didactic and laboratory content are conducted by Dr. Jean O'Donnell, Associate Dean of Academic Affairs, and by the chair of the appropriate department. External reviews are conducted by the University of Pittsburgh Center for Instructional Development and Distance Education. These reviews are to occur once per five year period. However, they may be done more frequently based upon data received from student evaluations. External reviews can also be performed by another dental school willing to evaluate all course material. This type of review should also be done on a five year basis.

BUF The material is reviewed in an ongoing basis. For both pre-clinical (2nd year) and clinical lecture course (both semesters third year):

1. The latest versions of our textbooks (Summitt's Fundamentals of Operative Dentistry and Fejerskov & Kidd's Dental Caries: the Disease and its Clinical Management) are consulted, as well as references listed in those books.
2. Continual literature searches are conducted to update information.
3. The ADA's evidence-based clinical recommendations are taught.
4. Input from clinical faculty assists in bringing in topics that are not currently being addressed adequately.
5. Input from annual CODE and AOD meetings and current research.

UIC The Department of Restorative Dentistry at UIC has an advisory committee that is composed of the Department Chair and Component Directors from the various content areas within restorative dentistry. This committee has the responsibility for creating, reviewing and revising the learning objectives that guide the restorative dentistry portion of the curriculum. The committee also has created and periodically revises the restorative department's philosophy document. This document further defines the learning objectives and establishes guidelines for implementing the department's philosophy in the pre-patient care courses and into the pre-doctoral clinics. The philosophy document is posted on all DAOB (Dental Applied Oral and Biological Sciences) course blackboard sites and on the UIC intranet so that it can be easily referenced.

In addition, a Dental Materials Advisory Committee meets once each month to review the current materials and instruments that are accepted for use at UIC. As practice trends and current evidence develop, the committee insures that proper materials are available for pre-patient care instruction and for use in patient care.

Trends in student clinics and student performance on clinical licensure exams are also monitored to insure that the content is preparing students to challenge these critical examinations. As an example, course content has shifted in recent years to include a reduced emphasis on techniques for restoring teeth with amalgam in favor of a greater emphasis on tooth colored alternatives. With the recent implementation of CAD/CAM technology

into the curriculum, planning and implementation is already underway to incorporate vital information regarding clinical indications/contraindications for this type restoration and also training has been implemented to prepare students to use the skills related to computer aided design and milling in patient care.

WVU No response

WO No response

2. What role does current literature play in the process above?

CW No response

DM No response

IU Current literature does play a part. The school has a graduate operative program and an active dental materials department that utilizes graduate MSD and PhD students' research projects to stay on top of the relevant topics.

MI Current literature is referenced and used in updating.
D1 students have a separate Evidence Based Dentistry course where students learn to research the literature. Faculty in-services on EBD have been held to help faculty keep up with current research.

MWU Content experts provide a review of literature supporting course content.
Some examples are:
post placement in endodontically treated teeth, pulp protection materials and methods, bonding methods and materials.

OS No response

PITT Current literature is extremely important, as a course director, I am constantly updating my material. In my course, I have revised the simulation clinic manual with the input of the instructors who evaluate and grade the students. We have changed the primary textbook to "Fundamentals of Operative Dentistry" by James Summitt. All course directors, make modifications to their lecture material, power points, course policies and examinations based upon current research and evidence based dentistry. We have an outstanding individual in charge of educating faculty concerning new concepts in teaching methods. Courses are always being conducted on how we can improve our teaching and evaluation methods. Courses are given over many weeks or sometimes a short presentation can be given over lunch.

BUF It is central to this process. This is an evidence-based course.

UIC The Department Philosophy documents and the Materials Advisory Committee utilize the principles of evidence based dentistry to apply best practices in our adopted standards, techniques, teaching and materials.
Also the Component Directors for the various disciplines are responsible for remaining well informed and aware of current evidence in order to help mold the department's practice philosophy. All DAOB courses have

assigned reading from current literature as a part of the learning experience to insure that students are aware of current trends, controversies and evidence.

WVU No response

WO No response

3. Who makes sure the process, above, occurs and who ensures the accuracy (dept. chair, curriculum committee, individual course director, etc.)?

CW No response

DM No response

IU The Curriculum Committee is involved only as a determinant of time allotted in the curriculum for each course. We occasionally have to fight for our time with the students. (This year we are losing about 5-8 percent of our time as are other courses from all departments.) Department Chairs are advised if a change is major in scope and particularly if a budget will be involved. So, the individual course director is the one who determines and is solely responsible for content and accuracy of the material given to the students.

MI Course Director(s) and the Discipline Coordinator for Restorative Dentistry

MWU The process begins with the content expert / session director, then the program director and finally the curriculum committee.

OS No response

PITT Assistant Dean of Academic Affairs, Department Chair, Individual course director

BUF For both pre-clinical (second year) and clinical courses (both semesters third year), the course director is the main person in charge of staying up to date with the literature. Our department chair supports course director suggestions.

UIC The department chair, department advisory committees, Curriculum Advisory Committee, and Curriculum Committee, all are responsible for insuring that the curriculum effectively incorporates the department's learning objectives and that the curriculum meets expectations for accreditation and for preparing students to be critical thinkers and competent practitioners.

WVU No response

WO No response

4. What types of novel teaching methodologies other than (lectures, sage on the stage) are used at your school for teaching operative dentistry? Please include examples and results so far.

CW No response

DM No response

IU As mentioned above, we are currently reviewing all courses to compress topics and eliminate others. To keep as much material flowing to the students as possible, we are replacing traditional lectures with on-line presentations for students to view on their own time. This time saved is placed in the pre-clinical laboratory during first year. The third year operative course continues to be a lecture course and does not have a laboratory. Courses such as Tooth Morphology and Gnathology are also attempting to have more information available in a non-live lecture mode. The recent students seem to be bored with the lecture system so we feel that eliminating many lectures can alleviate this attitude and release the student for more time in the pre-clinical laboratory as well.

MI Lecture notes and laboratory demonstration videos are posted online so that students can review material on their own before lab, in place of some lab sessions, or later on in clinic prior to performing procedures on patients

Written examinations are done online with a review session immediately following where students receive immediate feedback regarding questions missed

Student-led approach to learning

- Self and peer evaluations of preclinical work
- Student generated study plans for improvement in preclinical assessments
- Student exam question writing (in Cariology Course) – edited and modified by faculty

Team based teaching in preclinical foundation course (vs specific instructors assigned) to expose students to a wider variety of faculty feedback and improve faculty calibration

Team based teaching in D2 Restorative Clinic. D4 student mentors assist faculty by providing one on one guidance and feedback to D2 students prior to faculty evaluation

Case-based approaches in learning (D1 and D2 Clinical Foundations courses, Cariology, D1 Comp Care/Treatment Planning)

Case based final written examinations (this year will be combined with a laboratory practical examination as well)

Use of simulated online patient cases to coordinate between D1 Clinical Foundations course projects and Comp Care treatment planning course

Students' treatment plan simulated patients using MiDent, the school's electronic health record program, and then perform restorative procedures on manikins/typodonts in the Clinical Foundations preclinic course. Treatment notes are written and procedures are completed electronically using the same procedures as in clinic.

Reinforcement of reflective learning and critical thinking

Multiple formative assessments (laboratory practicals) provide feedback prior to summative assessments

Student generated study plans using feedback from formative assessments

Pre-reflections, post-reflections and meta-reflections

D4 students mentor in both D1 Clinical Foundations preclinic lab and D2 Restorative Clinic. Students complete both a pre-reflection (preparation for and anticipation of what they need to know) and post-reflection on their experiences. Students complete a meta-reflection for their final grade summarizing their experiences and their effect on clinical decision making.

iClickers are also used during some lectures to assess attendance, participation and for some quizzes

MWU Small group discussions which are used for the case based sessions.

Small group discussions are used for some exercises: ICDAS caries diagnosis, treatment planning, caries management plans.

impressions, die trimming, provisional fabrication

Case based procedures are incorporated into all of preclinical courses: including tooth eruption, material selection, caries management plans

Day in clinic – where students are given a roster of simulated patients, then a schedule of which patient will be treated in a particular session. The student must look ahead at the patient record to determine what they need for the procedure, what has to be prepared in advance of the procedure session etc,

Station type exams are used to test students' ability to perform procedures and to test the student's ability to evaluate problems / clinically unacceptable results.

Videos are used to demonstrate procedures. Some of the videos that were made at CDMI include, amalgam and composite restorations, complex amalgam restorations, crown preparation, making of impressions

OS No response

PITT Some course directors use POGIL, Process Oriented Guided Inquiry Learning, exercises to engage the students more during lecture time. I personally have used some POGIL exercises this past year with mixed results. Some students thought they were a positive adjunct to the lecture material and others viewed them as a waste of time. Some course directors are thinking of recording their lecture for the students to watch prior to class time. Then the actual class time will be used to encourage more critical thinking from the students as well as to encourage more question and answer sessions during lecture time.

In the clinical restorative courses, we use competencies to evaluate our students. We also incorporate two mock board restorative examinations. In these examinations, we try to closely replicate the NERB restorative clinical examination as closely as possible. Students are expected to communicate with their instructors as they would with board examiners when it comes to the case presentation, asking for modifications to their preparations and having their treatment evaluated. We use the same grading criteria as used for the NERB examinations. One of these mock boards is given to third year students and the other to fourth year students. We are stricter on the evaluation of our fourth year students to prepare them for the NERB examination.

BUF For our clinical lecture course (both semesters third year):

The course is blended. The course is 2 credit hours, but we meet with students in the classroom one hour a week.

The online portions consists of students reading directed excerpts from textbooks and published scientific articles and watching videos where foundational information and the evidence for that topic is learned by students at their own pace.

That is followed by a quiz in the live classroom session, which is followed by discussions of clinical cases selected for that week's topic(s). So, we are "flipping" the classroom.

This is our first year with this blended concept and the flipped classroom. Students are saying very positive things.

UIC Lectures in the traditional format are rare at UIC. There is a concerted effort to insure active student learning. The didactic sessions are called "Interactive Didactic Sessions" and this reflects our belief that students should actively participate in the learning process. The sessions are very interactive. In some instances the faculty use an "automated response system" (Clickers) and questions incorporated in Turning Point presentations to stimulate discussion of the topics. The majority of our sessions are conducted in a "small group learning" format. All of the basic biologic sciences are introduced during "SGL" sessions where students discuss cases, identify knowledge gaps, complete investigation outside of class and then return to discuss findings with the members of their small groups. The pre-clinical DAOB courses have an IDS, followed by a small group "huddle" where issues related to the planned daily activities are discussed. Procedural videos have been created to demonstrate consistent presentation of most operative procedures for student review. All measureable outcomes have been impressive since the implementation of our DMD curriculum – this includes a 100% pass rate on first attempt National Boards Part I for the first two years of the revised curriculum

WVU No response

WO No response

5. Does your school incorporate the use of a digital record (sample patient record) in the teaching of laboratory operative skills? If so, is there any noticeable difference, when the students start clinic?

CW No response

DM No response

IU For the first time this year, we have a new course for first-year dental students that involves an introduction to clinical skills (Introduction to Patient Care). This course includes an introduction to Axium, health histories, some charting, and HIPAA among other topics. Also included are a couple topics that are taught in the first year operative course such as rubber dam application on a fellow student and assisting a mentor upper-class student with a patient. The patient record is included in all of these topics. In addition, the first year operative course incorporates use of some digital radiographs so students can identify with the objective of their laboratory exercises

MI When the electronic health record was introduced at the School of Dentistry in 2009, an attempt was made to coordinate the D1 Clinical Foundations course projects and the Comp Care treatment planning course so that students would treatment plan simulated patients using MiDent, the school's electronic health record program, and then perform restorative procedures on manikins/typodonts in the Clinical Foundations

preclinic course. Treatment notes would be written and procedures completed electronically using the same procedures as in clinic to train the students in proper clinic procedures.

Because it was the same software as was used for live clinic patients, problems arose such as the simulated patients needing “appointments” to be treated and graduate students teaching in preclinic courses who were unauthorized to approve clinical treatment could not complete treatments. Because of multiple glitches, the process was discontinued until this year, when it was reintroduced after a software revision. A “training” version of the program now allows the use of simulation patients without involving the “live patient” electronic health record program.

Because it has just recently been reintroduced in the Clinical Foundation course, it is too soon to tell if it will affect clinical performance.

MWU Simulated patient cases are used in most courses. It is difficult to say if there is a difference since case based sessions were always included in pre-clinical courses.

OS No response

PITT Not at this time.

BUF Not currently, but the school is looking into acquiring a Simodont trainers by ACTA which uses haptic technology. It has a virtual clinic database with cases that the students can use to treatment planning.

UIC We have an educational version of the clinical digital record, “axiUm Ed”. All students have an assist record in axiUm Ed and they make entries each day following pre-patient care activities. The entries are in the same format as the expected progress notes that will eventually be entered following patient care sessions. They have small group sessions to learn about record documentation and the use of axiUm. Students incorporate treatment planning into the pre-patient care discussions beginning in the first semester of the D1 year. Many patient scenarios are built into the axiUm Ed program for use in student small group learning sessions.

WVU No response

WO No response

6. What methods/exercises are used to help students to learn to treatment plan Operative Procedures

Prior to clinic? How often?

CW No response

DM No response

IU The Cariology course utilizes dentoforms with imbedded sterilized teeth and the students evaluate them for types of defects including caries activity and need for restoration. The operative course also discusses treatment planning and has each student practice removing caries from a carious sterilized tooth and view radiographs. [See #5 above]

MI Students are taught treatment planning in the D1 Comp Care course. Simulated patients are treatment planned using the electronic health record program used in the School of Dentistry clinics. Students also have a formal Treatment Planning course in Spring/Summer of D2 year.

Aspects of treatment planning (such as when to intervene, material choices, sequencing) are also covered in various didactic and laboratory courses including D1 (direct restorations) and D2 Clinical Foundations (indirect restorations) courses, Intro to Prosthodontic Treatment Options, Dental Materials and Cariology courses

Both the D1 Cariology course and D2 Clinical Applications of Direct Restorations courses use case based teaching and case discussions of clinical scenarios to teach Caries Risk Assessment and clinical decision making in restorative dentistry. Students must justify treatment decisions and the complexity of cases increases as students progress

MWU Students are taught treatment planning in most preclinical courses, except the very first course. Treatment planning sessions occur once or twice per quarter (course)

OS No response

PITT First year students are introduced to axiUm , our computerized system for all patient information. In their second year, students have both lecture and small group sessions where they learn how to properly devise a treatment plan. There are also case studies given to the students and discussion groups where they can present many optional treatment plans. These treatment plans are discussed with an instructor and added to axiUm.

BUF In our 2nd year didactic Operative course, some of the lectures are intended to introduce students to treatment planning of Operative procedures. Some of these include: medical model for caries management, preventive and minimally invasive dentistry, indications, contraindications and case selection for amalgam, resin composite and glass ionomer materials.

We have a treatment planning seminar that takes place in an ongoing basis during the 3rd and 4th year.

UIC We use an interactive didactic method to introduce treatment planning concepts beginning D1 fall semester. Students write SOAP notes after completing a Comprehensive Oral Exam on a classmate and they practice entering/coding common operative procedures in AxiUm. In future courses, via small group learning cases and huddle assignments, students create problem lists, diagnose, and create simple treatment plans to treat/manage simulated patient scenarios. These exercises continue at least once per semester. During D2 fall semester, interactive didactic sessions on treatment planning increase and in spring semester, students work in small groups on a weekly basis to complete 3 multiphase-treatment plans on simulated AxiUm Ed patients. Students have an essay-format exam on creating a comprehensive treatment plan for a complex patient including rationale for treatment.

WVU No response

WO No response

After commencing clinic?

CW No response

DM No response

IU The third year Operative course re-introduces the student to many of the items learned from the first year pre-clinical course. This course includes lecture and short labs that enforce concepts [e.g. resin bonding systems]. Since the students are now in the clinics with their patients, the understanding of the material by the students is at a much higher level. Also during fourth year, a course entitled Group Learning activity has 13-16 students review and discuss possible treatment plans from a selected patient's chart. Operative is discussed here along with other areas including health history, periodontics, endodontics and prosthetics. Additionally, third and fourth year students have a weekly "rounds" meeting in which an assigned student gives a presentation complete with images, pre-operative and post-operative models, radiographs, etc. Operative treatment planning and restorative choices are included here.

MI Students have an Advanced Operative Dentistry course in their D3 year.
All students attend Grand Rounds all four years. Topics rotate and change but restorative dentistry is included
Students have an Advanced Operative Dentistry course in their D3 year.
All students attend Grand Rounds all four years. Topics rotate and change but restorative dentistry is included

MWU Students begin to treatment assigned patients immediately. Case presentations are part of each clinical course, in both D3 and D4 year. Case presentations are themed. Examples are: replacement of missing teeth, ethical dilemma, special needs.

OS No response

PITT All treatment plans are reviewed by a team leader in the clinic before being approved. Consults are obtained, when needed from the appropriate departments, such as, periodontal, endodontic, prosthodontic, etc.

BUF In their 3rd and 4th year, students have a treatment-planning seminar where case presentations are discussed. Also, the students develop individual treatment plans with the assistance of the supervising faculty and group director.

UIC In clinic, students are expected to create treatment plans for each of their assigned patients. There is a clinical treatment planning performance exam and caries management portfolio that are also scheduled during D3 year. Students continue in small group learning activities, where they discuss and create treatment plans for complex patient scenarios. During D4 year, students present one of their own patient cases to their peers and faculty which would include their multi-phased evidence-based treatment plan, rationale, and outcomes.

WVU No response

WO No response

**7. How is your school incorporating critical thinking in the teaching of operative dentistry?
Please give examples, and degree of satisfaction from the results.**

CW No response

DM No response

IU Refer to answer to number 6 above. Critical thinking is involved in the GLA course and weekly rounds in the third and fourth years. We are relatively happy with the results of these courses but we also recognize that only more experiences will allow the student and new graduate to become proficient in critical thinking and treatment planning in operative dentistry.

MI Evidence Based Dentistry class scheduled in D1 year
Case-based learning with formative feedback used in some classes
Self and peer evaluation emphasized in preclinical laboratory projects
Student generated study plans following formative laboratory assessments to prepare for summative assessments
Formative and summative case-based assessments (written exams) with clinical skill elements (lab practicals) intertwined
Fishbowl learning circles (panel discussions in class led by faculty with student members rotating in and out of the panel)
Chairside/clinic discussions of patients pre-operatively, intra-operatively, and post-operatively
Clinical decision trees (used in Cariology)
Clinical leadership experiences (D4 mentoring) with pre-reflections, post-reflections and meta-reflections (summary) of preclinical and clinical experiences

MWU CASE - critical analysis sessions, are once each course. These are two part sessions where the students are given a scenario. The students working in groups of 8 develop their learning issues and then assign the learning issues to members of the group. The individuals in the group report the following week. The group comes to some closure – although there might not be a right or wrong answer. The topics include a broad variety of topics, but also include restorative topics - repair vs replacement of restorations for example, use of off shore dental laboratories.

There are simulated patient scenarios where some information is provided to the students in a patient case. Students have to determine what other information they need prior to treatment of the patient. Students are provided with additional information as they ask for it.

Day in clinic, where students get a patient case beforehand, and have to prepare for the session, which may include a diagnostic wax up, decision to take a radiograph, write a medical consultation.

Treatment plan case presentations are another example of where critical thinking is incorporated within the plan, rationales and also the question and answer part of the presentation

OS No response

PITT All students are required in their third year of dental school to give four Evidence Based Dentistry presentations. Two of these are to be done in the fall term and two in the spring term. The students select a topic relevant to one of their patients, research the topic and give a presentation to usually six other students and two faculty members. The students are then asked questions concerning the content and validity of their research.

Results are very positive from both the students and faculty. I personally believe there is a great amount of knowledge which is learned and discussed in these sessions.

BUF In our 2nd year didactic and pre-clinical course, after presenting foundational information regarding CRA, medical model for caries management, cases are discussed in class. A similar system, with progressively more complex cases, takes place in the 3rd year. These cases require students to synthesize and apply what they learned outside of class to real patient treatment. Our quizzes and exams are scenario-based MCQ's, which require problem-solving. As a part of the clinical grade, the students are also required to do case presentations.

UIC We try to integrate Evidence-Based Dentistry into every component of operative dentistry. Students have an EBD assignment each semester. D1 fall students need to create an evidence-based prevention plan for a classmate to maintain health. In the spring, the same students pick any topic in operative dentistry that they would like to learn more about and perform an EBD exercise. In all EBD assignments, students need to create searchable questions, identify the level of evidence, critically appraise their resources and discuss how he or she would apply the outcomes of their research. When students learn about research biases in D1 late spring, we have them apply their critical appraisal skills to several articles about the occupational safety of amalgam for dentists; they need to read, appraise and discuss an editorial, a cohort study, and scoping review. D2 year, the students need to choose a randomized control trial on a topic related to operative dentistry and need to identify the author's hypothesis and determine what additional research would be needed to further their topic of interests; students then form their own hypothesis for the research proposed.

Several learning objectives are addressed through Small Group Learning (SGL) methods. "Why" a procedure is performed and "when" to do it are common example types of the types of learning objectives in these case-base scenarios.

WVU No response

WO No response

8. Is your school using a grading system or Pass/Fail system on clinical performance?

CW No response

DM No response

IU IUUSD is using a hybrid system in which daily clinical operative activity is recorded using a checklist of comments as to the student's strengths and deficiencies. For example if a student leaves caries that should have been removed, a box is checked but no grade is attached to this defect. The idea here is that multiple checked boxes of this type, identifies the student as one needing remediation. The students are graded (A through F with no D grade) in third year and fourth year clinical operative dentistry by production. For example, students should attempt to restore 20 teeth by direct restoration during the first semester of third year. Fourth year has an operative dentistry competency requirement and the student's grade is one-half production and one-half the competency grade.

MI Though there has been some discussion about switching to a Pass/Fail system, we still use a grading system for clinical performance, based on a combination of clinical production, performance on clinical competency examinations and patient management.

MWU Pass /fail for individual procedures, grades for written examinations. The course receives a grade.

OS No response

PITT We use a percentage/point grading system for all oral diagnosis, treatment planning and restorative procedures. The students are graded by the clinical faculty on several criteria specific to the treatment rendered. For our competencies in oral diagnosis, treatment planning and restorative we started using the pass/failure system.

BUF Not currently. Grading is based on a letter system (A, B, C and F)

UIC The grading system in the clinic has evolved in recent years. Although there has been discussion of a High Pass/Pass/ No Pass approach, the UIC College of Dentistry continues to assess students in clinical competency measures using the traditional A(92-100%) B(84-91%) C(75-83%) F(less than 75%) system.

WVU No response

WO No response

Do you distinguish between Pass and higher achievement on performance and if not, how do you handle applications to graduate programs for your students?

CW No response

DM No response

IU IUSD issues letter grades for these courses.

MI NA since we use a grading system.

MWU Individual clinical procedures do not distinguish between pass or higher. The course is graded

OS No response

PITT

BUF Application to graduate programs is handled by giving grades, recommendation letters

UIC Yes, since we use the traditional A,B,C, F scale.

WVU No response

WO No response

9. Do you think your students are receiving enough patient experiences in operative dentistry to be minimally competent? If not, what suggestions do you have to mitigate the shortage of patients?

CW No response

DM No response

IU Our records show that students are receiving an equivalent amount of clinical experiences as in the past. Although it now takes longer for third year students to achieve a certain level, they are usually caught up by first semester of fourth year. This is due to newer periodontal treatment planning requirements that slightly bog down students with their first patients.

MI Yes, we feel our students are getting enough experiences to be competent in operative dentistry, especially with the time that they spend working in community based programs and clinics. The University of Michigan has affiliations with numerous outreach clinics spread out all over the state to provide care to underserved patient groups. A senior faculty member serves as outreach director to ensure quality of care, teaching, compliance and continuity with School of Dentistry standards.

MWU There are adequate patients for operative procedures. Students get additional experiences in extramural rotations.

OS No response

PITT Yes, students who are willing to learn and experience as much as possible are graduating from dental school with sufficient patient experience. However, our minimal requirements have been reduced in many disciplines. The most important factor for this decrease in requirements is new regulations of the Pennsylvania Medical Assistance Program. With these new regulations crowns, bridges and endodontic treatment is no longer a covered service. Also, patients are only eligible for one removable prosthesis per arch in their lifetime. We estimate that approximately 35 % of our patient load is under the Pennsylvania Medical Assistance Program. Students now have the option of doing a three unit bridge on a typodont instead of a patient. Our dental school is in the process of designing a marketing plan to increase our patient load.

BUF Yes, they are.

UIC Yes, we feel that students are able to demonstrate competency in operative dentistry based on their patient experience in the clinics. If shortages of experience are identified, the Managing Partners will review planned procedures in their student group, and reassign patients as needed to address the shortage.

Do any other disciplines in your school lack adequate experiences? What has your school done to mitigate the shortage of patients?

There are occasional challenges for students in acquiring experience in fixed partial and removable partial dentures, as well as endodontic procedures. The Managing Partners will reassign patients within a group to accommodate the needs of students with inadequacies in experience. In addition, if the limitation for treatment is related to finances, the Managing Partners have the latitude to offer a decrease in fee so that the treatment can be provided, and thus the students attain the needed experiences.

WVU No response

WO No response

Do any other disciplines in your school lack adequate experiences? What has your school done to mitigate the shortage of patients?

CW No response

DM No response

IU Other disciplines do have a shortage of experiences. For example, some students are forced to take bridge preparation competencies on a dentoform because of a shortage of clinical cases. This is most often due to patients opting for implants or a removable appliance instead of a bridge. Lowering of requirements is also an unfortunate result.

MI Prosthodontics cannot provide enough bridge experiences for every student so students do a competency stimulation exercise on manikins/typodonts. It is difficult to get an implant case for each student so we compensate by having them do independent assessments of the various implant procedures.

MWU Pediatric dentistry has lacked patients. Acceptance of public aid should attract more patients. Students have few experiences in removable partial dentures and implants. Additional simulated procedures take the place of patient based procedures.

OS No response

PITT

BUF Endodontic cases are more difficult, but all students fulfilled their requirements last year. Better tracking of cases in the school and assigned patient families are reviewed monthly.

UIC

WVU No response

WO No response

II. MATERIALS/TECHNIQUES AND DEVICES

1. Is your school incorporating the teaching of hard and soft tissue laser surgery?

If so, is this taught as an elective or part of core curriculum?

What discipline(s) teach(es) this course?

CW No response

DM No response

IU IUSD does not teach hard or soft tissue laser surgery

MI We teach soft tissue lasers as part of the D3 Advanced Operative Dentistry course.

A one-hour lecture is taught as part of the advanced restorative concepts.

Core curriculum

Restorative Sciences

MWU No

OS No response

PITT No

BUF Yes, but only in lecture. We have a lecture in our clinical operative lecture course on soft tissue laser. Restorative and Surgery

UIC We do teach hard and soft tissue laser indications didactically. Students receive in their D3 year an overview and review the evidence on the indications of the technology, but do not have any clinical exposure.

Is part of the core curriculum

DAOB course and is taught under the dental materials component.

WVU No response

WO No response

2. Does your school use digital imaging and analysis software to grade preparations/restorations?

CW No response

DM No response

IU The school has the E4D compare program; however, we have not used this software for grading preparations or restorations.

MI No

MWU Yes, CDMI is beginning to calibrate faculty to use Prep Check (Sirona) prior to students using the system.

OS No response

PITT Not at this time, however the department of restorative dentistry is exploring the possibility of utilizing Moog Simodont Dental Trainer.

BUF No, we are in the process of purchasing units such as Simodont and E4D scanners to incorporate as an adjunct in the teaching of Operative and Fixed prosthodontics.

UIC No. E4D Romexis Compare is used for student feedback only. It is currently being used in dental morphology where students scan and compare their own waxing projects with a master waxed model. We plan on using it in future courses, including scanning and comparing inlay, onlay and crown preparations.

WVU No response

WO No response

If so, please comment on results in terms of repeatability and consistency as compared to human evaluators.

CW No response

DM No response

IU NA

MI NA

MWU Too soon to evaluate the outcomes

OS No response

PITT NA

BUF

UIC

WVU No response

WO No response

3. **What do you think the future holds in regards to this type of evaluation?**

CW No response

DM No response

IU

MI (The following is the opinion of an expert in digital dentistry...)

“Although the programs are potentially an exciting option to consider, the results I have had (with both D4D and CEREC) and am aware of is that the scoring is very dependent on the accuracy of the scanned model. The scanning accuracy is dependent on becoming very proficient in using the digital camera. So although I like the emphasis this would put on learning digital techniques, it is a significant limiting factor in making it a purely "objective" measurement outcome.”

MWU One of the regional licensure testing agencies (CRDTS) is sending some of their examiners for training. It can evolve to be a good way of eliminating subjectivity and difficulties with faculty calibration.

OS No response

PITT I think these types of computer generated analysis hold great promise.

BUF Eliminates some of the subjectivity in grading.

UIC At this time, we have encouraged students to use digital imaging and analysis software to help their understanding of restorative concepts such as over/under contour, placement of incisal and cuspal anatomy, contacts, line angles, embrasures and preparation concepts such as undercuts and total occlusal convergence.

WVU No response

WO No response

4. Are you aware of any U.S. dental schools that have eliminated amalgam from their curriculum? If so, whom?

CW No response

DM No response

IU No

MI No

MWU No

OS No response

PITT No

BUF No

UIC We are not aware of any U.S. dental school that has eliminated amalgam, besides NYU making a statement about not being its first material of choice for direct restorations

WVU No response

WO No response

5. Do you disclose to students that they will be working with amalgam in dental school? If so, when? Prior to matriculation? Commencement of operative course?

CW No response

DM No response

IU No, we do not disclose to students that they will be working with amalgam.

MI No

MWU No

OS No response

PITT During the interview process and initial visit.

BUF No

UIC Prior to the use of amalgam in pre-patient care, there are several sessions where the properties of the material and the ADA's safe practice guidelines are discussed. We have an evidence based dentistry session where various selected papers from the current literature addressing the perceived risks associated with use of amalgam in patient care are discussed.

WVU No response

WO No response

5. Have you had issues with students refusing to work with the amalgam (or any other material) in your courses or in the clinic? If so, how was the issue handled?

CW No response

DM No response

IU We have not had any issues with students refusing to work with amalgam. For pregnant women, we advise to not use the methyl methacrylate resin. The protocol is for them to use a Bis-acryl resin or VLC resin material.

MI No

MWU No

OS No response

PITT No

BUF No

UIC Yes, we have had students that have expressed concerns regarding amalgam safety. This is addressed by keeping students well informed of the evidence that surrounds this discussion, including overwhelming evidence to support continued clinical use of amalgam as a restorative material when indicated.

WVU No response

WO No response

III. CARIOLOGY

1. What method of caries detection and classification is used at your school?

Are you using the (ICDAS) International Caries Detection Assessment system:

- 0 Sound
- 1 First Visual change in enamel (after prolonged drying or in 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

CW No response

DM No response

IU Preventive: Students are given lectures and demonstration labs in 1st year concerning ICDAS and are tested over their ability to correctly determine what ICDAS score is present in a bench test.

MI Students are taught the ICDAS system in didactic and laboratory Cariology courses. However, due to the complexity and difficulty of faculty calibration, in the clinics, caries classifications are condensed into 3 options, based on how we would treat the lesion:

Sound

Noncavitated (ICDAS 1,2, and some 4)-active or arrested

Cavitated (ICDAS 3, some 4, 5 and 6)- active or arrested

MWU Visual and radiographic are the main methods of caries detection.

Collapsed ICDAS, 1&2, 3&4, 5&6 is used for documentation

OS No response

PITT The caries we detect in the clinic are classified as incipient (approximately ½ way through the enamel or less) and through the enamel. Incipient caries are not normally restored, however several factors must be considered. For example, caries index of the patient, likelihood they will return for a six month re-evaluation and oral hygiene.

Not using ICDAS, however, we are exploring the possibility.

BUF We are not using ICDAS yet. We are still using a simplified version of this system (E1, E2, D1 and D2 lesions).

UIC At UIC College of Dentistry we teach the traditional caries detection methods such as visual, tactile (use of a blunt explorer), radiographic (analog and digital) and transillumination. We also teach in pre-patient care, advanced caries detection methods such as Diagnodent technology and the SOPRO life technology in the Operative section of the DAOB courses. None of the advanced technology is available to students in clinics. We teach ICDAS classification system didactically but it is neither applied nor used in our pre-patient care or patient care settings. Students are responsible for reading literature that references the ICDAS classification system.

WVU No response

WO No response

2. How is the progression or arrestment of a carious lesion detected, and recorded at your school's clinic?

CW No response

DM No response

IU Preventive: In clinic with the Preventive faculty they do have to state if, in their opinion, a lesion is active, arrested, noncavitated etc but an ICDAS score cannot be recorded in AxiUm.

Operative: Yes ICDAS is used but AXIUM only allows to record if the lesion is incipient, primary (cavitated) or secondary. As far as I know there isn't a systematic way to detect or record progression or arrestment of a carious lesion at our school. In the clinic I try to use the criteria: white, chalky/ opaque and rough surface to determine if the lesion is active.

MI Detection:

Visually – emphasize clean and dry teeth

Explorer - used only when in doubt about cavitated or surface texture – no force applied

Radiographs - for questionable or interproximal lesions

(Students are taught to use Diagnodent on each other as an adjunct but it is not used in clinic on patients due to expense and the need for extensive faculty training. Must thoroughly understand instructions or great potential exists for overdiagnosis and overtreatment)

Progression or arrestment:

Activity: Look at texture, color, presence of plaque, caries risk and history to determine active vs arrested

Emphasize history of the patient – look at notes in record and old radiographs to see if lesion has changed

Recording: Can have cavitated vs noncavitated/active vs arrested – any combination of the four

MWU At periodic recalls as specified in the patient's caries management plan, the progression or arrestment is documented. The documentation is recorded as an ICDAS code, and the caries activity is also documented

OS No response

PITT There are recorded as incipient in axiUm.

BUF

UIC We do not use any advanced caries detection methods in the clinic, as mentioned earlier. We give emphasis on reassessment after risk factors modification, and follow-up appointments. We look for clinical signs of remineralization such as black or brown discoloration, hardening of the surface, glossiness, plaque

free areas and reassessment of patient dietary habits and oral hygiene. The caries risk is reassessed and documented in our electronic patient record.

WVU No response

WO No response

3. What criteria are used to determine if surgical intervention is necessary?

CW No response

DM No response

IU Operative: Presence of cavitation is threshold for surgical intervention.

MI If cavitated and dentin exposed – ICDAS 5 or 6

If there is enamel break (ICDAS 3 and 4) – check radiograph and caries risk to help decide

Interproximally – if caries extends into DEJ (not if only in enamel) + risk/evidence (history) it is not arrested

Caries risk and patient reliability to perform preventive measures and to return for recalls may influence decision making for questionable lesions

MWU If the lesion is ICDAS 3&4 or 5&6 operative intervention is planned

OS No response

PITT The extent of enamel changes and dentin involvement.

BUF Unfortunately, this is still somewhat subjective, but we have adopted as department policy that surgical intervention should take place when E2 lesions transition to D1

UIC The Restorative Department's philosophy document provides guidelines for operative treatment. We take heavily into consideration patients' caries risk assessment for decision making. For non-cavitated E1 and E2 lesions, remineralization will be attempted for most of the cases (low risk to moderate risk). For lesions reaching the DEJ (D1) we might attempt remineralization if patient presents with low caries risk, modifiable risk factors, and is compliant. For high risk patients with D1 lesions, most likely surgical intervention will be planned.

WVU No response

WO No response

4. Are the criteria standardized and are faculty calibrated?

CW No response

DM No response

IU Preventive: We have tried training sessions for other faculty concerning the CRA and ICDAS in the past with limited results. I know many faculty do CRA in their heads I don't see a lot of emphasis made of it to students. I think this is primarily true for part-timers. In addition, I think explorers are still used. I think students are aware that fluoride can reverse lesions that are non-cavitated and may stop the progression of larger lesions if given time.

Operative: I have been here for a year and have not participated of any calibration, not sure how they did it in the past.

MI Attempting to calibrate faculty and outreach providers about ICDAS and clinic criteria (cavitated vs noncavitated)

MWU As best as possible

OS No response

PITT Yes

BUF This is an ongoing effort, which we continue to try to improve every year.

UIC As mentioned in the previous question there are departmental philosophy guidelines. Pre-patient care instructors are well calibrated. There are ongoing efforts to obtain calibration of the clinical faculty.

WVU No response

WO No response

5. What strategies have been used to standardize and calibrate faculty?

CW No response

DM No response

IU Preventive: The current preventive faculty conduct calibration exercises on risk assessment and diagnosis/detection of lesions periodically, but we have not conducted a school wide calibration for over 10 years. I also agree that the knowledge and value of fluoride among some of our faculty and students is limited.

MI Faculty in services

Choices in electronic health record for diagnosis and recording of lesions

Article in the Journal of the Michigan Dental Association - April 2013:

“Cariology for the 21st Century” by Margherita Fontana, DDS, PhD, Carlos Gonzalez Cabezas, DDS, PhD and Mark Fitzgerald, DDS, MS

MWU Hands on calibration sessions are scheduled which include ICDAS classification exercises, radiographic interpretation, the caries management plan.

OS No response

PITT We hold regular meetings of the restorative department. Every morning our department holds a faculty meeting. This meeting has the same agenda for the entire week but is conducted daily for the restorative faculty scheduled to be in the clinic. In this meeting we discuss relevant topics and issues, which have arisen during the past week. Also, we have an annual departmental meeting which is usually held in the evening so the majority of part time faculty are able to attend.

BUF We have a cariology-working group, which designed and implemented the criteria. We have faculty in services during the summer where literature is reviewed and presented to the faculty for standardization purposes.

The concept of active vs. arrested lesions, methods of determining that, and treatment modalities are exhaustively taught in our third year clinical lecture course. The same information presented to students is presented to the faculty in an ongoing basis for standardization purposes.

UIC Every semester the Restorative Department plan a departmental meeting to update the preclinical and clinical faculty on any changes in our teaching philosophy, introduction to new materials or new technology.

WVU No response

WO No response

IV. OTHER

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

LOCATION INFORMATION FOR 2014 REGIONAL MEETING

University: COLUMBIA UNIVERSITY COLLEGE OF DENTAL MEDICINE

Dates: OCTOBER 2, 2014

Chairperson: DR, R. LICHTENTHAL

Phone # 212 305 9898

University: COLUMBIA

Fax # 212 305 8493

Address: 630 WEST 168 STREET NYC NY
10032

E-mail rml1@cumc.columbia.edu

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

Suggested Agenda Items for Next Year:

LOCATION INFORMATION FOR 2015 REGIONAL MEETING

University: ? Site to be decided

Dates: ? Dates to be decided

Chairperson: Dr. Richard Lichtenthal

Phone # 212 305 9898

University:

Fax #

Address: NEW YORK CITY, NEW YORK

E-mail rml1@cumc.columbia.edu

Please return all completed enclosures to;

Dr. Edward J. DeSchepper, National Director
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Phone: 901-448-7686
Fax: 901-448-1625

Memphis, TN 38163

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

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2014 NATIONAL CODE AGENDA

REGION V RESPONSES

(Evidence cited where applicable)

Region V School Abbreviations

BU Boston University

CLMB Columbia University

CONN University of Connecticut

DAL Dalhousie University

HARV Harvard University

HOW Howard University

LAV University of Laval

MCG McGill University

NYU New York University

PENN University of Pennsylvania

SUNY State University of NY – Stony Brook

TEMP Temple University

TUFT Tufts University

UMD University of Maryland

UMNJ University of New Jersey

UMON University of Montreal

USN US Naval Dental School

UTOR University of Toronto

2014 NATIONAL CODE AGENDA

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

2014 REGIONAL CODE AGENDA

Thursday, October 2nd, 2014

Columbia University Columbia
Presbyterian Hospital

PH 17 Conference Room

IN ATTENDANCE: Tufts, Stony Brook, Rutgers, Maryland, Howard, Penn, NYU, Temple, Columbia and U. Connecticut

Discussion topic – off Agenda:

Accidental Dentoforms: Only 4 schools have bought the Accidental dentoform for pros exam; only 1 school is using it for the training preclinically, and they are not happy and would like to switch back to Columbia. Schools now advise the Jr. Class to purchase the Accidental Dentoform separately to practice. NERB/ADEX currently is compiling data to see if it makes a difference if students are trained on one model are examined on a different dentoform.

Notes from the schools that have switched: The teeth are different. Not Ivorine. They are melamine. The cutting is different. This is important!!! Also, when training students in preclinical Pros course: the base of the dentoform is melted by the Jet Acrylic Liquid!

Note: If ADEX will make all schools take the exam on the Accidental dentoform in the very near future, they should consider this: The Accidental dentoform exam is on the maxillary quadrant only. Therefore, if the schools that refuse to change from their existing training dentoform (either for the preclinical pros course or for the D3 students to practice), they should consider making the students practice the same teeth/quadrant that will be given on the Accidental Dentoform during the exam. Right now: Student training on Columbia mandibular posterior arch should change to the Maxillary posterior arch.

I. Curriculum

1. What method is used to update operative didactic and laboratory content and how often is the material reviewed?

Tufts: Course directors for Pre-clinical Operative, Materials workshops, Operative workshops, 3rd. year materials course update their own content and recommend changes. Materials are reviewed and updated by Course Directors and reviewed by Chair for approval. Literature based. Materials, procedures, most instruments are mirrored preclinically and clinically; students buy instruments and rent their instruments clinically.

Stony Brook: Courses are reviewed annually. Materials or instruments are changed with review by a committee, and the change is literature based. Students rent instruments, but own their own cavitrone, handpieces, light curing units, sectional matrix systems.

Rutgers: Curriculum Committee reviews yearly. Materials and Instruments are reviewed by Course Directors, Chair, and faculty and presented to Instrument committee. Department Committee reviews literature-based committee that allows changes in materials and procedures taught. School owns all instruments. Students rent Instruments. Procedures and materials same as pre and clinic

Maryland: Course reviewed by faculty within the course. Journal articles are used to supplement text, Department reviews the course as well. Changes are up to the faculty/course director; literature updates changes in the course content; Preclinical materials, procedures and instruments ideally will follow what is used in the clinic. Students rent instruments

Howard: Course Director uses evidence-based information for materials; Course director will update as dictated-no committee involved; equipment is different than what is in the clinic. Students rent instruments

Penn: Curriculum committee yearly review; Department Chair reviews course yearly with course director. Didactic and procedural changes are discussed in Executive Committee and are literature based; Materials committee decides changes in materials, and this is also based on most current science. Students buy their instruments preclinically and rent clinically.

NYU: Course director recommends changes; chairman decides – evidence based. Instruments are the same preclinically and clinically. Many unused instruments were eliminated recently.

Temple: Curriculum committee review; Department Chair reviews course yearly with course director. Changes to the course are suggested by course director. No materials committee. Students rent instruments

Columbia: Course directors and faculty talk about changes yearly, but change occurs very slowly. Materials and instruments reviewed every year, instruments in preclinic and clinic are the same but not always utilized. Preclinical students buy their instruments; clinic students turn in their own clinical instruments to sterilization, in trays, to use in restorative technique. Students buy their own cavitrone, curing lights.

2. What role does current literature play in the process above?

Generally current literature and faculty clinical experience are instrumental in the selection process for all schools.

3. Who makes sure the process, above, occurs and who ensures the accuracy (dept. chair, curriculum committee, individual course director, etc.)?

Individual faculty, Course Directors - ultimately the Division Chair

4. What types of novel teaching methodologies other than (lectures, sage on the stage) are used at your school for teaching operative dentistry? Please include examples and results so far.

Tufts: Fully pose-able avatar patient - computerized virtual patient, online videos, small group demonstrations, materials demos, TA program, workshops to ready students for operative board exams

Maryland: Live demos at teaching station, digital assessment tools (E4D compare, prep check); digital dentistry clinic

Howard: Blended and hybrid courses, Integrity lecture capturing, Audience response system, Examsoft, Reflections of 3 clinical procedures done (use and discuss literature), flipped classroom; shadowing and clinical assisting; Blackboard use is significant

Penn: Online procedure videos - under magnification, small seminars (cariology and occlusion modules), TA program - upperclassmen instruction, DAU 01 assisting program during 03 and 04 procedures (2x/week January - June 01 year). Mediasite lecture capture, Examsoft, Audio response seminars

Stonybrook: Online procedures, demos - small group, TA program - upperclassmen instruction, students rotate through the clinics, self-reflection of procedures - customized lesson plan (03)

NYU: Online quizzes, small seminars, upper classmen as TAs, precare form-daily care form - preclinically and clinically, e-portfolio documentation - student uses smartphone to photograph work and critique it in preclinical setting; 02 students work as assistants.

Temple: More online videos; real time videos; clinical shadowing, E4D in preclinical pros course but not operative

Rutgers: 1st week of dental school trained as dental assistants in the clinics with a mannequin with a 04 student. Created space in curriculum for 01 assisting on the clinical floor. Revised preclinic program - coordinated dental anatomy, occlusion, and general dentistry course. The schedule now incorporates all the different disciplines. Hopes to have better retention. Lecture capture. Moodie

Columbia: New course sequencing has been developed and are part of the curriculum. More digital, e-book and team based learning. Literature reviews are incorporated as well. Disciplines are not taught separately but rather as general dental comprehensive care. Normal, healthy first, then move on to sequenced grades of pathology. Small group discussions, cased based. Reflections and feedback.

5. Does your school incorporate the use of a digital record (sample patient record) in the teaching of laboratory operative skills? If so, is there any noticeable difference, when the students start clinic?

All answered yes to both questions

6. What methods/exercises are used to help students to learn to treatment plan Operative Procedures. Prior to clinic? How often?

Maryland: Sophomore blocks as clinical rotations incorporate treatment planning.

Howard: Treatment planning course for D2 in spring semester prior to entering clinic, Summer course for D2 entering clinic, small groups involved in treatment planning and entering treatment plan into aXium

Tufts: Introduction to the patient program, Treatment Planning Class Prior to Clinic entry

Stony Brook: Seminars/Lectures - treatment planning cases

UConn: Lecture

Penn: Lecture series with cases.

NYU: Case Based approach

Temple: Lecture series, case based treatment seminars

Rutgers: Lecture series

Columbia: Case based diagnosis and treatment planning courses, Case based fourth semester (second year preclinic) comprehensive care course with axium entries.

After commencing clinic?

Maryland : Junior Year OSCE examination

Tufts:

Stony Brook: Treatment planning course - multi disciplines/departments

UConn:

Howard:

Penn: Case presentations

NYU: Case presentations

Temple: Case presentations

Columbia: Treatment planning course year three and four- multi disciplinary; cased based exams

Consensus ; it seems like most are doing the same things; some courses are more intense than others

7. How is your school incorporating critical thinking in the teaching of operative dentistry?

Tufts: Pilot program - seminars in small groups with simulated cases - all 4 years

Stony Brook: Cased based examples, small seminar settings, discussions between faculty and students, reflections

Maryland: Self Assessments , Cased based examples, small seminar settings, discussions between faculty and students

Howard: Reflections and the rest of the same things

Rutgers: Cased based examples small seminar settings, discussions between faculty and students

Penn: Self -assessments, Cased based examples, small seminar settings, discussions between faculty and students

NYU: same

Temple: stepwise learning/check-off procedures with expected discussion between faculty and students

Columbia: Team-based early morning review of cases with small groups and faculty referee

Please give examples, and degree of satisfaction from the results.

Examples given above. Most schools answered yes to satisfaction of programs they have

8. Is your school using a grading system or Pass/Fail system on clinical performance

Tufts: Used to Grade, moving to Pass/Fail. No daily evaluation. Grade is based on Competencies.

Rutgers: Students get a grade for their daily procedures but they do not count towards a grade, it helps monitor progress. 03 year is Pass/Fail. 04 year is a Grade (Competencies and procedure point accumulation)

Stony Brook: Each procedure has an assessment = Clinical Assessment to move on — SaP
UnsaU Honors

Maryland: Each procedure has an assessment = Pass/Fail

Howard: does not assess by daily grades at this time (wants to do this)/Competencies dictate grade; Grade is given

Penn: Daily assessment (each procedure has an assessment), reviewed by Clinical Review Board (quarterly) = Pass/Fail/Honors

NYU: Don't give daily grades, Competencies; exception report

Temple: Grade is given, Competencies are now weighted more

Columbia: Don't give daily grades, Case completion, Competencies, skill assessments using Honors/Pass/Fail

Do you distinguish between Pass and higher achievement and performance and if not, how do you handle application to graduate programs for your students?

Tufts: Rank student

Stony Brook: Currently rank students

Rutgers: Rank student

Maryland: Rank student

Howard: Rank students

Penn: Rank students

NYU: Rank students

Temple: Rank students

Columbia: Rank students by thirds of class, Letters of recommendation, personal phone calls

9. Do you think your students are receiving enough patient experiences in operative dentistry to be minimally competent? If not, what suggestions do you have to mitigate the shortage of patients?

All schools answered: Yes, but acknowledges deficiencies in some procedures.

Do any other disciplines in your school lack adequate experiences? What has your school done to mitigate the shortage of patients?

Maryland: Good use of patents, More exposure to a greater variety of patients

Howard : Evening clinics have been added , and additional simulation

Tufts: Yes, pros, students can get credit for interim dentures

Stony Brook: students go offsite to CODE sites

Rutgers:

Penn: Yes, we are now having Evening clinic sessions, Patient Open Houses and Patient Screening Fairs at the school to address that difficulty

NYU: Veneers - mitigated with simulated mannequin

Temple:

Columbia: Problem with Fixed Partial Dentures -mitigated with simulated mannequin exercises; Molar endo-mitigated by working on extracted teeth

II. MATERIALS/TECHNIQUES AND DEVICES

1. Is your school incorporating the teaching of hard and soft tissue laser surgery?

If so, is this taught as an elective or part of core curriculum?

Tufts: Lecture only

Stony Brook: No

Rutgers: NO

Maryland: No

Howard: No

Penn: No

NYU: Honors course does

Temple: No

Columbia: lecture, demo, occasional faculty supervised use, No clinical requirement

What discipline(s) teach(es) this course?

Only NYU, Tufts and Columbia

(pediatric dentistry and periodontics)

2. Does your school use digital imaging and analysis software to grade preparations/restorations?

If so, please comment on results in terms of repeatability and consistency as compared to human evaluators.

Tufts: No

Stony Brook: No

Rutgers: No

Maryland: Experimenting with it - not for grading purposes; for waxing

Howard: No

Penn: No

NYU: No

Temple: Is trying it - for pros

Columbia: No

What do you think the future holds in regards to this type of evaluation?

All schools think it is going to be a future development. Agreed it would be used as a tool but not a replacement for faculty, just an aid in interim evaluation

Believed it was nice for typodont evaluations, but not in the clinic. All in agreement: you still need to do a good preparation with good isolation. It can help in the review of preparations before laboratory phase is instituted.

3. Are you aware of any U.S. dental schools that have eliminated amalgam from their curriculum? If so, whom?

Tufts: No

Stony Brook: No

UConn: No

Maryland: No

Howard: No

Penn: No

NYU: No

Temple: No

Columbia: No

4. Do you disclose to students that they will be working with amalgam in dental school?
If so, when? Prior to matriculation? Commencement of operative course?

No official warnings are given

Amalgam safety protocols are reviewed during the schools' courses as well as explaining why safety protocols are given.

5. Have you had issues with students refusing to work with the amalgam (or any other material) in your courses or in the clinic? If so, how was the issue handled?

All schools answered No

III. CARIOLOGY

1. What method of caries detection and classification is used at your school?

Tufts: Cardiology course, taught by texture and radiographs

Stony Brook: radiographs, clinical exam, Cariology course

Rutgers: Radiographs, explorer, visual

Maryland: Radiographs, explorer, visual

Howard: Radiographs, explorer, visual

Penn: Radiographs, explorer, visual, Cariology course, Cariology seminars

NYU: Radiographs, visual, Cariology course

Temple: Radiographs, visual

Columbia: Radiographs, visual intra-oral

Are you using the (ICDAS) International Caries Detection Assessment system?

- 0 Sound
- 1 First Visual change in enamel (after prolonged drying or in 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

Tufts: Teach ICDAS, EO, E1, E2, D1, 02, D3

Stony Brook: EO, E1, E2, D1, D2, 03

Rutgers: Teach ICDAS and EO, E1, E2, D1, 02, D3

Maryland: EO, E1, E2, 01, 02, 03

Howard: Teach ICDAS and EO, E1, E2, D1, 02, D3

Penn: Teach ICDAS but not in clinic. Use EO, E1, E2, 01, 02, 03 and 0, MO, DO, B, etc.

NYU: Teach ICDAS and EO, E1, E2, 01, 02, 03

Temple: Teach ICDAS and EO, E1, E2, 01, 02, 03

Columbia: Teach ICDAS in Cariology it is but not used in clinic; incipient, primary or advanced M, D, O

2. How is the progression or arrestment of a carious lesion detected, and recorded at your school's clinic?

Tufts: ICDAS, EO, E1, E2, 01, D2, D3

Stony Brook: EO, E1, E2, 01, 02, 03

Rutgers: ICDAS and EO, E1, E2, 01, 02, D3

Maryland: EO, E1, E2, D1, D2, D3

Howard: ICOAS and EO, E1, E2, 01, 02, 03

Penn: EO, E1, E2, D1, D2, D3

NYU: ICDAS and EO, E1, E2, D1, D2, D3

Temple: ICDAS and EO, E1, E2, D1, D2, 03

Columbia: ICDAS but not used in clinic; incipient, primary or advanced; M, D, 0, B, etc.

3. What criteria are used to determine if surgical intervention is necessary

Tufts: Risk, DEJ

Stony Brook: DEJ

Rutgers: DEJ, Risk

Maryland: OEJ

Howard: DEJ

Penn: DEJ/D1 lesions

NYU: DEJ

Temple: DEJ

Columbia: DEJ Risk

Are the criteria standardized and are faculty calibrated?

Tufts: Computerized faculty standardization

Stony Brook: Faculty calibration

Rutgers: Faculty standardization in small groups

Maryland: Faculty Calibration meeting

Howard: Departmental meeting calibration

Penn: Computerized faculty standardization

NYU: faculty meetings

Temple: lunchtime CE

Columbia: daily lunch and learns

What strategies have been used to standardize and calibrate faculty?

Answered Above

IV. OTHER

V. 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.

Consortium of Operative Dentistry Educators (CODE)



REGION VI (SOUTH) ANNUAL REPORTS

Region VI Director:

Dr. Mary Baechle

Virginia Commonwealth University
Richmond, VA

Region VI Annual Meeting Host:

Dr. Paula P. Caskey

University of Kentucky
Lexington, KY

Region VI Annual Report Editor:

Dr. Paula P. Caskey

University of Kentucky
Lexington, KY

CODE REGIONAL MEETING FORM

REGION: 6 ()

LOCATION INFORMATION FOR 2014 REGIONAL MEETING

University: University of Kentucky College of Dentistry

Dates: October 15-17, 2014

Chairperson: Paula P. Caskey, DMD

Phone # 859-323-3459

University: University of Kentucky

Fax # 859-257-1847

Address: Chandler Medical Center, 800 Rose
Street

E-mail pcask2@uky.edu

Lexington, Kentucky 40536

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

Suggested Agenda Items for Next Year:

Bioactive Materials being used in Enamel Remineralization

Grading with the ED4-Outcomes?

Still using pins or Amalgambond or other amalgam bonding systems?

Liners, Bases, and Cements. Which ones are being used for what purposes?

Professional Development Opportunities at your school and beyond: Leadership? ADA? ADEA?

New Teaching Methodologies for the same old subjects

LOCATION INFORMATION FOR 2015 REGIONAL MEETING

University: Meharry

Dates: October, 2015

Chairperson: Dr. Tyus

Phone # 615-327-6719

University: Meharry Medical College

Fax #

Address: 1806 Meharry Blvd, Nashville, TN
37208

E-mail jtyus@mmc.edu

Please return all completed enclosures to;

Dr. Edward J. DeSchepper, National Director

E-mail: edeschep@uthsc.edu

UTHSC College of Dentistry
875 Union Avenue
Memphis, TN 38163

Phone: 901-448-7686
Fax: 901-448-1625

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: 6 ()

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Paula P. Caskey	UKCD	606-316-4076		pcask2@uky.edu
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*(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. Curriculum

6. What method is used to update operative didactic and laboratory content and how often is the material reviewed?

All schools reported yearly curriculum review as syllabi were reviewed for updating, adhering to their own school and CODA standards. MUSC was unique in that they invited General Dentists from all over the state to come into a meeting and give feedback on what they felt recent graduates might be lacking in their training and how they could be better prepared as new graduates..

7. What role does current literature play in the process above?

All schools relied heavily on peer review literature (EBD). Additionally, Curriculum Committees, Department and Division Chairs, and especially course directors have input. U of L reported reviewing so called “throw away” journals for subjects of interest and exploring higher levels of evidence from ADEA or AADR to flesh out ideas. Deans of Academic Affairs and student feedback were also considered.

8. Who makes sure the process, above, occurs and who ensures the accuracy (dept. chair, curriculum committee, individual course director, etc.)?

It was variable among the schools who was responsible for this occurring and any protocol for the process. It could be course director only, any variation of Committees or Chairs. U of L actually did have a formal process which is included in our full report.

9. What types of novel teaching methodologies other than (lectures, sage on the stage) are used at your school for teaching operative dentistry? Please include examples and results so far.

All types of teaching methodologies were reported from game show format, flipped class room model, small group work reporting to whole class or instructor only, technique videos available on individual school Black Board access or individual instructor uTube postings, role playing of patient situations related to simulator

exercises with appropriate step checks, and lectures available for review on BB. Everyone reported better success with any method other than lecture but none had data to relate.

10. Does your school incorporate the use of a digital record (sample patient record) in the teaching of laboratory operative skills?

If so, is there any noticeable difference, when the students start clinic?

There were more no than yes answers to this question. GRU was an exception as was MUSC. UK is just gaining the capability to use the EHR pre-clinically. GRU and MUSC both report much improved use of all aspects of the EHR for students as they enter clinic.

11. What methods/exercises are used to help students to learn to treatment plan Operative Procedures

All schools reported some sort of treatment planning either incorporated into Operative or as a free standing course,

Prior to clinic? Yes How often? All schools other than LeCom which is only two years old report some type of Treatment Planning course D1-D3 and case presentation or portfolio review in D4.

After commencing clinic?

All schools reported treatment planning taking place as oral quizzing students on the rational for treatment and materials choice when they have a treatment plan review for more complex treatment plans.

12. How is your school incorporating critical thinking in the teaching of operative dentistry?

All schools reported implementing assessment of critical skills. Case studies are widely used for testing application of critical thinking through D1-D-4.

Please give examples, and degree of satisfaction from the results.

GRU and MUSC both use the HER to test and assess critical thinking skills. These two schools report improvement in student's critical thinking skills. Most other schools reported assessing critical thinking through treatment planning in an OD or Cariology course. Most schools are looking for additional training for faculty to teach and assess critical thinking.

Both UK and UF reported observing frustration and poor response when students are asked to think critically,

13. Is your school using a grading system or Pass/Fail system on clinical performance?

All schools in Region 6 other than LeCom are using some combination of numerical and P/F grading. LeCom uses P/F only.

Do you distinguish between Pass and Higher achievement and performance and if not, how do you handle applications to graduate programs for your students?

Most schools use both systems to be able to have some evidence of higher achievement to offer graduate programs. Smaller programs are more likely to have faculty who interact with students pre-clinically and clinically all four years and they have firsthand experience with most every student. (UK)

14. Do you think your students are receiving enough patient experiences in operative dentistry to be minimally competent? All schools said yes.

If not, what suggestions do you have to mitigate the shortage of patients?

UK had a shortage of Endodontic patients so we lowered our fees. Problem solved.

Do any other disciplines in your school lack adequate experiences? What has your school done to mitigate the shortage of patients? Some school expressed a deficit of Prosthodontic and Periodontal Patients. They did not report what actions are being taken to mitigate this situation.

II. MATERIALS/TECHNIQUES AND DEVICES

15. Is your school incorporating the teaching of hard and soft tissue laser surgery?

GRU, UF (Waterlase), NSU teach laser use to dental students and they use it clinically.

If so, is this taught as an elective or part of core curriculum?

MUSC, GRU, and VCU include as part of their Core Curriculum.

What discipline(s) teach this course?

UK only teaches laser use at the graduate level in Perio, Ortho and OMFS

16. Does your school use digital imaging and analysis software to grade preparations/restorations?

MMC uses digital imaging only in Dent Sim Remediation. VCU, MUSC, and UPR use it for grading. VCU uses it in Dent Sim Lab where they experience a good degree of success.

If so, please comment on results in terms of repeatability and consistency as compared to human evaluators.

MUSC reports as published in JDE in October of this year that grading is more consistent and repeatable than human grading as well as being available 24 hrs daily to grade.

What do you think the future holds in regards to this type of evaluation?

VCU offered this empirical statement from Dr. Joon Coe, Dept of Prosthodontics, "It takes fewer student tries and less 'argument' to produce a clinically acceptable product with the E4D. MUSC has had very positive experience with using for grading in Dental Anatomy. All schools feel that expense and not being quite developed enough for consistent performance are the major drawbacks.

17. Are you aware of any U.S. dental schools that have eliminated amalgam from their curriculum? No Sixth Region School has eliminated Amalgam. If so, whom? LeCom reports or knowledge that NYU has eliminated amalgam.

18. Do you disclose to students that they will be working with amalgam in dental school? No school reported disclosing amalgam use prior to entering. If so, when? During orientation seemed to be the first exposure to knowledge of amalgam, Prior to matriculation? Commencement of operative course? UK does not talk about amalgam until Operative starts.

19. Have you had issues with students refusing to work with the amalgam (or any other material) in your courses or in the clinic? If so, how was the issue handled? No school reported any student refusing to work with amalgam.

III. CARIOLOGY

6. What method of caries detection and classification is used at your school?

MMC, GRU, UPR, and NSU use ICDAS. Most schools reporting are teaching some combination of the system on axiUm and visual, tactile, and radiographic exam. All have plans for moving toward CAMBRA or ICDAS.

Are you using the (ICDAS) International Caries Detection Assessment system:

7. Sound

8. First Visual change in enamel (after prolonged drying or in the confines of a pit or fissure)
9. Distinct Visual change in enamel
10. Localized enamel breakdown (without clinical visual signs of dentinal involvement)
11. Underlying dark shadow from dentin
12. Distinct Cavity with visible dentin
13. Extensive Distinct Cavity with Visible Dentin

14. How is the progression or arrestment of a carious lesion detected, and recorded at your school's clinic?
GRU use ICDAS. Most other schools report relying on axiUm diagnostic terms to record the state of progression or if arrested.

15. What criteria are used to determine if surgical intervention is necessary?
Most schools report still relying on clinical judgment to determine clinical intervention after visual, tactile, and radiographic evaluation.
Are the criteria standardized and are faculty calibrated?
Most schools expressed that their faculty was calibrated and had regular updates when criteria changed.
What strategies have been used to standardize and calibrate faculty?
Most schools reported calibration through workshops and lectures. Another method was to require two graders per clinical competency (UF). U of L uses iClicker question/response to identify areas of weakness and provide training. GRU has self-paced PPT program offered to students and Faculty.

IV. OTHER

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.

Consortium of Operative Dentistry Educators Region VI Regional Agenda Questions- Fall 2014 Summary Lexington, KY October 15-17, 2014

(Proposed by UFCD- Dr. Deborah Dilbone DDILBONE@dental.ufl.edu)

1. Do students at your institution remediate every psychomotor exam they fail?

UK-Yes. *Exceptions (briefly describe)* **UK-Students must *retake* failed exams and pass. They have only one chance per practical. If student fails the retake he/she will fail the course if (as in RSD 812) 2 of the 5 practicals are failed and not remediated.**

UFL- No

GRU- Yes

ULSD- Pre-clinically, no. *We tried this for many years with no real evidence that remediation resulted in sustained improvement. Currently, in the pre-clinic, there are lab exams (preparations and restorations). Course grade is based solely on lab exams, not daily projects. Those that fail will practice more as they know another exam is coming. We also have a Replacement Day before the final exam in which students can replace one failed preparation for a potentially better grade (a lower grade is also possible). I'm concerned about them improving while they are concerned about the grade. This is usually sufficient motivation for them to practice quite a bit. Even those with no failures will generally take advantage of the opportunity and this results in more practice.*

Clinically, yes.

NOVA- No. As part of the Integrated Restorative Dental Sciences I, students will be challenged by 5 Independent Preclinical Performance Assessments (IPPAs). Three out of five IPPAs must be passed in order to pass the class in addition to an overall laboratory average of 70% or greater (There is no remediation for a failed IPPA; it is calculated in the final grade). If IPPA #3 – wax up premolar in occlusion- is failed, the project must be satisfactorily completed on the student's own time and shown to the occlusion content expert). As part of Integrated Restorative Dental Sciences II, students must pass five of the six IPPAs, including the Class II amalgam preparation. There are two remediations allowed for the Class II amalgam preparation.

UPR competency exam are enforce to practice on simulation prior to have a third exam. If a student fails to pass the competency exam he or she will be reported to the Promotion Committee. - Yes. Students who fail a competency exam are allowed to retake it on patient. Students who fail a second must return to pre-clinic to remediate.

VCU- Yes / No

Exceptions- Although I am not sure how every department at my institution would answer this question, in General Practice it is handled differently in some courses. One course offers an optional opportunity to remediate one of the practicals, and upon successful completion of that remediation, the failing grade for that practical is replaced with a 70. In another course the highest grade on the retake, even if it is a 100, replaces the original grade. Some courses allow a student to fail a psychomotor exam and not remediate it, as long as the overall average for the course is passing. Additionally, in any course where a student has failed a psychomotor exam(s) and is struggling, tutoring will usually be arranged for the student to help improve these skills.

2. Do students remediate failed psychomotor exams within a course or after the course is over?

UK-Within / and After

Exceptions (briefly describe- e.g. differences between pre-clinical and clinical courses)

UK-Pre-clinical courses are given a wider opportunity for remediation than clinical courses.

UFL- After; *Exceptions (briefly describe- e.g. differences between pre-clinical and clinical courses)*

GRU- within 2 weeks of the failed exam

ULSD- Within

NOVA- Within and after: Pre-clinical: For IRDS I, students do not remediate failed IPPAs within the course; only after the course is over, if the overall average is a failure, the student must remediate the course. For IRDS II, students remediate only the class II amalgam preparation within the course and then if the overall average is a failure, the student remediates the course after it is over.

Clinic: All D-3 IPPAs that are failed must be remediated to obtain a maximum grade of 70% on that IPPA. All D-3 and D-4 ICPA's must be remediated as follows: If an ICPA is failed, the same procedure must be remediated as an IPPA and then performed on a patient for a maximum grade of 70% for that ICPA.

UPR- Within the course.

VCU- Within / After- Students may remediate failed psychomotor exams within a course for some courses; in other courses this is done after the course is over.

3. How many opportunities do you give students to remediate?

UK- Only one opportunity is given. Within 10 days of the original exam. Usually failure of 2 practical examinations, including the retake, will result in student failure of the class. There is no remediation for pre-clinical courses at that point. The class must be retaken.

UFL- One

GRU- Usually 1 is enough since they have tutoring prior to re-testing; a second remediation is allowed PRN

ULSD- Clinically, they practice until the Operative Clinic Director determines that they are ready to challenge another competency exam.

NOVA- See above for pre-clinic. Clinically, after students fail an ICPA and then remediate as an IPPA, by the time they challenge the remediation patient ICPA, they are well prepared to be successful. Students are not allowed to challenge the remediation exam, unless approved by the Team Leader or clinic director

UPR- Three times

VCU- I am unsure as this may vary by course.

4. What type of assistance do you give students that struggle with psychomotor skills?

UK- Office hours are arranged to discuss struggles. We also offer tutors.

UFL- They are assigned a psychomotor tutor. Tutors work with small groups (5-6 students) as needed.

NOVA- In the laboratory setting, students are given an array of opportunities within the class to succeed such as peer tutoring with designated D-2, D-3 and D-4 students who earned at least a grade of 90% or better in the subject matter, additional one on one instruction with faculty/PG resident instructors and or the content experts and course director. In the clinic, students' performance and progress are evaluated by the team leader and other supervising instructors. The team leader helps ensure that students have the necessary patients and appropriate procedures to move students towards competency.

UPR- Pre-clinic: individual follow up with an assigned faculty. Clinic: Module Coordinator takes over.

VCU- Assistance varies by course but usually includes: course director meet with student to discuss progress and answer any questions, encourage student to seek faculty guidance during course, tutoring (optional).

5. What are your strategies to help students accept responsibility for their academic performance?

UFL- The course director meets with all students that fail an exam. They discuss strengths and weaknesses and a plan for moving forward. We are seeking advice in this area.

GRU- Our department grading model requires a student get 75% or better to get a C grade on written exams. 74 or less is a failure. We periodically remind students, usually the entire class during a major course, of the importance of not having to fail/repeat a course as the financial burden may be too great for them. We do have students repeat a year on occasion & which becomes known to the rest of the student body pretty quickly.

UK- Students are required to self-evaluate and compare their assessment with faculty assessment.

ULSD- Pre-clinically, they are not required to remediate failed lab exams. The potential to earn a higher grade on Replacement Day seems to provide motivation for them to practice on their own without a requirement.

NOVA- Clinically, students are given suggested benchmarks. It is the students' responsibility to meet with the team leader to determine readiness to challenge each ICPA; the student then is responsible to select the appropriate case and schedule the exam with an independent standardized examiner.

UPR- Students have 3 opportunities to pass a competency exam. They can practice all they want. Students who fail are reported to the Promotion Committee.

VCU- We offer optional tutoring to help them improve; we also have Technical Standards they are expected to fulfill, as well as an Honor Code they are expected to follow.

(Proposed by UPR- Dr. Juan A Agosto Colon juan.agosto3@upr.edu)

6. CARIES: Once incipient caries lesions are detected clinically and radiographically, what is your protocol to handle them?

UFL- Enamel lesions are added to the axiUm chart as a finding. They are addressed in the caries management plan and are re-evaluated at intervals which are dependent upon the caries risk level. All treatment is evaluated again at a disease control, post-treatment assessment

GRU- They are annotated in the axiUm odontogram and the patient is informed.

UK- Fluoride rinse or paste, trays, MI Paste, home care instruction, floss, etc. are used per individual case. We have no facility for saliva testing or evaluation of specific oral bacteria.

ULSD- In most cases, if detectable in both ways, the tooth will receive a restoration. In reality, if teeth were not restored until they are completely cavitated, there would not be enough to satisfy the number of competency examinations even though they are very minimal in number.

NOVA- NSU emphasizes the medical model of caries management with emphasis on caries risk assessment and formulation and implementation of the preventive treatment plan. The Section stresses the importance of early diagnosis of both primary and secondary caries and those steps necessary to encourage remineralization of those lesions before resorting to an irreversible surgical procedure. When performing restorative procedures, minimally invasive principles are followed. Our goal is preservation of tooth tissue.

UPR- Evaluation every 6 months, mouth rinses with fluoride and fluoride varnish.

VCU- We would follow the ICCMS protocol for incipient lesions (i.e. take a risk assessment, behavior modification, chemical treatments such as fluoride, Chlorhexidine, Mi-Paste, etc.) and monitor these areas with regular recalls.

7. AMALGAM: If the use of Dental Amalgam is limited for any reason at your dental school, what materials you would expect to take its place?

UFL- We do not limit the use of amalgam.

GRU- Resin Composite or RMGI depending on the location in respect to esthetics and function.

UK- It depends on caries risk, ability to isolate the field, size of preparation, involvement of centric cusps, etc.... There is a definite push from patients for "white fillings". The advent of cad/milled restorations as well as less polymerization shrinkage from composites also make these restorations less "risky" for the high risk caries people if they are willing to change habits.

ULSD- We do not limit the use of amalgam. For many years we have used glass ionomer for a significant number of Class V lesions. More composite restorations are being performed for clinical competency examinations.

NOVA- Composite resin, RMGI.

UPR- Direct and indirect composite resins

VCU- If amalgam was no longer a restorative material option, in some situations composite would work fine. In other situations when amalgam would be the material of choice, and it was not available, perhaps a casting or CAD/CAM restoration might be an option.

8. SIMULATION: During the last 20 years, dental education had been impacted by simulation.

a. What is the role of simulation in teaching operative dentistry at your dental school? Example: Is simulation used only for training or to fulfil clinical requirements in place of patients?

UFL- Simulation is not used to fulfil clinical requirements in place of patients.

GRU- Simulation is used extensively in the D-1 Operative course. It is used in Fixed Pros, Removable pros, and Esthetics. Although simulation is used in preparation for clinical procedures, students are still required to pass clinical competency exams on live patients.

UK- Simulation is used in pre-clinical courses. A few examinations in clinical courses will involve simulation only as an addition; students must fulfil clinical requirements with patients.

ULSD- Simulation is used for training & remediation in operative dentistry. Simulation is not used for competency examinations in operative dentistry. It is use for clinical competency exams in endo and complete dentures.

NOVA- Computer-based simulation for operative dentistry is no longer being used. CAD-CAM dentistry is supervised by the Section of Prosthodontics.

UPR- *Pre-clinical Operative Course in simulation for training. Clinically, all competency exams are in patients.*

VCU- *DentSim is used extensively in the first semester of the D-1 year within the operative dentistry course. Simulation in our school is used only for training. It is not used in place of patients or to fulfill clinical requirements.*

b. Based on your understanding of student performance, have you had the opportunity to compare student performance on classic typodont vs. computer-based simulation?

UFL- *We purchased a computer-based simulator several years ago to help students that were struggling with the development of psychomotor skill. At that time, the unit was frustrating to faculty members trained to use it and therefore it was never utilized. We have not data to compare.*

GRU- *We have seen computer based simulation at VCU. We have no plans to use it at GRU.*

UK- *No*

ULSD- *We do not have computer-based simulation.*

NOVA- *No*

UPR- *Actually, unpublished and unfinished research is included: "Bench vs Non-Computer Assisted Simulation" Preliminary results- "Skills Developments by Freshmen Students (Class 2014) in the Preclinical Operative Course: Bench vs. Simulation*

"The evaluation of dental students' progress is an essential component in their educational training in operative dentistry. The acquisition of knowledge and technical skills among others, challenges the assessment of students' progression to deliver acceptable degree of quality for the patient well-being. One of the methods for assessing students' attainment of competence is through simulation. Its use has increased in dental education and many dental schools had engaged in the development of expensive simulation facilities. This innovation is recognized as virtual reality computer assisted (VRBT) or classical (contemporary) non-computer assisted simulation.

VCU- *Yes. We have both classic typodont and computer-based simulation (DentSim) in the first-year pre-clinical operative dentistry course, and believe DentSim to be helpful in the students' psychomotor skill development as well as learning operative dentistry.*

c. What type of simulation is been used at your school and who took the decision to choose one or another? Based on your experience, can you recommend it to another dental school?

UFL- *We have no experience or recommendation.*

GRU- *N/A*

UK- *A-dec Simulator was chosen due to reputation, sales pitch and space requirements. We recommend with reservations*

ULSD- *We use standard, traditional simulation with phantom heads.*

NOVA- *Not applicable*

UPR- *Adec-Nevin. Yes if the money to spend is restricted.*

VCU- *We use DentSim Virtual Reality simulation and mannequin simulation. The DentSim (DS) implementation was first suggested by the Dean for Academic Affairs, and then investigated by a special faculty committee which visited other schools with the technology and made recommendations. The school worked closely with the DS Company to design the lab and at the same time the eventual director of the VCU simulation lab worked with the lab technician and course directors to redesign the curriculum and create a DS component. I believe it was all approved by the curriculum committee and was part of a school wide change of adding more prerequisite classes (admission consideration), eliminating some basic science material and adding clinical experience. Based on my experience I would definitely recommend DentSim along with the mannequin simulation.*

(Proposed by MCV- Dr. Mary Baechle: mbaechle@vcu.edu)

9. What are you teaching to place under amalgams/composites? Are you using e.g. Gluma or Consepsis, etc.?

UFL- *We teach our students to use Consepsis on all preparations.*

GRU- *We teach it but we are not routinely using any Glutaraldehyde or Chlorhexadine cavity conditioners.*

UK- *We teach Consepis as a disinfectant agent used after tooth preparation before pulp protection. For shallow amalgam preparations we recommend: rinsing with Consepis and application of Gluma. For moderate to deep amalgam restorations: rinse with Consepis and apply Dycal (only to pulpally deep areas) and Fuji Lining.*

ULSD- *We no longer place bonding agent under amalgam.*

NOVA- *Depending on the RDT (remaining dentin thickness), a glass ionomer liner may be placed under amalgam or composite. We do not promote the use of Gluma, but it can be used on a case by case basis to reduce sensitivity. Consepis is used for cleaning the outer surface of the abutments for fixed partial dentures and not for operative procedures.*

UPR- *Amalgam: varnish or bonding agent. Composites: dentin bonding agent or glass ionomer hybrids*

VCU- *We are teaching Consepis with Optibond Solo Plus to seal amalgams and bond composites. For large bonded amalgams, we use Consepis with 5-Step Scotchbond Multipurpose Plus. If we are using a dual-cured composite for a core build-up, we will still use the Consepis/Optibond system, but then add BondLink.*

10. Are any schools having considerable difficulties implementing Cariology course teachings into their clinical curriculum? What are the confounding factors? Faculty, students, lack of curricular clarity?

UFL- *We implemented a very strong cariology program several years ago. We have calibration sessions regularly.*

GRU- *It took about 3 years to implement; compliance is increasing*

UK- *This will be our first year with the implementation of a Cariology course. The confounding factor has been mainly Faculty and the inability to come to a consensus on ICDAS, CAMBRA, ADA Protocol, homegrown version of caries protocol for high risk patients.*

ULSD- *We have had a stand-alone Cariology course for many years.*

NOVA- *Difficulties found are in the disparity between faculty philosophy and treatment decisions versus the Section of Cariology and Restorative Dentistry's philosophy. As a result, the Division of Primary Care promotes that Division faculty meet regularly to ensure training and standardization on the CDM protocols.*

UPR- *Yes. We have a Cariology course, faculty calibration, but not in use yet.*

VCU- *VCU teaches the most current evidence-based science regarding Cariology, but it is being implemented more slowly in the clinics. Confounding factors for this may include: calibration of faculty (particularly adjunct faculty), students' apprehension in discussing risk level and intervention with patients, and questions of clinical "credit" for preventive care. Students are accepting of conservative management of lesions, but often are overwhelmed in deciding the appropriate treatments based on salivary testing results.*

11. What are the roles of Operative Dentistry faculty in the teaching of new technologies to our students: CAD/CAM, digital impressions, all ceramic restorations including veneers and single crowns?

UFL- *We currently have a separate clinic with the CAD/CAM system. This clinic is operated by operative faculty once per week. The only procedures done in this clinic are **direct** veneers, diastema closures and Cerec restorations.*

GRU- *The preclinical operative dentistry course at GRU has recently added a 1 hour lecture on indirect restorations including information on E4D milled restorations. The D-4 year Comprehensive Dentistry*

UK- *D-3 students are introduced to CAD/CAM DENTISTRY in a very superficial way via lecture, observing the machine at work, and cementing the restoration into a dentofom.*

ULSD- *Actual instruction is primarily by the prosthodontics faculty for digital impressions, machined restorations. Single crowns and FPD are taught in courses of combined faculty. An esthetic course (didactic and lab) in the D3 year is taught by operative faculty.*

NOVA- *CAD-CAM, digital impressions and all-ceramic indirect restorations as preclinical and clinical activities are overseen by the Section of Prosthodontics. Experiences on CAD-CAM technology start as early as the D2 year. The Sections of Cariology and Restorative Dentistry, as well as Prosthodontics, belong to the Division of Primary Care. NSU's CDM organizational structure allows complete training, standardization and calibration between the different sections.*

UPR- Veneers, all ceramics but no in house digital impressions, nor CAD/CAM

VCU- CAD/CAM currently is under the direction of prosthodontic department faculty. All ceramic restorations are taught in prosthodontics, but both GP and Prosthodontic faculty cover these procedures in the pre-doctoral clinics.

12. Are the esthetic dentistry concerns of our students, patients and some faculty, driving dental school curricula?

UFL- Yes, esthetic concerns drive the curriculum to a certain degree.

GRU- Esthetics are part of the curriculum & emphasized in several courses. The number of amalgam restorations has decreased in recent years while composite use has increased validating that we are placing more resin restorations. Knowledge of this trend by course directors will require us to ensure adequate training is provided.

UK- Yes

ULSD- Minimally

NOVA- We are finding we are only using amalgam approximately 5% of the time clinically. Although the use of amalgam in direct restorations is considered in high caries risk patients, when isolation is difficult and when the preparation ends on cementum; there is less patient demand for amalgam (partly due to aesthetics). Although aesthetic dentistry concerns are not driving the CDM's curriculum at this time, since approximately 30% of the preclinical operative curriculum is still on amalgam preparations and restorations, we are continuing to expand the teaching of state of the art aesthetic procedures. We are enhancing integration of cariology principles/prevention into the clinical curriculum, and with greater focus on tissue preservation, we can do more aesthetic dentistry. In addition, our intent on integrating evidence based dentistry is our biggest driver in the curriculum.

UPR- Not yet, the use of dental amalgam is endorsed by The Heath Reform.

VCU- Esthetics is important to our students, patients and faculty, but I do not think it is driving our curricula.

13. Are there any schools using electric handpieces?

UFL- Yes, we switched our entire school to electric handpieces a little over one year ago.

GRU- Oral Surgery only

UK- No; however, we just had over 100 motors installed by Bienn-Aire in September so we will soon have feedback

ULSD- not in the general clinic

NOVA- NSU is using the electric handpieces in the PG Operative Dentistry Clinic.

UPR- No electric handpieces

VCU- VCU does not.