

Consortium of Operative Dentistry Educators

(CODE)



REGIONAL REPORTS
FALL 2008

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

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Consortium of Operative Dentistry Educators (CODE)

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

National Director

On February 21, 2008, CODE held a National/International meeting during the annual meeting of the Academy of Operative Dentistry in Chicago. Dr. Gary Stafford, Marquette University School of Dentistry presented the program entitled "Dental Amalgam Recycling Pathways, Principles and Practices."

During the year CODE was active in providing input to Dental Licensure testing services on restorative concepts and testing proposals. Surveys were also accomplished relation to preclinical laboratory environment concerns faced by a couple of schools.

I had the privilege to attend the Region III meeting at the University of Tennessee School of Dentistry. A great meeting with good discussion and sharing of information. Thank you to everyone for the warm hospitality.

Familiarize your Deans and Department chairs with CODE's objectives and it's value to their school. Their support is crucial in providing the means for their faculty to attend or host regional meetings. **NOTE:** In July 2008 some brief information about CODE was e-mailed to the Deans/Directors of US and Canadian Dental Schools.

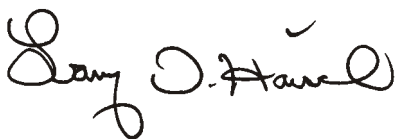
Continue to spread the word about CODE and work to provide input to Licensure Boards on Restorative Dentistry. Also encourage/invite members of the Licensure examining boards to attend the Fall Regional meetings. Invite our colleagues in the Armed and Public Health Services to our meetings - both Regional and National. **NOTE:** In July 2008 an open invitation to attend these meetings was e-mailed to CITA, CRDTS, NERB, SRTA, WREB and the American Association of Dental Examiners.

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

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

My appreciation to the Directors and the meeting hosts (Drs. John Lee, John Purk, Janet Harrison, Andrew Nigra, Richard Lichtenthal, and Kevin Frasier), the Operative Section of ADEA and, especially, the general membership for helping to make CODE what it is and what it accomplishes.

Best wishes,



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

Project ACORDE (A Consortium of Restorative Dentistry Education)

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

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

The Broad Goals and Functions of this committee were:

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

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

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

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

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

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

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

The Early Years (1974-1977)

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

The Transition Years (1977-1980)

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

The Reaffirmation Years (1997 - 1998)

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

Reaffirmation of CODE official title (2003)

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

The Future of CODE

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

National Coordinators/Directors

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

ORGANIZATION OPERATION

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

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

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

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

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

Regional Directors:

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

CODE ADVISORY COMMITTEE

(Revised 2-01-08)

	Region	Regional Director	Phone/E-mail	Term (3 years)
I	Pacific	Dr. Edmond R. Hewlett UCLA Los Angeles, CA	310-825-7097 ehewlett@dentistry.ucla.edu	2009-2011
II	Midwest	Dr. R. Scott Shaddy Creighton University Omaha, NE	402-280-5226 shaddy@creighton.edu	2009-2011
III	South Midwest	Dr. Robert Sergent LSU New Orleans, LA	225-334-1786 rserget@lsuhsc.edu	2007-2009
IV	Great Lakes	Dr. Edward DeSchepper Indiana University Indianapolis, IN	317-274-5331 edeschep@iupui.edu	2007-2009
V	Northeast	Dr. Richard Lichtenthal Columbia University New York, NY	212-305-9898 rml1@columbia.edu	2008-2010
VI	South	Dr. Kevin Frazier MCG Augusta, GA	706-721-2881 kfrazier@mail.mcg.edu	2008-2010
II	At-Large	Dr. Poonam Jain SIU Alton, IL	618-474-7073 pjain@siu.edu	2008-2010
III	At-Large	Dr. Alan Ripps LSU New Orleans, LA	540-619-8548 aripps@lsuhsc.edu	2007-2009
II	National Director	Dr. Larry D. Haisch UNMC Lincoln, NE	402-472-1290 lhaisch@unmc.edu	2008-2010
II	Web Master	Dr. William W. Johnson UNMC Lincoln, NE	402-472-9406 wwjohnson@unmc.edu	

**Consortium of Operative Dental Educators (CODE)
2008-2009**

Paid - Regions and Schools

✓ = Paid Member as of October 31, 2008

68 schools (10 Canada, 57 United States)

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

The National Agenda for 2008 was established after review of the suggestions contained in the reports of the 2007 Fall Regional meetings, National CODE Meeting and from the Regional CODE Directors. Previous National agendas are reviewed to avoid topic duplication. Inclusion of a previous topic may occur for discussion from the aspect of what has changed and the response/action taken and the outcome.

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

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

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

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

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

The required format and sequence will be:

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

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

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

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

National CODE Meeting:

The meeting will be held Thursday, February 26, 2009 from 4:00 pm to 6:00 pm at the Fairmont Hotel in Chicago, Illinois. Suggestions as to how to make this meeting productive and efficient are requested.

National Directory of Operative Educators:

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

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

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

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

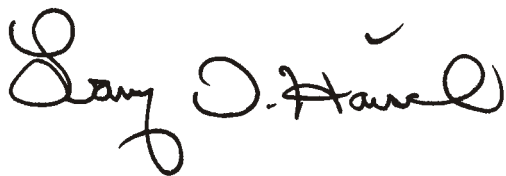
Please have each school in your Region update the following information for the National Directory of Operative Educators:

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

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

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

Thank you,



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

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

2008 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. Use of Simulation in Teaching and Testing: Now and in the Future.

Typodonts and simulation have been an accepted protocol for training and measuring competency for dental students prior to performing procedures on patients. In addition, simulation has been used for over ten years as a means to evaluate competency by licensing agencies. Simulation includes not only the standard surgical procedures as crown preparations, but also restorations and endodontic procedures. Simulation is used as a default option in order to provide training for students when there are insufficient patient resources; i.e., porcelain veneer procedures, ceramic inlay/onlays, etc. The ADA, ADEA and other dental organizations have expressed opposition to the use of human subjects for licensing examinations.

It would be appropriate to discuss the use of simulation in Teaching and Testing especially as relates to validity and reliability.

1. What procedures are you currently simulating in the pre-clinical laboratory?

	Yes	No	Comments
Operative			
Crown & Bridge			
Endodontics			
Periodontics			
Oral Surgery			
Pediatrics			
Esthetic Dentistry			
Implants			

2. Are there any procedures taught in simulation that a majority of your students do NOT perform in the clinic? Please list
3. Are you utilizing simulation to teach some or all of your PRE-CLINICAL endodontic procedures? Yes/No. If YES, please list.
4. Are there any required CLINICAL competencies that you test on typodonts rather than patients? Yes/No. If YES please list.
5. Besides the standard uses for typodonts and simulation that most schools are teaching such as cavity preparations, crown preparations, etc. what innovative or new techniques have you incorporated into your simulation laboratories?

6. Do you use performance in the simulation lab as a means to identify superior students? (For example selection into honors programs). Yes/No. If YES please explain:
7. Is it your observation that student performance in simulation mirrors their performance in the clinics with similar procedures? Yes/No. Please explain:
8. Has it been your observation that students who perform better in the simulation laboratory are more successful in licensing examinations? Yes /No Comments:
9. The Western Regional Boards is reluctant to adopt a simulation crown preparation as part of their examination even though other testing agencies with results accepted by over forty states have used simulation for over 10 years. Is there any evidence that would demonstrate that the manikin crown procedure is not a valid or reliable way to test competency for a licensure candidate? Please explain and provide references.

II. Principles of Cavity Preparations - Outline Extension

Earlier this year the following questions were asked and the results were posted on the CODE web site (<http://www.unmc.edu/code/>). Schools should again respond and expand on as requested. Answer each questions and provide the rational/evidence for each answer. Are these conceptions taught in the pre-clinics then applied in the clinics? If NO, please comment.

1. Must facial, lingual, and gingival walls be extended to completely break contact with the adjacent tooth if not dictated by varies/penetrable decalcification? Yes/No. Rational/Evidence. Applied?
2. Is there a difference in extension criteria between Class II amalgam and Class II composite preparations? Yes/No. Rational/Evidence. Applied?
3. For the anterior Class III, is it required that proximal contact be broken gingivally? Facially? Incisally? Yes/No. Rational/Evidence. Applied?
4. What questions/comments do you have based on the survey results? See CODE web site (<http://www.unmc.edu/code/>)
5. Other comments related to Principles of Cavity Preparation other than those outlined.

III. Caries - Treatment/Detection

Treatment of deep carious lesions by complete excavation or partial removal - A Critical Review, JADA, Vol 139, 705-712, June 2008

(This is not a repeat of a related agenda question, 1999, 2007)

1. Does your school teach the concept off incomplete caries removal? Yes/No. If YES, for how long? How well accepted and applied by the faculty? If NO, why not? Should it be taught?

2. Other comments related to the meta-analysis on this topic?
3. Is Atraumatic Restorative Treatment (ART) taught for root caries? What has been the experience?
4. What methods of caries detection are taught in schools (e.g., Explorer (how used), visual, Diagnodent, transillumination, fluorescence, other?)
5. Does your school use caries detection dye? (Please list product(s). Do students and/or faculty use caries detection dye? What are the criteria?

IV. Health and Safety Issues Related to Teaching/Practicing Dentistry

1. How are **extracted teeth** with amalgam handled and stored? How long has the protocol been in place? What is the basis/science behind your school's protocol? Are the protocols different for amalgam-free extracted teeth?
2. Have there been **air-quality issues** with fumes and/or particulate matter? What is/are the specific issue? How did the issue surface? (Inspector, complaint, etc.) What was the resolution?
3. Have there been issues with **noise**? If YES, please respond per the questions asked in the air quality issue.
4. What are your school's protocols for dealing with **student** accidental needle sticks, bur punctures, and blade cuts?
5. What are the protocols for **patients** injured during procedures by burs, diamonds, disks, blades?
6. Does your school have concerns with **Bisphenol A** in resin restorations? What is the evidence? If YES, please explain:

V. Curriculum

1. Has your pre-clinical or clinical operative curriculum recently undergone a significant revision? What changes did you make (additions or deletions)? Why did you make the changes and what positive or negative outcomes have you seen?
2. What is the time gap (in semesters or quarters) between the end of pre-clinical operative dentistry and the start of clinical operative experiences for your students? Describe the curricular progression of your students in operative dentistry (Example-Freshman pre-clinical operative, Sophomore block clinic rotation, Junior-Senior clinics, or Junior clinic, Senior Comprehensive / General Dentistry clinic). Is there any concern with diminishing knowledge or skills between pre-clinic courses and pre-clinical practice? What types of knowledge or skill erosion did you observe and what have you done about it?

Regional CODE Agenda

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

Suggestions for CODE.

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

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

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

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

3. Other comments/suggestions?

CODE REGIONAL MEETING REPORT FORM

REGION _____

LOCATION AND DATE OF MEETING:

University: _____

Address: _____

Date: _____

CHAIRPERSON:

Name: _____ Phone #: _____

University: _____ Fax #: _____

Address: _____ E-mail: _____

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

Suggested Agenda Items for Next Year:

LOCATION AND DATE OF NEXT REGIONAL MEETING:

Name: _____ Phone #: _____

University: _____ Fax #: _____

Address: _____ E-mail: _____

Date: _____

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

Deadline for return: 30 Days post-meeting

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

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

CODE Region _____ Attendees Form

NAME	UNIVERSITY	PHONE #	FAX #	E-MAIL ADDRESS

CODE REGIONAL MEETING REPORT FORM

REGION I (Pacific)

LOCATION AND DATE OF MEETING:

University: Oregon Health Sciences School of Dentistry

Address: 611 SW Campus Drive #175 Portland, OR 97239

Date: October 23 - 24, 2008

CHAIRPERSON:

Name: Dr. John C. Lee Phone #: 503-494-8948

University: Oregon School of Dentistry Fax #: 503-494-8892

Address: Portland, OR 97239 E-mail: leejohn@ohsu.edu

List of Attendees: Please see reverse of this page for List of Attendees to 2008 Regional Meeting

Suggested Agenda Items for Next Year:

No responses noted

LOCATION AND DATE OF NEXT REGIONAL MEETING:

Name: Dr. Klud Razoky Phone #: 480-219-6184

University: Arizona School of Dentistry and Oral Health Fax #: 480-219-6180

Address: 5850 E. Still Circle E-mail: krazoky@atsu.edu

Date: Mesa, AZ 85206 Date: **TBA**

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

Deadline for return: 30 Days post-meeting

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

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

CODE Region __I__ Attendees Form

NAME	UNIVERSITY	PHONE #	FAX #	E-MAIL ADDRESS
Klud Razoky	ASDOH	480-219-6184	480-219-6180	krazoky@atsu.edu
Douglas Roberts	LLU	909-558-4640	909-558-0235	droberts@llu.edu
Dan Tan	LLU		909-558-0235	datan@llu.edu
Juliana da Costa	OHSU			dacostaj@ohsu.edu
John Lee	OHSU	503-794-8948		leejoh@ohsu.edu
Rose McPharlin	OHSU			
Tom Galibraith	OHSU			
Mike Carlascio	OHSU			
Jack Ferraca	OHSU			
Peter Morita	OHSU			
Mark Fogelman	UBC			mfog@interchange.ubc.ca
Ingrid Emanuels	UBC			
Edmond Hewlett	UCLA	310-8257097	310-825-2536	ehewlett@dentistry.ucla.edu
Sam Huang	UCSF	415-892-4845	415-246-5801	samuelhuang@earthlink.net
Richard Walker	UNLV	702-744-2684		richard.walker@unlv.edu
Phil Buchanan	UOP	415-351-7152	415-929-6531	jbuchan@garlic.com
Brian Kenyon	UOP	415-929-6466	415-929-6531	bkenyon@uop.edu
Marc Geissberger	UOP	415-929-6581	415-929-6531	mgeissbe@pacific.edu
Ai Streacker	UOP	415-929-6613	415-929-6531	
Parag Kachalia	UOP	415-929-6694	415-929-6531	pkachalia@pacific.edu
Eddie Sheh	USC	213-740-2372	213-740-6778	sheh@usc.edu
Calvin Lau	USC	213-740-1525	213-740-6778	cslau@usc.edu
Mamaly Reshad	USC	213-740-9531	213-740-6778	reshad@usc.edu
Gabriela Ibarra	UW	206-543-5948	206-543-7783	gibarra@u.washington.edu
J. Martin Andersen	UW	253-852-5155		jam@u.washington.edu
George McCulley	WREB			

**2008 NATIONAL CODE AGENDA
REGION I
SUMMARY RESPONSES TO NATIONAL AGENDA**

(Editor note: Questions condensed for printing purposes)

I. Use of Simulation in Teaching and Testing: Now and in the Future.

Region I schools are typically simulating most of the procedures listed, with Oral Surgery being the least cited. Procedures taught in simulation but not commonly done in clinic included bonded ceramics (4 schools) and partial-coverage cast gold (2 schools). All schools are using simulation for preclinical endodontic procedures, and four are using an endodontic typodont from Arcadental. About half of our schools do no testing of required clinical competencies on typodonts, while the other half does do so, but to varying degrees. Innovative simulation approaches include teaching of all simulation in the clinic (no sim lab), an introductory laser course, and 3-D scans of ideal tooth preparations as a teaching tool. Schools are split on both using sim performance to identify superior students and an observed correlation between sim and clinical performance with similar procedures. Almost none, however, observed a correlation between sim performance and success on license exams. The detailed, thoughtful, responses on the WREB manikin crown procedure validity reflect the complex nature of this issue.

II. Principles of Cavity Preparations - Outline Extension

Most of our schools teach breaking contact with proximal extensions, primarily for convenience. Class II extensions for composite are commonly described as “more conservative” and “lesion-dictated” as compared to amalgam, but the differences in clinical practice at most schools is minimal. Virtually all approach Class IIIs as lesion-dictated with common breaking of the contact at the gingival only.

III. Caries - Treatment/Detection

Treatment of deep carious lesions by complete excavation or partial removal - A Critical Review, JADA, Vol 139, 705-712, June 2008

(This is not a repeat of a related agenda question, 1999, 2007)

Four schools subscribe to incomplete caries removal in— one has done so for many years - while the others teach complete caries removal. Of the latter group, however, all generally agreed that the findings of the JADA article are compelling and that some modification of their teaching is being considered. None are using ART for root caries. Visual examination of dry teeth under magnification predominates as the most commonly-taught caries detection method, and judicious use of the explorer is stressed. All but one school uses caries detecting dye, with all users recognizing and teaching its limitations.

IV. Health and Safety Issues Related to Teaching/Practicing Dentistry

Several schools provided detailed protocols for handling of extracted teeth and management of student and patient injuries. One school reports an issue with ivory dust in its sim clinic, but no other air quality or noise issues were reported. No concerns with BPA were voiced.

V. Curriculum

Reported changes in operative curricula were limited to the preclinical level. Time gaps between the end of preclinical and start of clinical operative ranged from 1 to 12 months, with a rough mean of 2 months.

Regional CODE Agenda

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

Suggestions for CODE.

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

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

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

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

3. Other comments/suggestions?

2008 NATIONAL CODE AGENDA
REGION I RESPONSES
(Evidence cited where applicable)

Region I School Abbreviations

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

I. Use of Simulation in Teaching and Testing: Now and in the Future.

Typodonts and simulation have been an accepted protocol for training and measuring competency for dental students prior to performing procedures on patients. In addition, simulation has been used for over ten years as a means to evaluate competency by licensing agencies. Simulation includes not only the standard surgical procedures as crown preparations, but also restorations and endodontic procedures. Simulation is used as a default option in order to provide training for students when there are insufficient patient resources; i.e., porcelain veneer procedures, ceramic inlay/onlays, etc. The ADA, ADEA and other dental organizations have expressed opposition to the use of human subjects for licensing examinations.

It would be appropriate to discuss the use of simulation in Teaching and Testing especially as relates to validity and reliability.

1. What procedures are you currently simulating in the pre-clinical laboratory?

UA: No response noted.

ATSU:	Yes	No	Comments
Operative	X		
Crown and Bridge	X		
Endodontics	X		
Periodontics	X		
Oral Surgery	X		
Pediatrics	X		
Esthetic Dentistry	X		
Implants	X		

UBC:	Yes	No	Comments
Operative	X		All simulation is taught and practiced in the same clinic as patient care
Crown and Bridge	X		
Endodontics	X		Extracted teeth set in plaster in an arch tray which is then instrumented and obturated in clinical simulation in the clinic setting
Periodontics	X		For scaling and root planing in clinical simulation in the clinic setting
Oral Surgery	X		Basic exodontia is performed using special oral surgery dentoforms in clinical simulation in the clinic setting
Pediatrics	X		
Esthetic Dentistry	X		Direct bond veneer, Class I, IV, Enameloplasty
Implants	X		For implant Prosthodontics and on models

LLU:	Yes	No	Comments
Operative	X		Preclinical projects and clinical exams typodont and simulator
Crown and Bridge	X		Clinic exams - simulator
Endodontics	X		Typodont
Periodontics	X		Typodont and simulator
Oral Surgery	X		?
Pediatrics	X		Typodont
Esthetic Dentistry	X		Typodont
Implants	X		Simulator

MUC: No response noted.

UNLV:	Yes	No	Comments
Operative	X		
Crown and Bridge	X		
Endodontics	X		
Periodontics	X		
Oral Surgery	X		
Pediatrics	X		
Esthetic Dentistry	X		
Implants	X		

OHSU:	Yes	No	Comments
Operative	X		
Crown and Bridge	X		
Endodontics	X		
Periodontics	X		
Oral Surgery		X	
Pediatrics	X		
Esthetic Dentistry	X		
Implants	X		

UOP: No response noted.

UCLA:	Yes	No	Comments
Operative	X		Class II amalgam; slot/pin-retained amalgam; Class V glass ionomer
Crown and Bridge	X		MOD gold onlay & temporary; FGC prep and temporary
Endodontics	X		Natural tooth mounted in typodont: 2 molars, 1 single-rooted
Periodontics		X	
Oral Surgery		X	
Pediatrics		X	
Esthetic Dentistry		X	
Implants		X	

UCSF: No response noted.

USC:	Yes	No	Comments
Operative	X		We use special layered teeth (Columbia) for simulating caries at a student cost of \$8.00 each. We also incorporate Body Mechanics, aka Ergonomics, in teaching the technical skills. See question 5 below
Crown and Bridge	X		
Endodontics	X		The WREB format is simulated in part of the teaching and testing
Periodontics	X		Tasks are incrementally increased in complexity in subsequent sessions
Oral Surgery		X	
Pediatrics	X		
Esthetic Dentistry	X		This is part of the bonded restoration course
Implants		X	

UW:	Yes	No	Comments
Operative	X		
Crown and Bridge	X		
Endodontics	X		
Periodontics		X	
Oral Surgery		X	
Pediatrics		X	
Esthetic Dentistry	X		
Implants	X		

2. Are there any procedures taught in simulation that a majority of your students do NOT perform in the clinic? Please list.

UA: No response noted.

ATSU: No, everything that the students had been taught in the sim-clinic performs in the clinic.

UBC: Direct bonded veneer; partial veneer crown; cast gold inlay/onlay. Porcelain laminate veneers are taught didactically, but no simulation.

LLU: No.

MUC: No response noted.

UNLV: Porcelain veneers, porcelain onlays, inlays and molar endodontic procedures.

OHSU: Porcelain veneers, CEREC restorations.

UOP: No response noted.

UCLA: Slot/pin-retained amalgam.

UCSF: Gold onlays.

USC: No.

UW: Indirect ceramic restorations such as inlays and onlays.

3. Are you utilizing simulation to teach some or all of your PRE-CLINICAL endodontic procedures? Yes/No. If YES, please list.

UA: No response noted.

- ATSU:** Yes, we use endo typodonts (Columbia & Acadental). Students mount natural teeth, do access opening, cleaning, shaping, hot vertical condensation (Obtura) and thermo fill.
- UBC:** All the clinical endodontic procedures are taught in clinical simulation using natural teeth set by plaster in dentoform trays then mounted in a mannequin head. These dentoform trays have grooves for radiographs so various radiographs are also taken in the same setting.
- LLU:** All preclinical endo procedures are done on extracted teeth mounted in Acadental typodont.
- MUC:** No response noted.
- UNLV:** Yes. Using both plastic and natural teeth students learn endodontic access, debridement, hand filing, rotary instrumentation, lateral condensation obturation, and placement of temporary restorations on anteriors, premolars and molars.
- OHSU:** Yes, but in the classic simulation sense, not using computer simulation at all except in lectures where the Dental Anatomy and 3D Interactive Tooth Atlas by Brown and Herbranson is used. In lab, the DS1 class has plastic teeth bu Acadental (910-384-7390) so all can do the same access opening, etc. DS2 class mounts extracted teeth in a typodont and so gets a more “real” simulation.
- UOP:** No response noted.
- UCLA:** Yes. Natural teeth are mounted in the Viade #2888 “Endodontic X-ray” typodont which permits all steps of endodontic therapy - including radiographs - to be performed in simulation mode.
- UCSF:** Yes, plastic tooth models and extracted teeth.
- USC:** A WREB-approved typodont is used for all procedures.
- UW:** ALL of the preclinical endodontic procedure training are done in the simulators - access, instrumentation (including rotary Nickel-Titanium files), medication and temporization of the canal(s), and obturation. Extracted teeth and artificial anatomically-correct plastic teeth (Acadental, Real-T Endo Series teeth) are used mounted in the simulator phantom head.

4. Are there any required CLINICAL competencies that you test on typodonts rather than patients? Yes/No. If YES please list.

- UA:** No response noted.
- ATSU:** Yes. If the students do not have enough patients for certain procedures, like Class II amalgam and fixed partial denture, then the competencies will

be measured on the typodont. For RPD regardless of how many cases the students will do in the clinic, they all have to take a competency exam on four casts in the Simulation-clinic.

UBC: There is considerable dissent amongst faculty as to whether clinical evaluation and competencies should not ALSO be evaluated with clinic patients. The arguments against having evaluations during patient care (which assumes full management of the specified clinical procedure(s) with no operative intervention by an instructor unless such is required to protect the patient) apparently parallel the arguments mounted against patients for Board and certification examinations, and center around “the patients are put at greater risk”, and “because of differences in each patient’s situation, some students therefore operate at advantage/disadvantage compared to other students”. On the other side of the argument are those who feel that there are many elements of technical access and proficiency, as well as professionalism and patient management which can and should be assessed during operative treatment for actual patients, and that this should be done IN ADDITION TO the basic physical/technical/surgical assessments which are properly done in simulation. The current Associate Deans of Clinical Affairs and of Academic Affairs at UBC have proscribed testing and assessments by operative personnel except for (faculty-assisted) daily work feedback. Because there is essentially no calibration achievable amongst the 150+ part-time faculty who are engaged in clinical operative teaching, there are huge lacunae of indefensible assessment feedback. The dissent continues.

Operative: CI II amalgam/composite
CI III composite
Complex amalgam

The grading of ergonomics, rubber dam placement, and organizational skills is completed in the clinical (simulation) setting by direct observation, but end-product evaluation (i.e., of preps and restorations) is completed randomly and by instructors blinded to the students’ identities.

Pediatric Operative Dentistry: In the latter part of the third year dentistry program during the pre-clinical pediatric dentistry sessions, named Clinical Skills in Pediatric Operative Dentistry, the students perform all exercises and pre-clinical assessments on the typodonts. After five sessions of pre-clinical exercises on preparing and restoring teeth #84DO, #55MOL, #54DO, #74SSC, #75SSC, #74DO, and optional composite preparation and restorations for anterior and posterior primary teeth, the students’ clinical competency is tested on a randomly assigned side-by-side proximal Class II preparations. The grading is also completed randomly and by instructors blinded to the students’ identities.

LLU: Fixed prosthodontic preparations are simulated in addition to some competencies performed with patient restorations. All D2 and D3 clinical exams are done on typodonts mounted in a manikin in a clinic chair. One D\$ amalgam or composite may be done on typodont in a manikin in clinic.

MUC: No response noted.

UNLV: No competencies are required on a typodont. However, a typodont mock board crown is required.

OHSU: No.

UOP: No response noted.

UCLA: Only the FINAL Restorative Competency - an OSCE - after all clinical procedures and competencies have been completed.

UCSF: Yes, fixed partial dentures, some endodontic procedures such as multi rooted molars, OSCEs, diagnosis and treatment planning sessions (scenarios), implant problem solving (models).

USC: No, patient testing is preferred because the people part of dental care, which includes patient management, is also an important part of the curriculum.

UW: No.

5. Besides the standard uses for typodonts and simulation that most schools are teaching such as cavity preparations, crown preparations, etc. what innovative or new techniques have you incorporated into your simulation laboratories?

UA: No response noted.

ATSU:

1. The second year dental students take a 3 day module of Introduction to Laser which includes hands on in the simulation-clinic.
2. Full day of Introduction to CEREC and CAD/CAM technology.
3. Six full days of implant module, placing implants, provisional restoration and implant supported overdentures.
4. Two full days of Laboratory Exercise - Fabrication Orthodontic Appliances.

UBC: **Operative:** Since we have all simulation teaching and practice in the clinic (no lab) we are also teaching simultaneously clinical ergonomics and infection control. Regarding innovative techniques we teach enameloplasty; caries removal and pulp protection; caries simulation (wood glue) for CI V and also direct bonded veneer. **Pediatric Operative Dentistry:** For the spring of 2008 we incorporated two innovative techniques in an attempt to enhance our simulation teaching. The first approach involved preparing related cavity preparations on the typodont and having it digitally scanned for review by the students. This allowed the students to visualize an ideal cavity preparation prior to starting their own preps. Having the 3-D image of a cavity prep is quite helpful in solidifying the students' understanding of discussions and materials presented during the preclinical mini-lecture. The feedback has been very positive. These images have also been placed on the Vista WebCT and made accessible to the students at all times. In this manner even the 4th year students may review a specific cavity preparation in anticipation of the planned

procedure for a real patient. **NOTE:** This technique of utilizing manipulable “virtual tooth” 3-D scans has been used for 7 years in the Operative division and was reported at several ADEA meetings by UBC faculty. The second innovation we had employed in the spring of 2008 was the development and use of Objectively Based Evaluation Criteria (OBEC) and having the students and instructors complete the assessments on the computer system, namely Axium. This project has been helpful in allowing the students to objectively, and in detail, evaluate their preparations and restorations. It has also allowed the instructors to be more objective in their evaluation of the students. The additional advantage of this computerized system has been the statistical analysis of common mistakes by the students, inter-instructors comparison, and compiling data. The disadvantage of this computerized grading using OBEC forms has been the additional time wasted during grading. We are currently working on new ways to modify our system and make it more efficient. **Endodontics:** This year we tried for the first time to practice the use of the electronic apex locator by setting a natural tooth in alginate and using a bent paper clip to hook the lip electrode with great success. [I’d like to see this done.... Do the orthodontics folks instruct the session on paperclip bending...?] (UNLV uses Playdoh)

LLU: D1 students do a mirror learning exercise on manikin. The D3 students do an implant placement procedure on a special typodont.

MUC: No response noted.

UNLV: We have incorporated the use of an apex locator and digital radiographs for root canal treatment in the preclinical endodontic course. Caries detectors (DIAGNOdent, DIFOTI and D-Carie) are introduced in preclinic operative dentistry. Simulated caries and simulated recurrent caries (with Elmer’s glue and wood repair material) are excavated and restored in the preclinical courses. In the sophomore year, the simulation head is considered to be a patient with dental needs – caries placed in typodont teeth, fractured teeth, missing teeth, etc. The patient’s dentition is diagnosed and treatment planned and entered into our clinical management training software (SALUD). As treatment is completed, grades are entered into SALUD. This is an attempt to prepare students for their transition into the clinical setting. Standardized calculus detection and mobility evaluation (unscrew teeth to varying degrees) are incorporated in preclinical periodontics. The simulation heads can be placed on dental chairs for use in the clinic for remediation or practice for mock boards. Part-time faculty can receive CE credit for attending preclinical courses and passing an examination.

OHSU: CEREC Training in DS 2 year (1 unit).

UOP: No response noted.

UCLA: None.

UCSF: Borrowed from UNLV wood glue caries sim, and incorporated mounted extracted tooth in typodont (D2).

USC: Because of the shortage of natural teeth, we use layered teeth (Columbia) that have “cariou” dentin inlaid underneath the enamel layer at the DEJ. The cariou defect allows the student to prepare the tooth outline form to minimal depth while circumscribing caries and isolating it to the pulpal or axial wall. The teeth used to be hand modified by faculty, but now the manufacturer produces these typodont teeth. There is slight variation in the size of the caries, but that makes for a more realistic situation, rather than being so uniform that the student “masters” the one and only model of cariou tooth by sheer repetition. The teeth are more costly than regular ivorine teeth; they cost \$8 each. A collaboration of the dental school and the physical therapy program has resulted in a more formal approach to Body Mechanics, also known as ergonomics. Fit to Sit™ is the name of this approach. It is emphasized early in the curriculum, currently in the first-year Operative amalgam course. This involves proper posture and work area organization. Spine, hip, neck and shoulder positioning complement a seated, stable posture. Variation in positioning or bending should be kept within 20 degrees of optimal.

UW: Limited use of microscopes.

6. Do you use performance in the simulation lab as a means to identify superior students? (For example selection into honors programs). Yes/No. If YES please explain:

UA: No response noted.

ATSU: Yes, we identify superior students. We offer them an elective module to work as a teacher assistant (TA) in the simulation lab to help teach the first year students with the operative module. Working with Brasseler to sponsor Simulation Award at graduation.

UBC: We no longer have a simulation laboratory. However, we do identify exceptional student performance in simulation (as described above) as well as during patient care (as best we can) based on cumulative positive daily and summative reports gathered from observations of a plenitude of non-calibrated full-time and part-time clinical instructors.

LLU: No - except that preclinical course grades are one criterion for selection for senior awards.

MUC: No response noted.

UNLV: No.

OHSU: The simulation clinic is not used as a means to directly compare student performances. The simulation clinic is mainly for the preclinic courses. While you may have a good idea about which students have the better hand skills, you will not necessarily be able to identify those that are superior in other patient care skills, such as communication, ethics, etc. We do not

subscribe to the concept that fine motor skills are all it takes to make a superior dentist.

UOP: No response noted.

UCLA: No.

UCSF: Yes, letters of commendation based on overall performance and a separate one with professionalism. Prizes from guest lectures and manufacturers.

USC: Performance in preclinical technique courses occurs in the simulation lab, but not all procedures are done on the manikin. Nonetheless, outstanding students are identified and subsequently asked to be a teaching assistant (TA) for future preclinical courses. Those individuals are also eligible for selective course such as the esthetic selective.

UW: We use the performance in the simulation lab to determine which students will be the recipients of the Maston prize. This is a cash prize that consists of \$2,000 to \$3,000 dollars that are awarded to the top students in the Operative Dentistry Technique courses.

7. Is it your observation that student performance in simulation mirrors their performance in the clinics with similar procedures? Yes/No. Please explain:

UA: No response noted.

ATSU: Generally this is true, occasionally we find students who are interested in specific discipline they will show excellent performance.

UBC: We have little data to either *support* or *disprove* this - see comments for above response regarding our ongoing disagreements with the faculty regarding clinical evaluation.

LLU: Yes, if it is only the preparations that are evaluated. Clinical performance has so much to do with patient management that the overall experience may not be great for a student that did well on typodont preparations but does not have the patient management skills.

MUC: No response noted.

UNLV: Yes, generally, however some students make dramatic improvement while in clinic.

OHSU: No! In the pre-clinic environment the student is challenged to prepare teeth to a **much higher level of criticalness** than in the actual clinical setting. The tendency is to allow for more taper in extra and intra-coronal preparations. There is also a clear difference in the margins of the previously mentioned preparations. Pre-clinically the student can prepare margins that are smooth and flowing. In the clinical environment the margins tend to be rougher, less smooth and occasionally jagged. It is our

feeling that this is simply a reflection of insufficient repetitions in the clinical setting. Students prepare far more teeth in the pre-clinical setting than they do after moving to the patient treatment clinic. A student may go weeks with out preparing a tooth for a given type of restoration, not the best way to maintain a developed skill.

UOP: No response noted.

UCLA: Yes.

UCSF: Yes and No. Yes for dentistry. No for patient management skills. This is an important aspect not taught in Sim lab.

USC: In general we find that the closer the simulation is to the actual clinical experience, the easier is the transition from preclinical situations to clinical situations. If simulation is truly emphasized as a process, rather than being results-oriented, then students discover that the journey is just as important as the end product. The difficulty is that evaluation and grades tend to override process, so students “sacrifice” their body (posture) in order to achieve the grade.

UW: Yes. Although many students mostly improve once they are in clinic, we have found that there is a correlation between the simulation and the clinic in terms of performance.

8. Has it been your observation that students who perform better in the simulation laboratory are more successful in licensing examinations? Yes /No Comments:

UA: No response noted.

ATSU: We are a new school, two classes took the licensing examination, and our passing rate was 96% and the students who failed were only partial fails, so it is hard to make this call.

UBC: We have no access to licensing examinations’ outcomes.

LLU: We have not tracked it, but I would think so.

MUC: No response noted.

UNLV: Yes, but there are always a few exceptions.

OHSU: No. Licensure examinations are “snapshots in time” and can easily be a reflection of a person having a good day or a bad day. If the exam includes patient care, the variables that a live patient presents can easily render typodont training ineffective. If the student only has to do typodont exercises on the licensure exam, then unless the student reverted back to typodont practicing, the typodont test is less than realistic. One has to

acknowledge there is still a huge difference in the way a plastic tooth cuts/burns over a real tooth.

UOP: No response noted.

UCLA: We have not perceived any correlation.

UCSF: Unsure.

USC: The most recent results with WREB show about a 90% pass rate, regardless of simulation laboratory success. A better question would be to correlate clinical performance with performance in licensing examinations. This question assumes that there is a relationship of simulation lab performance and licensing examination performance. Anecdotally that is at best a weak relationship and not a clear indicator of licensing examination success. There are numerous other factors that are most significant.

UW: No.

9. The Western Regional Boards is reluctant to adopt a simulation crown preparation as part of their examination even though other testing agencies with results accepted by over forty states have used simulation for over 10 years. Is there any evidence that would demonstrate that the manikin crown procedure is not a valid or reliable way to test competency for a licensure candidate? Please explain and provide references.

UA: No response noted.

ATSU: Our faculty think that using the Manikin for simulation crown preparation for WREB is a reliable way. They do not support using patients for this procedure during the WREB.

UBC: Not aware of any.

LLU: I don't know the statistical validity of the manikin versus clinical competency, but the proposed WREB clinical crown preparation test is hardly anything more than a simulation exercise and a lot more hassle.

MUC: No response noted.

UNLV: It is unclear if the manikin crown procedure is a valid and reliable way to test competency for a licensure candidate. As Ranney stated in "*Works in progress: a comparison of dental school experiences between passing and failing NERB candidates*", 2001 *J Dent Ed*, 67:3, 311-16, he knew of no study comparing results of examination by NERB to behavior in practice. The studies have tended to focus on the correlation between performance in dental school and licensure exams. At the University of Florida from 1996-2003, Stewart, CM, et al, in "*Relationship between performance in dental school and performance on a Dental licensure examination: an eight-year study*" *J Dent Res* 69:8, 864-869 reported that there was a positive correlation between academic performance and all sections of the NERB, 1) overall, 2) clinical periodontics, 3) clinical amalgam,

4) laboratory (manikin exam SIM), etc. (SIM examination – class II composite added and pin amalgam deleted in 2000, three-unit bridge preparation added single crown deleted in 2000, Class II composite restoration on a pre-prepared tooth, Class II amalgam restoration on a prepared tooth, Class IV composite restoration, endodontic access). These results indicate that a simulation exercise or clinical (patient) examination might be a valid test for licensure. However, at the University of Maryland from 1994-2004, Ranney, RR, et al, in “*The relationship between performance in dental school and performance on a clinical examination for licensure : a nine-year study*”, 2004 JADA 135:Aug 1146-1153 reported that the results of the clinical restorative and simulation patient portions of the NERB results varied significantly over time. Additionally the failure rates of the clinical restorative and sim patient were inconsistent with one another over nine-years. The sections of the NERB that had the highest correlation to dental school class rank are (in order) 1) dental simulated clinical exercise (written), 2) perio clinical exercise, 3) sim patient, and 4) restorative clinical exercise. The sim patient correlation to class rank percentile was just statistically significant while the restorative clinical exercise was not statistically significant. Ranney concluded that NERB examination results of the graduates from one dental school failed to be a good measure for detecting the quality of those graduates as determined by the dental school’s faculty. The inter examination reliability was low. The clinical examinations did not provide validity for making the licensure decision, bringing into question the ethics of using invasive and irreversible procedures on patients as a part of the dental licensure examination. From these two studies you may conclude that dental licensure examination simulation (manikin) procedures correlate to dental school performance. Whether a crown preparation is a valid way to test competency for dental licensure is an open question. According to Ranney, there is no study that correlates licensure examinations to behavior in practice. However, if a one-time examination is required prior to dental licensure, simulation has been shown to correlate to dental school performance. Since crown preparations are a common dental procedure it may deserve to be part of a dental licensing examination.

- OHSU:** WREB recently requested, from many dental schools, any evidence of correlation of performance on manikin teeth preparation and natural teeth preparation. No one could produce any evidence to show the resin teeth gave any performance equivalents. Any practitioner that is being honest will agree that working on plastic teeth is different than working on natural teeth. Typodont exercises have the advantage of allowing for consistency for the test exercise, but the disadvantage of not being a reproduction of real dentistry.
- UOP:** No response noted.
- UCLA:** It doesn’t test tissue management.
- UCSF:** No counter evidence, but it could eliminate “incompetency”.
- USC:** Simulation versus live patient is a hopeless conundrum. The whole premise that passing a licensing examination is a reliable indicator of competency is fraught with uncertainty. We have all seen instances where a “good” student fails the licensing examination the first time, but passes on the next attempt – all without any “remediation.” To believe that a moment-in-time examination is the definitive screening device for

licensure and demonstrating competency is a leap of faith. Competency is something that is achieved with consistently acceptable performance over time. That is the business of dental education. Dr. Arthur Dugoni has been a tireless advocate of licensure by graduation. He can more eloquently express this position than I am able to. Why do we in dental education buy into the premise of licensing examinations being a true measure of competency? There are better ways, and some are already in place. The best one, licensure by graduation, is yet to come. A CODA-certified institution and program is a much more reliable mechanism for determining competency than the one-shot approach that licensing examinations proclaim to be. It is time to move on from this legacy system and bring licensure back to reality and the twenty-first century. The focus should shift from measuring initial competency via licensing examinations to one of dental boards assessing continued competency in better ways than just essentially counting CE units.

UW: Dentists treat patients, not manikins. When working with manikins, there are many aspects that are not observed, such as:

- No need for anesthesia or pain management
- No saliva management
- No blood management
- No tissue retraction management and impression taking
- No carious lesion management
- No build-up management
- Plastic teeth do not replicate the natural tooth structures
- No patient management

Is simulation is valid for crowns, than it follows that simulation is valid for every operation. Again, dentists treat patients, not manikins.

II. Principles of Cavity Preparations - Outline Extension

Earlier this year the following questions were asked and the results were posted on the CODE web site (<http://www.unmc.edu/code/>). Schools should again respond and expand on as requested. Answer each questions and provide the rational/evidence for each answer. Are these conceptions taught in the pre-clinics then applied in the clinics? If NO, please comment.

1. Must facial, lingual, and gingival walls be extended to completely break contact with the adjacent tooth if not dictated by varies/penetrable decalcification? Yes/No. Rational/Evidence. Applied?

UA: No response noted.

ATSU: Yes, to make sure that we accessed all the decay and to achieve better finishing of the restoration.

UBC: Gingival contact is always (for amalgam and composite) broken to ensure complete caries removal. For amalgam we teach to break both facial and lingual contacts for carving proximal cavosurfaces. For composite facial and lingual contacts do not have to be broken but may be broken for convenience and for placing bevels (Based on Summit's textbook)

- LLU:** Amalgam - facial and lingual would not require that contact be broken if the margin is in sound tooth structure and can be clearly visualized. However, we would require extension on the gingival margin to clear the contact and extend apical to the caries prone area that is apical to the contact. (An exception would be if the patient had a low caries index and the restoration was repairing only a fracture, not a carious lesion.) Composite resin - because to place the beveled margins it would require that all margins break contact.
- MUC:** No response noted.
- UNLV:** Class II Amalgams – F, L, and G contacts should all be broken (as per evaluation criteria for the WREB, and ADEX exams. It is mentioned in lecture/ preclinic that there is some current controversy about the need to always break F and L contact if not dictated by the caries. Gingival contact should be broken as this is where the caries usually is located. Class II Composites – Again F and L contacts need not be broken if not dictated by caries location. Gingival contact should be broken as this is where the caries usually is located. Class III Composites – Contacts need not be broken unless dictated by caries. This is considered a possible compromise for esthetics.
- OHSU:** Not aware of any research to answer this question. I believe it to be empirical, based on conservation of tooth structure. If breaking F/L/G contact would require removal of significant sound tooth structure, then it isn't indicated. However, from a practical standpoint, having open F/L/G contacts enhances placement of sectional matrices, and if these open contacts can be obtained with minimal removal of non-diseased tooth structure, it is often worthwhile doing. An additional consideration is the emergence of sonic and ultrasonic preparation instruments. These instruments allow for more conservative preparation, and are "safe-sided" so preparations can be made to open contacts with minimal removal of tooth structure and less risk of adjacent tooth damage vs. rotary preparation. This type of tooth preparation has been shown to not adversely affect bonding with adhesive systems: Cehreli Z et al, J Dent 31:429 (2003).
- UOP:** No response noted.
- UCLA:** At the preclinical level, students are directed to minimally break contact with their F, L, and G wall extensions for both amalgam and composite resin, with specific prep dimension criteria. This facilitates assessment of their work, particularly in practical examinations. They are concurrently taught that in the clinical situation, composite preparation extensions are driven by the extent of the carious lesion and decalcification. With amalgam, however, students are taught to break contact on all proximal extensions on their clinic cases according to the same criteria presented preclinically. Our basis for all of this is largely empirical.
- UCSF:** No - too many factors, including CRA/CAMBRA, bonding strength, esthetics, occlusion etc.
- USC:** Conservation of tooth structure rules over extension for convenience in many restorative situations today. Minimally invasive dentistry, MID, is

the hot topic. Materials and techniques have evolved to make this possible. Additionally, the nature of caries and its prevention allow a less aggressive method of surgical caries control. After all, today's restoration won't necessarily last for decades. Isn't it better to leave more tooth so that tomorrow's treatment methods have more to work with? By the same token, if this question is meant to indict licensing examination scoring criteria, such as WREB, it is comparing apples with oranges, so to speak. It seems that agencies such as WREB want to measure competency via an outcome that is quantifiable and reliably measured. MID requires considerable judgment and does not deliver the "classic" outline form or other tangibles that we of the amalgam era were born and raised with. WREB is aiming for competency, but MID is more along the lines of excellence and mastery. Both are acceptable, but are clearly at different levels. To equate the two as equally desirable is off the mark. They serve different purposes and should not be uttered in the same sentence or context. Adhesive dentistry is rewriting the book on outline extension. Improvements in materials and techniques now permit more conservative preparations. The classic concepts associated with amalgam and cemented restorations are no longer applicable to the new era of composites and bonded restorations. The principles of cavity preparations are not immutable over time. They must adapt to the materials and techniques of the present era.

UW: It depends on the restorative material that will be used for the final restoration. If the restoration is to be a conservative composite restoration, then there is no need to break the contacts in the absence of caries/decalcification. If, on the other hand, a cast restoration is indicated, then proper cavity preparation will require breaking of the contacts.

2. Is there a difference in extension criteria between Class II amalgam and Class II composite preparations? Yes/No. Rational/Evidence. Applied?

UA: No response noted.

ATSU: In the simulation clinic. We teach the same for both amalgam and composite. They need to have 0.3-0.5 mm separation from the adjacent tooth we could have a slightly bigger lingual separation to able to finish and polish the restoration (convenience form). We teach them the balance between conservative and convenience. We do not teach to leave undermined enamel in general, because micromechanically retained but can pull away and cause microleakage. If there is decalcified enamel, it is not preferable to leave it because it wouldn't be strong to bond to, however we teach the students in certain clinical situations, it is possible for composite restoration not to break the facial contact after evaluating the extension of the decay and the patient risk. Preparation depth they could be on enamel for composite but they should be at least 1.5 mm deep for amalgam preparation. For composite preparation they should place a bevel on the facial and lingual walls in box. Gingival bevel should be placed if the preparation is in enamel.

- UBC:** Composite preparation are more conservative and should be mostly caries driven. We teach the preparations should be non-retentive mechanically and require only 1 mm minimal depth.
- LLU:** No difference in F-L-G extension of proximal box except as noted in previous response to #1.
- MUC:** No response noted.
- UNLV:** As in response to #1, amalgam preps are taught clinically with an eye to the licensing exam criteria. (F-L-G contact is always minimally broken with a 90 degree cavosurface margin). Composite preparations should always break gingival contact, but may not necessarily break F or L contact. The cavosurface margin does not have to be 90 degrees.
- OHSU:** Similar to above, I am not aware of any research to answer this question. In general, usually adjacent tooth structure should be broken to allow amalgam carving and burnishing. Again, this also enhances matrix placement – if breaking F/L/G contact would require removal of significant sound tooth structure, then it isn't indicated. (Summitt et al, Fundamentals of Operative Dentistry, Chap 11, p. 348 (2006).
- UOP:** No response noted.
- UCLA:** In the preclinical curriculum, extension criteria are essentially the same (break contact with ≤ 0.5 mm clearance) for both instances, save for the beveling of proximal composite prep margins. Class II amalgam preparations in the clinic are held to this criterion as well. Clinical composite prep extensions are more conservative and lesion-driven, but minimal extension beyond the contact area on one or more proximal margins is commonly performed for access/convenience form. Again, our evidence base is largely empirical.
- UCSF:** Yes and No. Composites allowed greater extensions for convenience form and finishability for beginners. Extension not taught dogmatically - conservation of tooth structure and other factors. Concepts stressed.
- USC:** This question is a backhanded slap at testing agencies such as WREB. We all know that preparation design is dictated by the physical properties of the restorative material. Why quibble the fine points and differences? It is certainly possible to be more conservative with not only extension but internal for composite compared to amalgam. But we also know that an “average” amalgam will survive longer than an “average” composite. Longevity and outcomes are less technique sensitive for amalgam. There was a recent study contrasting Class II amalgam and composite restorations. A bitewing study looked at the incidence of recurrent caries and overhangs. Guess which material did better? Yes, the literature can demonstrate longevity of composite restorations, but the ones that do so well are ones done with excellence and meticulous attention to detail, such as isolation with rubber dam for moisture control, carefully performed

bonding procedures, incremental composite placement, etc. That is, attention to detail. Amalgam on the other hand is relatively technique insensitive. It may not look like a tooth, and it does contain mercury, but it is a tried and proven material whose benefits overall outweigh the risks.

UW: Yes. The cavity preparation for a composite resin restoration is lesion-dictated. Only the affected tooth structure is to be removed with no need for additional retention features to be incorporated into the cavity preparation design. In the case of amalgam, the preparation has to provide the retentive features needed for the restoration to be successful. Therefore, the extension of the preparation may/will be greater than that for composite resin.

3. For the anterior Class III, is it required that proximal contact be broken gingivally? Facially? Incisally? Yes/No. Rational/Evidence. Applied?

UA: No response noted.

ATSU: We do not break the incisal contact. The contact should be broken gingivally for better access, facially minimal separation from the adjacent tooth for visibility to allow for removal of excess composite and polishability.

UBC: Yes gingivally to make sure extension to sound enamel. Other contacts remain intact unless caries extension dictates otherwise. (Summitt)

LLU: Gingival - yes. Facial - no. Incisal - no. Rationale - less "C" factor issue due to minimal size.

MUC: No response noted.

UNLV: Again, as responded to in #1, facial and incisal contacts need not be broken if the caries is removed. Gingival contact is broken. Sturdevant and Summitt are the texts employed at UNLV and serve as the general reference and rationale for all preparations that are taught.

OHSU: The outline form for composite restorations is determined solely by the extent of the carious lesion and access for removal of carious tooth structure (Summitt et al. Fundamentals of Operative Dentistry, Third edition, Quintessence, 2006). Therefore, we teach the students to break contact gingivally because a carious lesion is usually located gingival to the contact area. We do not teach to break the contact facially and incisally unless it is necessary for caries removal.

UOP: No response noted.

UCLA: Clinic: Contact is usually broken gingivally inasmuch as the carious lesion involvement of this aspect of the contact area dictates so. Otherwise, extensions are lesion- and access-driven.

UCSF: Gingivally yes - convenience form. Facially for D1 students, clinically not always necessary - CRA factors, aesthetics, etc. Incisally No - no evidence.

USC: Access is the name of the game. Who remembers that medieval torture device called a separator, which was used when placing certain gold foils? That was macro-dentistry at its finest in a former era. Times have changed. Capabilities have too. Extension for prevention no longer rules. Access is the name of the game. A more fascinating question would be if we treatment plan doing a direct one-surface composite on a tooth adjacent on the approximating carious surface adjacent to another tooth requiring a crown or an indirect restoration. In other words, why not start the indirect restoration and open up the contact, of course, with rubber dam in place? Access to the carious proximal lesion is almost like doing a buccal pit. Now that is much more conservative than the classic Class II approach on posterior teeth, or even the classic Class III approach on anterior teeth. In other words are we treatment planning to sequence the two lesions together? Start with the larger one and while that is open do the smaller adjacent one with direct access that would not be possible with an intact adjoining proximal surface. Then continue on with the larger one.

UW: The extension of the cavity preparations will be dictated by the size and extension of the lesion. The objective in this situation should be to preserve as much tooth structure as possible, therefore, if caries is not extending past the contact points, the cavity preparation should not extend to break them.

4. What questions/comments do you have based on the survey results? See CODE web site (<http://www.unmc.edu/code/>)

UA: No response noted.

ATSU: No response noted.

UBC: No response noted.

LLU: No response noted.

MUC: No response noted.

UNLV: None.

OHSU: What is the rationale for teaching students to break the facial and incisal contacts?

UOP: No response noted.

UCLA: None.

UCSF: No response noted.

USC: Since USC was part of the response group, the survey and its interpretation are understandable. There is certainly a range of acceptable. We seem to be operating in the era of surgical dentistry and not really paying enough attention to preventive dentistry and remineralization methodologies. Isn't it somewhat ironic that the financial rewards accrue to the surgeons, not to the ones who prevent the surgeries? Dr. Max Anderson is still fighting this war.

UW: No response noted.

5. Other comments related to Principles of Cavity Preparation other than those outlined.

UA: No response noted.

ATSU: No response noted.

UBC: Composite preparations should have no mechanical retention as the loss of bond will lead to loss of the restoration thus decreasing the risk of secondary caries (one of two main disadvantages of composite).

LLU: Trend toward minimally invasive procedures, i.e. slot versus occlusal extension (we do not teach or advocate the tunnel preparation).

MUC: No response noted.

UNLV: None.

OHSU: No response noted.

UOP: No response noted.

UCLA: None.

UCSF: No response noted.

USC: Principles of Cavity Preparation are context sensitive. What material is being used? How much magnification is available? Lighting? Isolation? Skill? Access? Remineralization potential? Technology has changed the game. Optimal treatment might very well be no surgical treatment.

UW: We love G. V. Black :)

III. Caries - Treatment/Detection

Treatment of deep carious lesions by complete excavation or partial removal - A Critical Review, JADA, Vol 139, 705-712, June 2008

(This is not a repeat of a related agenda question, 1999, 2007)

1. Does your school teach the concept of incomplete caries removal? Yes/No.
If YES, for how long? How well accepted and applied by the faculty?
If NO, why not? Should it be taught?

UA: No response noted.

ATSU: Yes, we teach it if the tooth has a vital pulp, no history of spontaneous pain and has normal response to thermal stimuli. Placing thin layer of CaOH over questionably decayed dentin remaining over the pulp followed by a hard base. In the clinic, faculty use this technique when indicated.

UBC: Yes for sealants. However, in simulation we teach complete caries removal and pulp protection.

LLU: Yes, if the pulp would be endangered by complete removal. We have been teaching this approach for 3 years. Faculty give lip service to it at least.

MUC: No response noted.

UNLV: We do teach the idea and controversy of incomplete caries removal in lecture and Sim Lab, but, again, complete caries removal is generally taught with an eye toward licensing exams. Clinical faculty members vary in their implementation of caries removal (complete and incomplete). Direct and indirect pulp capping tends not to be consistent throughout the faculty.

OHSU: No, because we think if the tooth is not properly sealed, there is a higher chance of recurrent caries. After reading this article, maybe we should consider teaching partial caries removal.

UOP: No response noted.

UCLA: We do not currently teach this concept per se - students are taught to remove carious dentin until the texture/hardness is similar to that of uninvolved dentin. Initial discussions of the concept with faculty indicate that a number of them do apply this concept on selected cases in their own practices, and that the concept should be taught on a carefully-considered context.

UCSF: Yes, since 30+ years ago. Endodontists - no. Most general faculty - yes. Especially with ART, minimally invasive approach and glass ionomers.

USC: We are old school and still teach total removal of caries. In student hands, which are novice or beginner hands, it is more predictable to remove the soft stuff than to seal in caries that might become inactive. It is almost anathema to do less precise dentistry, even though the science is beginning to change long-held beliefs.

UW: Yes, we teach that in deep cavity preparations there is no need to completely excavate some of the affected dentin ("leathery dentin") if there is a risk of exposing the pulp tissue. However, it is up to the instructor in the clinic to determine how far to extend and how much dentin to remove.

2. Other comments related to the meta-analysis on this topic?

UA: No response noted.

ATSU: No response noted.

UBC: None.

LLU: No.

MUC: No response noted.

UNLV: No.

OHSU: No response noted.

UOP: No response noted.

UCLA: We find the article to be very compelling - well-respected authors and a robust methodology. This is becoming a hot topic among our Restorative Dentistry faculty. We expect that the concept of incomplete caries removal will remain controversial for the foreseeable future with zealous supporters on both sides of the philosophical fence. That said, we anticipate that the concept will be woven into our curriculum in the very near future.

UCSF: No response noted.

USC: This article is almost a frontal assault on the premise of the founding of our illustrious profession, We can thank the Industrial Revolution for allowing the widespread availability of refined sugar. Its unanticipated consequence was the epidemic of dental caries we still have today, and, of course, why dental schools and we dentists occupy a place in the healthcare professions. Dentistry has changed and will continue to change. We need to accept change that will remodel the fundamental basis of how we started. That is difficult for many of us. Why do we exist? What is our role in society? How do we serve society best?

UW: No response noted.

3. Is Atraumatic Restorative Treatment (ART) taught for root caries? What has been the experience?

UA: No response noted.

ATSU: Hand excavation if caries available, prep-less GIC - Composite.

UBC: No, restoration only if cavitated and then caries removal.

LLU: No.

MUC: No response noted.

UNLV: Atraumatic Restorative Treatment is not taught as a self-standing, definitive treatment modality. It is a technique that is sometimes employed in patients with an extremely high caries rate and high Caries Risk Assessment as an interim restorative modality to control caries and evaluate long term responsibility of teeth prior to definitive treatment plan formation.

OHSU: No.

UOP: No response noted.

UCLA: No.

UCSF: ART used in many applications including Class V.

USC: This seems to be another example of science being at loggerheads with alternative methods of caries management. USC is not very ARTful, but it does strive for excellence. We have no experience with ART.

UW: No, we don't follow the ART approach for root caries.

4. What methods of caries detection are taught in schools (e.g., Explorer (how used), visual, Diagnodent, transillumination, fluorescence, other?)

UA: No response noted.

ATSU: In the didactic module we introduce them to the transillumination, Diagnodent, infra red detection (no radiation higher contrast). Clinically We do not encourage the students to use explorer to detect decay. Using the explorer is distracting and disrupts the integrity of the weakened demineralized enamel which makes remineralization with fluoride impossible. Research indicates only a 50% sensitivity.

UBC: Visual mostly for diagnosis and also radiographs,. Explorer used gently.

LLU: Explorer - not on occlusal pits or white spot lesions, OK on root surface
Visual - with dry teeth and magnification
Radiographic detection - yes
Diagnodent - no
Transillumination - yes
Fluorescence - no

MUC: No response noted.

UNLV: Both traditional and high tech techniques of caries detection are taught. Traditional techniques include: visual inspection w/ magnification, tactile w/ explorer, caries indicator dye, radiographs and transillumination. High tech techniques for caries detection have included Diagnodent, D-Carie

(Midwest Caries I.D.), DIFOTI, Inspektor Pro, and Logicon. The techniques have been introduced in the freshman operative course, and are reinforced in the sophomore Cariology course with a hands on exercise employing extracted teeth, explorers, Diagnodents, D-Carie, and visual criteria..

OHSU: Visual caries detection is the primary method taught. The teeth should be cleaned and dried. Good lighting and magnification are prerequisites. Bite-wing radiographs are also taught to assist in detection of proximal, occlusal, and recurrent caries lesions. Fiber-optic transillumination is taught for detection of proximal lesions in anterior teeth.

UOP: No response noted.

UCLA: Under the new cariology curriculum, we are working to train students and RE-train faculty NOT to use the explorer “stick” in pits and fissures as a detection technique. We stress visual inspection w/ magnification and interpretation of radiographs, while processing the findings in the context of the patient’s caries risk status. Newer detection technologies are discussed didactically but not used clinically at this time.

UCSF: Very controversial. Visual, radiographic, explorer only if open access. Diagnodent as an aid. Future IR (infra red technology).

USC: Is this survey intended to press hot buttons and challenge long-held beliefs? We may say that an explorer is not a definitive instrument to detect caries and determine if treatment of pit and fissure areas on the occlusal or accessible axial surfaces of teeth is indicated, but most dentists seem to be ingrained with the “you have to poke it to diagnose it” approach to detecting caries. This question is also along the lines of surgical management of caries. Yes, there may be some high tech tools to measure caries, but history and caries susceptibility may be the better way of assessing caries risk and what level of care is needed. I hope CAMBRA isn’t turning around in some grave somewhere. Is it time for its resurrection? Oh, wrong holiday. It’s almost Halloween around here. Kind of scary, isn’t it?

UW: In the caries detection and diagnosis lecture the students learn about all the methods mentioned above. However, we do not have them available in the clinic for their use. The use of the explorer is discouraged as the method of detection for caries. They are instructed to use it to check preparations for smoothness, check the marginal fit of restorations that they placed, evaluate marginal integrity of existing restorations, detection of proximal caries under existing restorations, identification of overhangs, and to check the texture of dentin. They are instructed not to put any pressure or “poke” into white or brown spot lesions. Visual inspection with a dry field and magnification are encouraged in addition to the use of the explorer.

5. Does your school use caries detection dye? (Please list product(s). Do students and/or faculty use caries detection dye? What are the criteria?

- UA:** No response noted.
- ATSU:** The students learned about it in the operative didactic module. We have Vista-blue (Methylene blue) available in the clinic. The clinical faculty so not use it very often. Caries indicating liquids are not completely reliable. False positives and negatives occur and indicating liquids will easily stain these areas and the pulp may accidentally be exposed.
- UBC:** No.
- LLU:** Students use SableSeek when they are approaching the pulp (or taking an exam if they choose).
- MUC:** No response noted.
- UNLV:** Caries indicator dye is introduced as a technique that is available, and is used on the clinic floor at the discretion of individual instructors. We use Schein Caries indicator.
- OHSU:** Yes. Product: Ultradent SableSeek. Both students and faculty use caries detection dye to enhance detection of dentin caries. Since the dye will stain fissures, plaque and demineralized enamel, it is not used for enamel caries detection.
- UOP:** No response noted.
- UCLA:** Yes (Snoop - Pulpdent). It is available to students in the clinic and used at their discretion or as directed by faculty to confirm removal of carious dentin. More cases than not proceed from start to finish without its use, and students are taught that false positives are not uncommon.
- UCSF:** Red caries liquid or green - Ultradent.
- USC:** Caries detection dye is available in the green (Ultradent's SableSeek) version and the blue version (different chemistry). WREB doesn't like any red stuff, nor do we have that available. These dyes are useful for novice and beginning students who are unable to visually and tactilely evaluate for the presence of residual caries. And, in fact, if the premise of that June JADA article referenced above is valid, it should not make a difference as long as the area is sealed. The dyes are used on the premise that all caries must be removed. We know anecdotally that doesn't occur, and now the science supports leaving the stuff behind – intentionally!
- UW:** Yes. We have it available in the clinic for their use and they learn to use them in the pre-clinic during caries excavation exercises on extracted teeth. They are advised against removing all stained dentin due to the evidence that areas with less mineral content will stain. The product available is from Ultradent.

IV. Health and Safety Issues Related to Teaching/Practicing Dentistry

1. How are **extracted teeth** with amalgam handled and stored? How long has the protocol been in place? What is the basis/science behind your school's protocol? Are the protocols different for amalgam-free extracted teeth?

UA: No response noted.

ATSU: In the biohazard.

UBC: All extracted teeth, regardless if they have amalgam fillings or not, are disposed of in a "biohazard" container, and disposed or appropriately at an off-site facility.

LLU: No difference in handling between teeth with or without amalgam. Starting in 2007, all teeth have been soaked in Formalin for 2 weeks prior to use in the lab. In laboratory use the students must use universal precautions and PPE (glasses, masks, gown). Basis is OSHA-driven by threat of citation - no science behind it.

MUC: No response noted.

UNLV: Extracted teeth are placed in formalin 10% for two weeks, rinsed three times and then placed in a 10% solution of sodium hypochlorite until used. If the teeth do not have amalgam in them then they may be autoclaved. Once the students are finished with the extracted teeth they are disposed of as a biohazard..

OHSU: Extracted teeth are collected and disposed as hazardous waste by the university Environmental Health and Radiation Safety Department. Extracted teeth are collected in a 1:10 bleach solution prior to pick up. This protocol has been in place for 3 years. The protocol prevents biohazard and amalgam/mercury contamination entering into the waste stream. Protocols are the same for all teeth regardless, this is to simplify disposal.

EXTRACTED TEETH DISPOSAL PROTOCOL

1. Place extracted teeth in plastic Nalgene jar containing 1:10 bleach solution (bleach can be obtained through Clinic Store). Containers will be provided to each department that will be generating extracted teeth.
2. Once a month, take the container to OMS Room 107. Place contents (bleach solution and teeth) in a gallon container located under the sink in the instrument cleaning room in OMS. Contents of the gallon container will be disposed of by EHRS.
3. After contents are emptied into the large container, place new bleach solution in the small container. Refill with enough bleach solution to cover expected contents of extracted teeth.
4. Extracted teeth being saved for preclinical technique lab should also be collected in Nalgene containers with 1:02 bleach solution until students disinfect the teeth via lab protocol.
5. Extracted teeth may be returned to the patient. For extracted teeth with gold castings, see SOD Clinic Manual.

UNIVERSAL PRECAUTIONS ARE TO BE USED THROUGHOUT THIS PROCESS

UOP: No response noted.

UCLA: We use the same protocol for all extracted teeth, regardless of amalgam content. Students use buffered 10% formalin in their collection jars and they continue to store the teeth in formalin for as long as they have them. Some other pertinent points that are communicated to students in the tooth collection protocol:

- Formalin will sterilize the teeth so they do not need to be autoclaved (autoclaving extracted teeth can release mercury vapors if they have amalgam restorations).
- There is no OSHA regulation against collecting and storing teeth. Extracted teeth should be handled using standard barrier techniques.
- California laws regarding the handling and disposal of human tissue and hazardous wastes specifically exclude extracted teeth from regulations.

UCSF: All teeth Gamma irradiate, past 3 years, amalgam teeth disposed of as biohazard. We do not allow students to drill on amalgam contained in the teeth.

USC: USCSD Protocol for Handling Extracted Teeth
Extracted teeth are occasionally collected and used for preclinical educational training. The teeth should be cleansed of visible blood and gross debris and maintained in a hydrated state. Because the teeth will be autoclaved before clinical teaching exercises, using an economical storage solution (e.g., water or saline) may be practical. A liquid chemical germicide (e.g., sodium hypochlorite [household bleach] diluted 1:10 with tap water) could reduce bacterial accumulation during storage, although it does not completely disinfect/sterilize the tooth. Extracted teeth must be placed in a well-constructed container with a secure lid to prevent leaking during transport and labeled with the biohazard symbol. Prior to being used in an educational setting, teeth should be heat sterilized to allow for safe handling. Pantera and Shuster demonstrated elimination of microbial growth using an autoclave cycle for 40 minutes. However, since preclinical educational exercises simulate clinical experiences, students enrolled in dental educational programs should still follow standard precautions. Autoclaving teeth for preclinical laboratory exercises does not alter their physical properties sufficiently to compromise the learning experience. However, autoclave sterilization of extracted teeth does affect dentinal structure enough to compromise dental materials research. The use of teeth that do not contain amalgam is preferred because they can be safely autoclaved. Extracted teeth containing amalgam restorations should not be heat sterilized because of the potential health hazard associated with possible mercury vaporization and exposure. If extracted teeth containing amalgam restorations are to be used, their immersion in 10% formalin solution for 2 weeks has been found to be an effective method of disinfecting both the internal and external structures of the teeth (OSAP Info).

The Centers for Disease Control and Prevention (CDC) addressed this issue in Guidelines for Infection Control in Dental Health- Care Settings, 2003.(1) They state the following:

"Extracted teeth that are being discarded are subject to the containerization and labeling provisions outlined by OSHA's bloodborne pathogens standard. OSHA considers extracted teeth to be potentially infectious material that should be disposed in medical waste containers. Extracted teeth sent to a dental laboratory for shade or size comparisons should be cleaned, surface-disinfected with an EPA-registered hospital disinfectant with intermediate-level activity (i.e., tuberculocidal claim), and transported in a manner consistent with OSHA regulations.

"However, extracted teeth can be returned to patients on request, at which time provisions of the standard no longer apply. Extracted teeth containing dental amalgam should not be placed in a medical waste container that uses incineration for final disposal. Commercial metal-recycling companies also might accept extracted teeth with metal restorations, including amalgam. State and local regulations should be consulted regarding disposal of the amalgam."

Additionally, extracted teeth should be cleaned and then decontaminated with a suitable disinfecting or preserving agent.(1,2) Extracted teeth without amalgam fillings may be autoclaved. (Teeth containing amalgam should never be heat sterilized because the high temperatures of the sterilization cycle can release mercury vapor.)(2,3). Extracted teeth may be given to the patient or may be used in an educational setting once proper decontamination procedures have been conducted. (*cited references available on request*)

UW: They are handled with gloves and kept in a container with a diluted bleach solution or with moist gauzes with the diluted bleach solution. The protocol has been in place for approximately 10 years and is used for amalgam-free extracted teeth also.

2. Have there been **air-quality issues** with fumes and/or particulate matter? What is/are the specific issue? How did the issue surface? (Inspector, complaint, etc.) What was the resolution?

UA: No response noted.

ATSU: No.

UBC: No - we have not encountered such problems. Our facility is two years old, and meets or exceeds any building code requirements.

LLU: No issues - but must use glasses and mask.

MUC: No response noted.

UNLV: No.

OHSU: Students are required to wear PPE whenever that are in the Sim Clinic doing preparations and restorations of any sort. With regards to air issues, yes. In the preclinic setting there are definite issues with “ivorine dust”. This occurs when students are preparing (75 students) teeth all at once and the high velocity air suction in the manikin is not adequate to remove all airborne particulate matter that is produced during tooth preparation. This is obvious by the layer of “ivorine dust” that covers horizontal surfaces in the preclinic. That includes desk tops, floors, operating lights and certainly students and faculty. Faculty and students will frequently comment on the dust level and on occasion about the perceived irritation to their respiratory tracts. At this time there has been no resolution to the problem and none has been proposed.

UOP: No response noted.

UCLA: No.

UCSF: We had a ventilation clearance study and methyl methacrylate study done in the lab. All okay. Desktops have disposable paper covers. UV tests done to look at surface contaminants.

USC: No issues.

UW: No.

3. Have there been issues with **noise**? If YES, please respond per the questions asked in the air quality issue.

UA: No response noted.

ATSU: No.

UBC: No.

LLU: No.

MUC: No response noted.

UNLV: No.

OHSU: There have been on noise issues.

UOP: No response noted.

UCLA: No.

UCSF: No, other than cell phones!

USC: No issue.

UW: No.

4. What are your school's protocols for dealing with **student** accidental needle sticks, bur punctures, and blade cuts?

UA: No response noted.

ATSU: Students should complete post exposure incident report which includes information as (person involved, type of incident and the exposure incident information, action taken, exposed person and source patient information). The students must report to the office of clinical activities to receive a copy of the report than go to an occupational health clinic.

UBC: We essentially follow the UBC Hospital and Student Health Services protocol for needle stick exposures which is similar to existing currently accepted protocol as per the CDC. A University Student and Visitor Incident/Accident Report is also filled out.

LLU: **NEEDLE STICKS**

Blood and/or Body Fluid Exposure

Needle Stick Exposure Monitoring Program

1. Wash immediately with anti-microbial soap and water.
2. Obtain from Dental Clinics Manager's office a "Report of Accident or Illness" (Form 20-0032-A - see page 11) and Form DWC 1 (staff and faculty - see page 10) to be completed by Supervisor, Special Care for Dentistry RN, Instructor, or Dental Clinics Manager.
3. Report to Special Care Dentistry (SCD). The RN will give the student/employee a yellow packet. The student/employee will go to the LLUMC Emergency Department to obtain prophylactic medications according to protocol. Medications should be administered within two hours of the incident. Prior to going to the Emergency Department, the SCD Nurse will draw **ONLY** the source patient's blood. The student/employee will need to take all other paper work to the Emergency Department (please allow time for paperwork and waiting while in the emergency department).
If the incident occurs after 5pm, go to the LLUMC Emergency Department. The source patient can either go with the student/employee or follow up in employee health. Make sure that the source patient is given the lab requisitions and blood tubes marked with the SS code number. They can either go to the lab themselves or go to Employee Health for direction.
4. All follow up care will be provided by Employee Health Services. If the student/employee opts to take the prophylactic medications they will follow up in the Emergency Department for more frequent testing. If the medications are not taken the follow up is in Employee Health Services. For questions, call 88775. Prophylactic medications for HIV (done at LLUMC), must be within 2 hours of incident (allow time for paperwork and waiting at LLUMC.)
5. Return the golden rod copy to Dental Clinics Manager's Office.

MUC: No response noted.

UNLV: All injuries are reported to the Health and Safety, OSHA, and Infection Control Manager and the student fills out an incident report. The patient is asked to take a blood test and, if in agreement, signs an agreement for UNLV to receive a copy of their blood test. The student is treated by the Student Health Center.

OHSU: The students are provided with the following information:

Soft Tissue Lacerations:

Lacerations of soft tissue can occur in various ways. These include all of the following:

- dental burs
- cutting disks
- rubber dam clamps
- polishing disks
- hand instruments
- scalpel blades

They may be prevented by remembering that you are using something that can damage tissue very easily and using a good finger rest and retraction/protection of the tissue. This retraction can occur in several ways. Use of a rubber dam, cotton roll, dri aide, dental mirror, suction tip, or other retractor are all good ways to get the tissue out of the field you are trying to work in.

Should a laceration occur, it is very important to take care of it and notify your instructor and the patient, as well as document it properly.

- Small lacerations not requiring sutures may be handled by informing your instructor and having them evaluate it. Then informing the patient and how they are to take care of it to make it heal. Proper documentation in the chart that the incident has occurred.
- Larger lacerations that require suturing involve immediate care to control bleeding. Direct pressure initially and getting someone or yourself to get your instructor to evaluate is the next step. If your instructor is not comfortable with suturing it they should help you find an oral surgeon or periodontist that would help with suturing. Instructions for care and follow up are needed. Proper documentation should be made in the chart by all parties involved and an unusual occurrence form should be completed by all parties.
- If the injury occurs to a student or employee, seek appropriate medical care via student health, employee health, or the OHSU ER. **See below.**

DENTAL/GRADUATE STUDENTS ACCIDENT/EXPOSURE PROTOCOL

STUDENT CARE:

- A.) For situations involving exposure to patient blood/body fluids, wash the wound or exposed area well with soap and water or antiseptic. For other injuries, give immediate First Aid as appropriate.
- B.) Notify your instructor.
- C.) Report incident to Office of Clinical Affairs, room 104. Exposure must be reported promptly. Obtain Unusual Occurrence Report Form, complete and return within 24 hours. If it is after hours, report the incident the next school day.
- D.) Call the Student Health Service at 4-8665 (ask for the nurse) for personal care of your injury.

For blood/body fluids exposure have the following information available:

- Nature of injury
- Significant source patient medical history
- Source patient availability for blood test

If the exposure is from a known HIV positive patient, you should notify the Student Health Service within 15 minutes of the exposure. IF Student Health Services is not available go immediately to the OHSU emergency Department.

For accident or blood/body fluids exposures after hours or if Student Health Service is closed go to the OHSU Emergency Department located next to Hospital South.

SOURCE PATIENT CARE:

Contact the Office of Clinical Affairs (room 104) to obtain verbal consent from the patient for the blood sample. The blood sample, evaluation and instruction for the source patient, is provided without cost to the patient.

OFFSITE EXPOSURE PROTOCOL:

For exposures to patient blood/body fluids, wash the wound or exposed area well with soap and water or antiseptic. Report exposure to the onsite supervisor immediately. Request source patient testing. Contact Student Health Services at (503) 494-8665 for availability or go the OHSU Emergency Department. If available, baseline blood testing may be done at the offsite location. Follow up will be through OHSU Student Health. Report incident to Office of Clinical Affairs (room 104) and complete Unusual Occurrence Report.

UOP: No response noted.

UCLA: UCLA Dental Center exposure Incident Protocol

Check off (✓)

_____ EXPOSURE INCIDENT

_____ First Aid (wash injured site with soap & water. Bandage as necessary
Flush mucous membranes with cool water)

_____ Exposed person reports to Infection Control Officer

_____ Obtain source person's chart or look in SOE Computer System. Fill out
Employee's Referral for Industrial Injury form

_____ Call Hospital Exposure Coordinator at Occupational Health Facility
(OHF) at 67-120 CHS, x55703 or at office at x56771 to notify and/or
make appointment with her.

_____ Exposed person goes to Occupational Health Facility (bring source
patient's chart)

_____ OHF indicates tests to be done on source patient.

_____ Obtain written permission for HIV testing from source patient. Fill out
Consent for HIV Antibody Blood Test form (one copy to patient and one
for patient's dental chart).

_____ When source patient is to be tested, pre-register at Hospital Outpatient
Pre-Registration desk x58911 (you will need patient's chart or access to
SOE Computer System).

_____ Fill out *Bloodborne Exposure Source Jab* form.

_____ Write pre-registration number, patient's name, birth date and sex on lab
order in upper left hand corner.

_____ Escort patient to Clinical Lab, A7-147 (take lab request form(s)). Notify
Hospital Exposure Coordinator or pre-registration number of source
patient.

_____ Confidential test results are accessed by Occupational Health Facility.

_____ Counseling

UOP: No response noted.

UCSF: We have a hot line protocol with the medical school. Counselor with
blood testing for all parties involved with follow up.

USC: USCSD Protocol for Injuries

Injury should be reported within 1 hour -- get tested at Student Health Center or
Good Samaritan Hospital if night clinic injury. Get tested day of exposure, 1
month, 3 months and 6 months from injury/exposure date.

Offered medications as needed -- Combivir, HBIG, Remcombivax etc.

The actual Policy:

If a student, patient or employee of the Dental School sustains an accidental injury
from a contaminated needle, instrument or from a bite that breaks the skin, the
following procedure must be followed:

1. The wound is to be washed with soap and water immediately, and the
supervising faculty must be notified.

2. The source patient, or his or her parent/guardian, should be asked if they know their HIV and hepatitis status. If they do not know their status, they may be asked once if they agree to be tested. Source patients who consent to testing will be tested for HIV antibody, HBV surface antigen when indicated, HCV antibody, and VDRL (syphilis) test.
3. The injured person and the source patient (if consent has been obtained) should go at once to room 235 or room 237. A Contaminated Puncture Wound form must be completed prior to authorization for treatment. This documents the injury and becomes a part of the School's permanent records. USC employees must complete a "Supervisor's Report of Injury" form and an "Employee's Claim for Workers' Comp. Benefits" form - these forms are available in the Human Resource Office, room 213, during normal business hours.
4. If a contaminated puncture wound occurs during regular hours, the following procedure should be followed:
 - A. The person sustaining the injury must take the authorization for treatment to the Student Health Center within one hour. The receptionist should be told that a contaminated puncture wound has occurred. They have an established protocol for handling this type of accident. USC employees must take a signed "Supervisor's Report of Injury" and signed "Employee's Claim for Workers' Comp." form to the Student Health Center.
 - B. Their policy includes drawing blood to test for hepatitis B surface antibody (if appropriate), hepatitis C antibody, and HIV antibody and VDRL test.
 - C. If the attending physician at the Student Health Center believes it is warranted, gamma globulin and tetanus vaccine will be administered. Depending on circumstances of the injury, post-exposure prophylactic drugs may be prescribed. If post-exposure drugs are prescribed, an internal requisition will be needed for an individual to purchase the medication(s) from the USC pharmacy. A requisition can be obtained from room 235 or room 237. The internal requisition will need to be signed prior to the individual picking up the medication(s).
 - D. Results of the injured person's tests will be given only to that individual. Results of the source patient's tests will be shared only with that source patient (or parent/guardian). The injured person will only be told the source patient's lab results if the source patient has consented to release the information to the injured party.
 - E. One month, 3 months and 6 months after exposure, the person sustaining the injury should return to the Student Health Center to be tested again. It is thought that seroconversion to HIV or hepatitis should occur during that period in the unlikely event that it could have been transmitted by the injury. All students will need to pick up a payment authorization form from room 235 or room 237 prior to all follow up visits at the Student Health Center.
5. If a contaminated puncture wound occurs after hours or if the USC Student Health Center is closed, the following procedure should be followed:
 - A. Complete steps 1 and 2 above.
 - B. Paperwork for after hour non-life threatening emergencies can be found in the Graduate Prosthodontic resident lab DEN 114, Dental Hygiene Office DEN 107, Second Floor Information Desk Office DEN 247, one of the second floor faculty lounges DEN 252 or DEN 234. The necessary paperwork for treatment at the Good Samaritan Hospital is in specially marked envelopes titled "Faculty/Staff" or "Student/Patient". The forms include a payment authorization, releases of medical information form, an incident report, and a map. USC employees will find the appropriate Workers' Comp forms in the "Faculty/Staff envelope. Please follow the directions printed on the outside of the envelope(s).

- C. Students, patients, faculty and staff go immediately to the Good Samaritan Hospital.
- D. Report the next morning to room 235 or room 237 to complete the documentation for our records.

ALL follow up medical visits for all non-life threatening emergencies will be conducted at the USC Student Health Center.

UW: Student is taken to the emergency room at the hospital for a blood draw. Paperwork pertaining to the event is filled out. Student receives a tetanus shot (if needed) and HIV prophylactic medication if patient HIV status is unknown. Patient is taken to the emergency room for blood draw.

5. What are the protocols for patients injured during procedures by burs, diamonds, disks, blades?

UA: No response noted.

ATSU: Same procedure as for students.

UBC: If the injury is significant, we summon our oral surgeons. If none is available, we escort the patient to the Emergency Department of our adjacent hospital. A University Student and Visitor Accident Report is filled out.

LLU: Depending on the severity of the wound and requirement for sutures, etc. Have consult with Oral Surgery or Periodontics department depending on the location of injury to determine the course of treatment..

MUC: No response noted.

UNLV: Injuries are reported to the Health and Safety, OSHA, an Infection Control Manager and the student fills out an incident report.

OHSU: See response to previous question.

UOP: No response noted.

UCLA: Wounds requiring primary closure are managed immediately by Oral Surgery. Student or faculty notifies clinical administration and student completed an incident report.

UCSF: Same as stated in response to previous question. All punctures are treated the same. We discuss it but do not have any protocols in place. Blood levels etc., but modern lifestyles have multiple exposure avenues.

USC: See response to previous question.

UW: Minor injuries are treated by the student and supervising faculty.

6. Does your school have concerns with **Bisphenol A** in resin restorations? What is the evidence? If YES, please explain:

UA: No response noted.

ATSU: No.

UBC: No - as is the Canadian Dental Association's 2008 recommendations to Dentists, and in accordance with our own Biomaterials authorities, the concentration of Bis-GMA, the chemical of concern in composite resins, is well within safety limits, and not closely related to Bisphenol A which has concerns associated with it.

LLU: No.

MUC: No response noted.

UNLV: No.

OHSU: No. Many resin materials have been shown that they do not release bisphenol A. The first article cited below is a systematic review of this issue with sealants and cites several sources that have shown no bisphenol A release from sealants. Actually, they note that none of the ADA –accepted sealants have been shown to release bisphenol A. The second article shows no bisphenol A release from a couple of dental composites. When bisphenol A is released, it tends to be released quickly and is usually almost completely eluted within the first day after placement, and therefore tends not to be a chronic source of this monomer. The last two articles demonstrate this fact. Finally, the ADA has evaluated this issue and has the following statement on their website: “The ADA believes any concern about potential BPA exposure from dental sealants or composites is unwarranted at this time. When compared with other sources of BPA, these dental materials pose significantly lower exposure concerns.” We agree with this assessment.

- ▶ Azarpazhooh A, Main PA. J Can Dent Assoc. 2008 Mar;74(2):179-83. Is there a risk of harm or toxicity in the placement of pit and fissure sealant materials? A systematic review.
- ▶ Polydorou O, Trittler R, Hellwig E, Kümmerer K. Dent Mater. 2007 Dec;23(12):1535-41. Epub 2007 Apr 3. Elution of monomers from two conventional dental composite materials.
- ▶ Mazzaoui SA, Burrow MF, Tyas MJ, Rooney FR, Capon RJ. J Biomed Mater Res. 2002;63(3):299-305. Long-term quantification of the release of monomers from dental resin composites and a resin-modified glass ionomer cement.
- ▶ Ferracane JL, Condon JR. Dent Mater. 1990 Oct;6(4):282-7. Rate of elution of leachable components from composite.

UOP: No response noted.

UCLA: No.

UCSF: No response noted.

USC: This matter was only recently publicized in the press for common items like baby bottles. If you news-Google "bisphenol," there are entries ongoing now. This has turned into industry having a vested interest in getting a favorable US government report. The science is still sorting through all of this. The jury is still out for determining the risk of this material in resin restorations, If that becomes an important concern, dentistry will have to get along without adhesive restorative materials, and possibly amalgam (because of mercury). Is it time to retire?

UW: There is evidence of estrogen leaching from the monomers as published by Geurtsen, W. Et al. However, the school has no serious concerns at this time regarding the use of resin-based material.

V. Curriculum

1. Has your pre-clinical or clinical operative curriculum recently undergone a significant revision? What changes did you make (additions or deletions)? Why did you make the changes and what positive or negative outcomes have you seen?

UA: No response noted.

ATSU: The Pre-clinical operative curriculum at ASDOH is six years ago. We revise the module every year by adding new techniques and using new materials. Our Modules had improved a lot during the last two years .By adding CAMBRA new composite material a techniques, advanced procedures for operative dentistry and esthetic dentistry. We deleted teaching Inlays we are teaching Onlays only. During the second year of the operative module our students are more clinically orientated by creating clinical scenarios and using natural teeth mounted in the typodont. Starting this year we introduced Portfolio, a new area of performance assessment related to monitoring of student's mastery of core curriculum. The portfolio is evaluated toward the end of the DMD program (D4 year). Portfolio grades are either "S" (satisfactory) or "U" (unsatisfactory). Students may be asked to make revisions to their portfolios before receiving a satisfactory grade.

UBC: No.

LLU: No major changes. We now teach composite resin prior to amalgam and have added glass ionomer restoratives to the curriculum.

MUC: No response noted.

UNLV: Our preclinical and clinical operative curriculum has not undergone significant revision. We redistributed some of the procedures in preclinic to encourage more just-in-time learning experiences.

OHSU: We changed the curriculum to add a summer session for the new DS2 students to orient them to the mannequin and work on basic cavity preps and restorations. They meet in the summer twice a week (4 hours) for six weeks. Then we decreased the contact time to once per week (4 hours) in the fall, winter and spring.

UOP: No response noted.

UCLA: Yes. UCLA's entire pre-doctoral dental curriculum has undergone a major revision and it is being rolled out with current D1 students. The curriculum is organized along 6 core thematic tracks. Preclinical operative dentistry has been renamed "Conservative Direct Restorations" and is part of a continuum (along with "Conservative Indirect Restorations" see Fixed Prosthodontics) in the "Restoration of Form, Function, and Esthetics" core. The content of the preclinical course has been decompressed and now extends over six academic quarters vs. four. The course now addresses the primary dentition as well, whereas this material was previously taught in a separate preclinical Pediatric Dentistry course. The course is also closely correlated with courses in the "Caries Management" core – restoration of carious lesions is now being conceptually positioned as an end stage treatment of caries management.

UCSF: Yes, Morphology is no longer a stand alone class, but integrated over the 2 years. Cosmetic dentistry greatly expanded. Indirect tooth colored restoratives expanded with a lab visit. New Advanced Clinical Skills course 4th year sim & WREB prep (night class). e-Portfolios, evidence based essay, Clinical OSCE's, natural tooth exercises.

USC: There is change in the winds, but nothing official yet. The intention is to continue teaching traditional subject such as amalgam and cast gold restorations, but expand on bonded restorations. Each subject does not fit into our 14-week trimester cycle. Instead, Operative will be a continuum that customizes the number of weeks each subject is scheduled. Some might occupy only a few weeks, but others several weeks. We currently begin teaching Operative in the third or last trimester of the freshman/first year. Plans are to move that up to the first trimester. In any case we believe in teaching contemporary dentistry that is evidence-based and of value to society. This is obviously an ever-shifting playing field for what the public wants, needs, or demands. The curriculum emphasizes learning essential knowledge and skills, but also having the judgment and values to implement dental services for the benefit of the public. Part of the skill set that the PBL curriculum emphasizes is critical thinking, research, vetting out credibility of published sources, etc.

UW: Yes, we are undergoing a revision.

2. What is the time gap (in semesters or quarters) between the end of pre-clinical operative dentistry and the start of clinical operative experiences for your students? Describe the curricular progression of your students in operative dentistry (Example-Freshman pre-clinical operative, Sophomore block clinic rotation, Junior-Senior

clinics, or Junior clinic, Senior Comprehensive / General Dentistry clinic). Is there any concern with diminishing knowledge or skills between pre-clinic courses and pre-clinical practice? What types of knowledge or skill erosion did you observe and what have you done about it?

UA: No response noted.

ATSU: The main operative module is introduced during the D1 S2 year for 12 weeks . Students will learn all the Cariology, CAMBRA, Prevention, Basic operative procedures, Complex operative procedure Onlays. During the D2S1 the students will learn about more advanced technique and esthetic dentistry. The student also gets exposed to clinical scenarios where they present a treatment plan and treat the typodont like a patient case. During D2S2 the student will take multiple competency exams . In addition the students should go through an OSCE which test their problem solving ability and critical thinking. The students do not progress to the clinic and start working on patients until they pass all pre-clinical competencies exam toward the end of D2S2 year.

UBC: No time gap, there is a gradual transition from simulation to patient care for third year students and they are permitted to perform additional procedures as they progress and pass competency assessments.

LLU: There is a 10-12 month lag from the end of D1 operative course to when the student would do their first clinical operative procedure on a patient. Yes this is of concern. However, during this interval the student is engaged in preparing teeth for single cast restorations and fixed prosthodontic restorations. The progression is:

- D1 - preclinical operative course
- D2 - preclinical cast restorations
- D2 4th Q - pass an OSCE for amalgam and composite prior to seeing patients
- D2 - 4th Q - get first patient for diagnostic procedures - may or may not do operative procedures
- D3 - 1st Q - start restorative treatment on patients

Students have few opportunities to do minor restorations on patients

MUC: No response noted.

UNLV: The gap is no more than 4 weeks. Our DS1s begin operative the 2nd trimester meeting once a week, and progressing through the 3rd trimester meeting twice a week. Operative then becomes a portion of the restorative stream, where procedures are repeated throughout the DS2 year. Simultaneously, the DS2s enter clinic in the 1st trimester, and most have completed some operative procedures starting the 2nd trimester. This is usually achieved through mentor oversight and the “vertical term” office approach. Skills do not necessarily erode, but require that leap which comes with treating a patient rather than a typodont. Our DS2 clinical session allows closer supervision for these entry forays into applied operative procedures.

- OHSU:** Eight weeks between the end of preclinic and actual preparations and restorations (DS2 to DS3). Of course we have some concerns regarding diminishing knowledge/skills during this period. Students are urged to prepare extracted teeth prior to their actual first or second clinical experience. Our observations vary from not much to “which end of this handpiece does the bur go in?” Just like real life.
- UOP:** No response noted.
- UCLA:** Technically, there is no time gap. Upon completion of preclinical operative (halfway through the D2 year), students are eligible to perform operative procedures in the clinic. Their first procedure must be done as a “2nd-Year/4th-Year” case wherein the D4 students assist the D2s. A few D2 students avail themselves of this opportunity early, but in reality students typically don’t actively engage in restorative patient care for 3-9 months following the completion of the preclinical operative curriculum.
- UCSF:** We actually have overlap. D2 students assist and perform initial exams etc. Sim lab has final competencies on typodonts and students can only perform restorative once all sim lab competencies are completed. If students had to remediate, they are barred from specific procedures. Competencies are comprehensive - so little diminishing seen. Problem is student organization, from learning clinical procedures, AXIUM, and to finally to first restorations - we see a drop off of content knowledge - EXPONENTIALLY. We’re working on this with video and lecture library.
- USC:** Timing is the key. Deliver the knowledge and skills when they can be applied, in this case clinically. It is also important to periodically validate competency over time. Periodic certification via examination for a particular skill might become a more significant part of the educational program. We currently perform clinical exams, but these are relatively modest compared to the quantity and quality that a skilled clinician can achieve over a career of dental practice. This logically leads to the notion of Lifelong Learning, which is a core value at USC.
- UW:** There is a time gap of 4 months between the end of Spring quarter of the second year in the preclinic and the start of the clinical activities in the Fall quarter of the third year. The curricular progression of our students in operative dentistry is as follows:
- Freshman: cariology course, cavity preparation principles and instrumentation.
 - Sophomore: preclinical operative courses
 - Juniors & Seniors: clinical operative dentistry
- There is no concern with diminishing knowledge or skills between the preclinical experience and the clinical practice. However, students seem to forget the details in some procedures. A clinical reference manual is available to aid them in this respect. Also repetition seems to be very helpful, especially after the students have seen the clinical cases.

Regional CODE Agenda

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

Dr. George McCulley of WREB made a presentation on the WREB examination

Suggestions for CODE.

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

Create a shared database of presentations and designs.

Develop models of agreed to preparations

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

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

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

No responses noted

3. Other comments/suggestions?

No responses noted

CODE REGIONAL MEETING REPORT FORM

REGION II Midwest

LOCATION AND DATE OF MEETING:

University: UMKC School of Dentistry

Address: Kansas City, MO 64108

Date: September 28 - 30, 2008

CHAIRPERSON:

Name: Dr. John Purk Phone #: 816-235-2168

University: UMKC Fax #: 816-235-2157

Address: Kansas City, MO 64108-2784 E-mail: purkj@umkc.edu

List of Attendees: Please see reverse of this page for List of Attendees to 2008 Regional Meeting

Suggested Agenda Items for Next Year:

1. Cariology
2. Remineralization procedures for dentin and enamel - materials (evidence-based)
3. Retention requirements for different restorative materials
4. Resistance, retention and outline forms necessary for composite preparations

LOCATION AND DATE OF NEXT REGIONAL MEETING:

Name: Dr. Dave Tyler Phone #: 306-966-5135

University: University of Saskatchewan Fax #: 306-966-6632

Address: Saskatoon, Saskatchewan, CA E-mail: dwt704@campus.usask.ca

Date: September 17 - 19, 2009

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

Deadline for return: 30 Days post-meeting

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

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

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

CODE Region II Attendees Form

NAME	UNIVERSITY	PHONE #	FAX #	E-MAIL ADDRESS
Dr. Susan McMillen	UMKC	(816) 235-2019	(816) 235-5524	mcmillens@umkc.edu
Dr. Larry Haisch	UNMC	(402) 472-1290	(402) 472-5290	lhaisch@unmc.edu
Dr. Bill Johnson	UNMC	(402) 472-9406	(402) 472-5290	wwjohnson@unmc.edu
Dr. Craig Passon	University of Colorado	(303) 724-7073	(303) 724-7079	craig.passon@uchsc.edu
Dr. Gary Stafford	Marquette University	(414) 288-5409		gary.stafford@mu.edu
Dr. R. Scott Shaddy	Creighton University	(402) 280-5226	(402) 280-5094	raymondshaddy@creighton.edu
Dr. Marl Belcher	SIU	618-474-7063	618-474-7150	mbelcher@siue.edu
Dr. Christa Hopp	SIU	618-474-7052	618-474-7150	chopp@siue.edu
Dr. Noriko Boorberg	Manitoba	204-789-3752	204-789-3916	n_boorberg@umanitoba.ca
Dr. Stuart McNally	Creighton University	402-280-5643 402-212-7886	402-280-5094	sj_mcnally@creighton.edu
Dr. Deborah Cobb	Iowa	319-335-7214	319-335-7267	deborah-cobb@uiowa.edu
Dr. David Tyler	Saskatchewan	306-966-5135	306-966-6633	dwt704@campus.usask.ca
Dr. Brian Williams	UMKC	816-235-2078	816-235-5524	williamsbr@umkc.edu
Dr. Derek Williams	UMKC	816-235-6682	816-235-5524	williamsdere@umkc.edu
Dr. John Purk	UMKC	816-235-2168	816-235-5524	purkj@umkc.edu

**2008 NATIONAL CODE AGENDA
REGION II
SUMMARY RESPONSES TO NATIONAL AGENDA**

(Editor note: Questions condensed for printing purposes)

I. Use of Simulation in Teaching and Testing: Now and in the Future.

Most schools had at least one component of each department simulated in the pre-clinical laboratory. In the other schools, oral surgery was the area not using simulation.

Some procedures that were taught in the lab were not necessarily taught in the patient clinic due to a limited supply of patients needing those procedures. Those procedures included fixed partial dentures, ceramic veneers, cast gold inlays and onlays, ceramic/composite inlays, diastema closures, peg lateral build-ups, and Cerec preparations/restorations. All schools utilized simulation to teach some or all of their pre-clinical endodontic procedures. Creighton, Manitoba, UMKC, UNMC, and SIU reported that they have required clinical competencies that are tested on typodonts. Five of the schools have innovative or new techniques that have been incorporated into their laboratories. Two schools, Manitoba and UMKC, use performance in the simulation lab as a means to identify superior students for mentoring, teaching assistant, etc. All schools stated that, to different degrees, there was usually a positive correlation between simulation and clinical performance.

UNMC was the only school that reported that “generally speaking” students who perform better in the simulation are more successful in licensing examinations. As to the question about any evidence that would demonstrate that the manikin crown procedure was not a valid way to test for competency, four schools responded in the negative, and three others questioned the use of manikins.

II. Principles of Cavity Preparations - Outline Extension

Whether or not to break contact with the adjacent tooth was most likely dependent on the material being used. The gingival walls in amalgam preparations were mentioned several times as needing to be broken due to the likelihood of recurrent caries in that area. All schools reported that in amalgam preparations the contacts with adjacent teeth should be broken, unlike contacts in a composite preparation. Most schools teach that caries and unsupported enamel should dictate how far to extend Class III preparations with a few schools mentioning that they break contact gingivally and possibly facially. Two schools stated that there was a sense of justification and lack of consensus among schools as to a standard of care. Other comments related to Principles of Cavity Preparation included entries from Manitoba and SIU that they tend to follow G. V. Black’s principles for amalgam preparations

III. Caries - Treatment/Detection

All but one school teach the concept of incomplete caries removal. Comments related to the meta-analysis on this subject included following statements: studies show that most trained practitioners fail to completely remove all caries: professors leave questionable dentin with Dycal/resin-modified glass ionomer: the evidence is compelling that complete removal is unnecessary: and there are too many variables to get reliable data. Atraumatic Restorative Treatment for root caries is used at Iowa, Manitoba, UMKC, and SIU in a variety of situations including special patient care and for pediatric teeth in special situations. For caries detection, most schools used visual changes, radiographs, transillumination, and caries detection solution with explorers used cautiously or not at all.

IV. Health and Safety Issues Related to Teaching/Practicing Dentistry

Regarding the handling and storing of extracted teeth with amalgam, two schools do not use extracted teeth with amalgam in any of their courses. The other schools use a variety of methods. Two schools, UMKC and UNMC, reported air-quality issues involving dentoform and tooth dust, methyl methacrylate, grinding and polishing materials and odors from casting burnout procedures. Noise issues were not reported by any schools. All schools have protocols for dealing with student accidental needle sticks, bur punctures and blade cuts. The complexity of the protocols varied, but they all included having the student's and patient's blood tested for communicable diseases. All schools, have protocols for dealing with patient injuries during procedures by burs, diamonds, disks, and blades. The protocol at most schools depended upon the extent of the injury. No schools reported any concerns with Bisphenol A in resin restorations. It was reported that Canada has a partial ban on the chemical and is considering a total ban which may, or may not, have an effect on dental composite resin use in Canada in the future.

V. Curriculum

Four schools reported a significant revision in their curriculum. Creighton added a new seven week summer course entitled "Intro to Clinic" which runs between the freshman and sophomore year. Iowa revised their entire curriculum with a stronger emphasis on caries risk, detection, prevention, and removal. They report a more comprehensive approach to Operative Dentistry in general and a defect-specific approach to carious lesions. On the downside of their new curriculum, some concepts are not accepted by other departments, and students receive conflicting information. Manitoba is now requiring students to pass competencies in order of their complexity, starting with the simplest. This seems to reduce the number of students failing competencies due to lack of experience. They are now introducing the didactic and pre-clinical components for Cerec in the 2nd year Operative dentistry course. SIU reports that they have removed gold inlay and onlay procedures and replaced them with Cerec instructions. The time gap between the end of pre-clinical operative dentistry and the start of clinical operative experiences ranged from no gap at several schools to a gap of five months. Concern about diminishing knowledge or skills is a concern. UMKC instituted a bridge course during the summer of students 3rd year before they start the clinic. Other schools handle the gap with mini review courses or complex procedures on dentoforms to compensate for the lack of clinical exposure to complex situations.

2007 NATIONAL CODE AGENDA
REGION II RESPONSES
(Evidence cited where applicable)

Region II School Abbreviations

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

I. Use of Simulation in Teaching and Testing: Now and in the Future.

Typodonts and simulation have been an accepted protocol for training and measuring competency for dental students prior to performing procedures on patients. In addition, simulation has been used for over ten years as a means to evaluate competency by licensing agencies. Simulation includes not only the standard surgical procedures as crown preparations, but also restorations and endodontic procedures. Simulation is used as a default option in order to provide training for students when there are insufficient patient resources; i.e., porcelain veneer procedures, ceramic inlay/onlays, etc. The ADA, ADEA and other dental organizations have expressed opposition to the use of human subjects for licensing examinations.

It would be appropriate to discuss the use of simulation in Teaching and Testing especially as relates to validity and reliability.

1. What procedures are you currently simulating in the pre-clinical laboratory?

COLO:	Yes	No	Comments
Operative	X		All components
Crown & Bridge	X		All components
Endodontics	X		All components
Periodontics	X		Scaling and instrument management only
Oral Surgery	X		Sectioning and removal of teeth
Pediatrics	X		All restorative components
Esthetic Dentistry	X		Veneers only
Implants	X		Restorative only

CRE:	Yes	No	Comments
Operative	X		typodont, Manikin
Crown & Bridge	X		Typodont, Manikin
Endodontics	X		Typodont, Manikin, plastic tooth in plastic block
Periodontics	X		Manikin for proper instrumentation and positioning
Oral Surgery	X		Suturing on pillow, Surgical typodont model
Pediatrics	X		Typodont
Esthetic Dentistry	X		Typodont, Manikin
Implants	X		Manikin (Kilgore) exercise for implant placement, surgical guides, fixture-level impressions

IOWA:	Yes	No	Comments
Operative	X		
Crown & Bridge		X	The Prosthodontic Department does this
Endodontics		X	The Endodontics Department does this
Periodontics		X	Don't know
Oral Surgery		X	
Pediatrics	X		Short rotation in the Sim Clinic before start with patients
Esthetic Dentistry	X		
Implants		X	The Prosthodontic Department does this

MAN:	Yes	No	Comments
Operative	X		Extracted teeth & Fraasco typodonts
Crown & Bridge	X		Extracted tooth for Pinned Ag Core & Typodonts
Endodontics	X		
Periodontics	X		Scaling, instrumentation & positioning. Simulated calculus removal
Oral Surgery	X		Only suture placement & removal
Pediatrics	X		On Pediatric typodonts, SSC, restorative & space maintenance therapy
Esthetic Dentistry	X		Veneers, (direct/indirect) on typodonts, Cerec
Implants	X		Only restoring implants

MARQ:	Yes	No	Comments
Operative	X		
Crown & Bridge	X		
Endodontics	X		
Periodontics	X		
Oral Surgery		X	
Pediatrics	X		
Esthetic Dentistry	X		
Implants	X		

MINN:	Yes	No	Comments
Operative	X		
Crown & Bridge			Not within our Division
Endodontics			Not within our Division
Periodontics			Not within our Division
Oral Surgery			Not within our Division
Pediatrics			Not within our Division
Esthetic Dentistry	X		
Implants			Not within our Division

UMKC:	Yes	No	Comments
Operative	X		All amalgam & composite preps & fills; rubber dam; caries removal, veneers
Crown & Bridge	X		Crowns, bridges, all ceramic, provisionals
Endodontics	X		MODupro single and multirooted teeth (extracted, one clear tooth: rotary and hand instruments; crown down
Periodontics	X		Manikin scaling positioning without calculus; work on each other
Oral Surgery		X	
Pediatrics	X		Class II, stainless steel crown; space maintainer
Esthetic Dentistry	X		Porcelain veneers, composite veneers/posterior composites
Implants	X		4 hours hands-on to familiarize with parts, impression, pour-up and surgical template

UNMC:	Yes	No	Comments
Operative	X		Dentoform
Crown & Bridge	X		Dentoform
Endodontics	X		Using extracted teeth
Periodontics	X		Scaling and root planing
Oral Surgery	X		
Pediatrics	X		Dentoform
Esthetic Dentistry	X		Dentoform
Implants	X		Manufacturer supplied models

SASK:	Yes	No	Comments
Operative	X		Adec Simulators, Frasacco dentoforms
Crown & Bridge	X		Adec Simulators, Frasacco dentoforms, changing from Kilgore to Frasacco
Endodontics	X		Bench top extracted teeth and propriety plastic models "Endo-VU". Learning rotary Ni-Ti
Periodontics		X	Used to use pig mandibles for surgery, but they are no longer easy to access here
Oral Surgery		X	Faculty turnover - not sure

Pediatrics	X		Adec Simulators, Frasacco teeth
Esthetic Dentistry	X		Frasacco and extracted teeth
Implants	X		

SIU:	Yes	No	Comments
Operative	X		
Crown & Bridge	X		
Endodontics	X		
Periodontics	X		
Oral Surgery		X	
Pediatrics	X		
Esthetic Dentistry	X		
Implants	X		

2. Are there any procedures taught in simulation that a majority of your students do NOT perform in the clinic? Please list

COLO: It is not possible to say a majority of students do not perform the following procedures because of variable availability from year to year but these are the clinic procedures that are in limited supply.

Fixed partial dentures

Ceramic veneers

Cast gold inlays and maybe onlays

Ceramic/composite inlays

CRE: Porcelain veneers, porcelain onlays, implants.

IOWA: Porcelain veneers

Indirect onlay - porcelain and gold (some students have cases for CEREC and gold onlays)

Diastema closures (Some depending on patient availability)

Peg lateral build-ups

Shear Bond Testing

MAN: Ceramic inlays, gold inlays

CEREC preparations and restorations

MARQ: Cast Post & Core

MINN: No.

UMKC: Yes, Inlays and onlays.

UNMC: Gold inlays/onlays - occasionally done in clinic Indirect composites. In general, we don't teach procedures in the preclinical labs that are not done in our clinics.

SASK: We do an entire tooth building exercise that constructs the entire crown using layering techniques for Filtec Supreme Plus from 3M. We do esthetic procedures like diastema closure, porcelain veneer preclinically and students may/not see a clinical case.

SIU: Gold inlays and onlays.

3. Are you utilizing simulation to teach some or all of your PRE-CLINICAL endodontic procedures? Yes/No. If YES, please list.

COLO: Yes. All standard endodontic procedures are taught in our Simulation Clinic. Students access, prepare and fill canals on both natural and plastic teeth in a dentoform mounted in the simulator. This division is strongly considering moving to plastic teeth exclusively for pre-clinic simulation and board preparation.

CRE: Yes. Typodont, Manikin, plastic tooth in plastic block.

IOWA: The Endodontic Sophomore course is taught in the Sim Clinic using mannequins, dentoforms and digital radiographs.

MAN: Access opening, canal preparation, cleaning & shaping, obturation is all simulated on extracted teeth. Both hard and rotary instrumentation.

MARQ: Yes. Access, shaping/flaring, obturation.

MINN: Not within our Division.

UMKC: Yes. Done on extracted teeth, one done on clear plastic tooth so they can see the process.

UNMC: Yes, the Endodontic course utilizes extracted teeth for their preclinical course.

SASK: Extracted Natural Teeth.- Clean and shape 29 canals and obturate 17 canals. Clear Endo-Vu acrylic models, straight and curved canals –traditional methods, then same with rotary

SIU: On extracted teeth in preclinic.

4. Are there any required CLINICAL competencies that you test on typodonts rather than patients? Yes/No. If YES please list.

COLO: No. However, some special and individualized Clinical competency examinations have been developed in the past to address certain unique needs. oard preparation will utilize simulation instead of patients consistent with board requirements.

CRE: Yes. Gold inlay for Junior Competency.

IOWA: No.

MAN: Yes - gold inlay preparation, cast post & core or SSC. Due to lack of patients available for each student.

MARQ: No.

MINN: No.

UMKC: Yes. Crown and Bridge – Bridge preps and single unit; basically whatever the boards require on typodonts; Endo – on a patient single canal and access multirooted extracted tooth and fill one canal and treat on extracted tooth with one canal from prep to obturation; Pedo – 4th year lab class II, SSC, space maintainer; Operative – Class II amalgam and composite; class III - composite.

UNMC: Yes. Senior fixed prosthodontic crown and fixed partial denture preparations and endodontic competencies are done to simulate the CRDTS exam. Both utilize the same typodonts as are used by CRDTS. If a patient-bases stainless steel competency cannot be found in our pediatric clinics, a dentoform may be utilized for that competency.

SASK: A simulated patient is created on a dentoform using Frasco teeth. Technician/summer student places a series of artificial caries lesions of standardized size and depth, some are deep/extensive lesions. Each student has to treatment plan and treat the patient-restore all of the lesions over six lab periods under competency marking conditions. This exercise must be passed in order to progress into clinic.

SIU: Operative - no Fixed Pros - students have option on their bridge competency

5. Besides the standard uses for typodonts and simulation that most schools are teaching such as cavity preparations, crown preparations, etc. what innovative or new techniques have you incorporated into your simulation laboratories?

COLO: No response noted.

CRE: None.

IOWA: Porcelain veneer preparations. CEREC preparations.

MAN: Online posting of videos of the clinical skill for students to access. Example: Class II composite preparation and restoration. A Restorative Self-evaluation learning portfolio assignment that each student completed at the end of each respective term (preclinical and clinical cases).

MARQ: Implant placement and restoration.

MINN: Dent Sim.

UMKC: None.

UNMC: Our Operative class uses our “simulation clinic” to make the procedures more closely match the clinical experience.

SASK:

- a. Simulated carious lesions both minimal incipient to extensive for pre-clinical competency.
- b. 1st year portfolio of years work in operative is created. Students file share exercises with students in other universities in North America and Australia.
- c. Whole tooth building exercise in 2nd year to experience composite layering techniques

SIU: None.

6. Do you use performance in the simulation lab as a means to identify superior students? (For example selection into honors programs). Yes/No. If YES please explain:

COLO: No. All students must pass all preclinic simulation classes before they are allowed to begin work in clinic. Clearly, however, students show stronger or weaker skills on preclinic exercises. We do not use this data to stratify students. We have often found that weak preclinic students “find” themselves in the clinic and excel.

CRE: No.

IOWA: No.

MAN: Yes - superior students are identified and can serve as tutors/mentors for the junior students.

MARQ: No.

MINN: No.

UMKC: Yes; common sense identifies good to better students and faculty place confidence in them to perform without as much supervision; then, if they apply to an honors program they remember how well they did in the labs. We also identify teaching assistants from their prior work to help in the lab.

UNMC: No.

SASK: No response noted.

SIU: No.

7. Is it your observation that student performance in simulation mirrors their performance in the clinics with similar procedures? Yes/No. Please explain:

COLO: Sometimes, but not reliably. Clearly, however, students can show stronger or weaker skills on preclinic exercises. We have often found that weak preclinic students “find” themselves in the clinic and excel. We use preclinic performance to guide us to make proper clinical student management decisions.

CRE: Yes.

IOWA: Yes as far as skills - maybe not as much with critical thinking and patient communication.

MAN: Anecdotal evidence indicates that students who are confident in a skill or competency are generally able to transfer the same skills from a preclinical to clinical realm.

MARQ: Yes. It is a rough parallel. Usually the students that struggle preclinically struggle clinically. It is a hand skill issue not a simulation issue.

MINN: Yes. Students having trouble in clinic usually have a history of trouble in the preclinical setting.

UMKC: Yes for Perio, C&B, Pedo and Operative.

UNMC: Anecdotally and in general, yes. We have a relatively small class size, and the same faculty are in both preclinical laboratories and in our clinics. Therefore, in general, we have a pretty good idea of what we think we will see. Usually the expectation is correct, occasionally it is not.

SASK: Anecdotally this is so, but I have not tracked this. Sometimes, star performers pre-clinically fall apart with the variables of working with real patients and less dextrous individuals seem to rise to the challenge and outperform expectations.

SIU: Most students who do well in simulation do well in clinic. However, some students who struggle in simulation do much better clinically.

8. Has it been your observation that students who perform better in the simulation laboratory are more successful in licensing examinations? Yes /No Comments:

COLO: We have never found a reliable relationship between preclinical simulation clinic performance and board performance of our students. We, for a long time, compared preclinic grades with clinic grades and board performance results and could never find a reliable relationship.

CRE: No.

IOWA: Unsure, but most likely no. Good students often fail due to bad decisions made when under an extraordinary stress. The 4th year students have

training in the Sim Clinic with the dentoform that they use for the examinations and they find it useful.

MAN: No.

MARQ: No.

MINN: Some top students do poorly on the licensing examinations or have patients that are not accepted at the start of the exam. This is not an indictment of the simulation laboratory as much as it is a criticism of the licensing examination - which purports to establish competency with a snapshot of the student's abilities.

UMKC: Some yes and others definitely NO.

UNMC: Generally speaking, yes, but there are those exceptions.

SASK: Do not track this here.

SIU: Not necessarily - the boards are not a true reflection of a student's ability. Therefore, some of the most talented students will have unforeseen problems that do not reflect their true abilities. Also, some of the weaker students will pass the boards with no problems.

9. The Western Regional Boards is reluctant to adopt a simulation crown preparation as part of their examination even though other testing agencies with results accepted by over forty states have used simulation for over 10 years. Is there any evidence that would demonstrate that the manikin crown procedure is not a valid or reliable way to test competency for a licensure candidate? Please explain and provide references.

COLO: No. But validity depends on "what you want to know." Today's simulation materials can provide very accurate data about one's ability to demonstrate fundamental crown preparation knowledge and skills. Boards need to ask what it is that they must learn about a candidate's ability and which testing method(s) will help demonstrate those abilities. Currently, now board asks for more information from a candidate that what a simulated environment can provide.

CRE: I don't know of any evidence for or against simulation for licensure testing.

IOWA: I am not aware of any evidence that it IS or IS NOT a VALID and RELIABLE way to test competency.

MAN: Not applicable to Canadian schools.

MARQ: No response noted.

MINN: Manikins are used in the preclinical setting because of the opportunity to isolate individual skill sets and examine student proficiency in detail. At the level of competency evaluation (i.e., licensing examination), a

synthesis of knowledge and skill is being appraised. The manikin in this setting inappropriately removes important patient factors from the treatment setting.

UMKC: Manikin crown procedure is graded more difficult than patient-based procedures. When I was on the CRDTS exam review committee, the highest failure rate was for the temporary crown.

UNMC: Not to our knowledge. Certainly working on a patient presents some challenges that don't exist with simulation examinations, however, use of simulation gives a test that is uniform and can be graded more objectively.

SASK: I have not seen any evidence base to settle the argument for or against simulation. I am highly in favor of simulation for ethical reasons as it does not involve people as guinea-pigs. Secondly, clinical exams are stressful and patient induced variables can compound this. Typodonts remove many of the variables allowing students to demonstrate the important aspects of each clinical stage in an idealized environment. We are out to examine those candidates with an erroneous set of basic concepts- simulation will demonstrate that very capably. However this is my view and that of colleagues, others on Faculty take the opposing view that there is no effective simulation to replace a real patient. I have not taken a survey of opinions.

SIU: It depends on how you define competency. If competency is being able to sit down and prep a tooth on a piece of plastic - ok. If competency is the ability to deal with a live patient on a vital tooth - ok. Patient management is not addressed with a manikin procedure, and that is as important as the procedure itself.

II. Principles of Cavity Preparations - Outline Extension

Earlier this year the following questions were asked and the results were posted on the CODE web site (<http://www.unmc.edu/code/>). Schools should again respond and expand on as requested. Answer each questions and provide the rational/evidence for each answer. Are these conceptions taught in the pre-clinics then applied in the clinics? If NO, please comment.

1. Must facial, lingual, and gingival walls be extended to completely break contact with the adjacent tooth if not dictated by varies/penetrable decalcification? Yes/No. Rational/Evidence. Applied?

COLO: No, but depends on materials to be used, dental history of patient, status of caries management, patient compliance, oral examination data, etc. No preparation should routinely break contact with adjacent teeth nor should this be a preconceived notion before starting the preparation. The need to break contact should be based on a tooth by tooth basis. Lesions that are large enough to require surgical intervention are probably large enough that the walls of the preparation will break contact naturally.

CRE: SA, Class 2 - Yes

CR, Class 2 - Not necessarily
CR, Class 3 - Daily work - Not necessarily
CR, Class 3, Mock Board or Licensure Exam - Extend gingivally and facially

- IOWA:** No, except for ability to restore: i.e., matrix, finishing margins.
- MAN:** Only gingival walls must be extended. However, usually this is a requirement of the preparation as the caries will occur gingival to the proximal contact.
- MARQ:** Yes. Amalgam preparations not resin.
- MINN:** We teach that for dental amalgam, proximal contact must be broken in order to establish convenience form - to allow access the quality of the restored margins and to gain access for carving and finishing procedures. Because dental amalgam has limitations in its physical properties, the design of the cavity preparation is material-specific. Composite resin is bonded to the margins, so breaking contact with the adjacent tooth is not required, unless the tooth structure is compromised. Proximal cavity preparations to receive composite resin are lesion-specific.
- UMKC:** No. Rational/Evidence - normally we see recurrent caries gingival to the contact and over the years have seen lots or recurrent caries at the gingival margin if it is not broken. Other contacts don't normally have food and plaque attached to it except in dirty plaque filled mouths. If the tooth is touching it has no space for the food to accumulate or the plaque. Applied in the clinics - Yes (Pedo does the same - they only require gingival contact broken but not necessarily facial and lingual).
- UNMC:** We minimally break contact with amalgam preparations, but do not with composite preparations assuming all caries can be removed and still leave intact tooth structure in contact.
- SASK:** Amalgam- We have traditionally taught that all contacts should be minimally broken to enable carving and burnishing. There is no evidence base to validate this view other than years of cumulated experience-as far as I know! The majority of class II amalgams that make up the bulk of insurance and other pooled data will have been prepared this way, which is an evidence of durability and longevity that outperforms direct resins, but not class II gold inlays. However, the latter is usually a representation of a more selected highly motivated patient, treated by a more highly motivated clinician which distorts the comparison.
Composite resin-again, we have traditionally taught breaking of all contacts, very conservatively to facilitate matrix placement and proximal wall bevels
- SIU:** Amalgam - yes. Extension for prevention and board exam criteria.
Composite - optional bonding supposedly seals margins so they do not leak and to keep composite as conservative as possible.

2. Is there a difference in extension criteria between Class II amalgam and Class II composite preparations? Yes/No. Rational/Evidence. Applied?

COLO: Depends on many factors: size of lesion, previous restoration, caries management, patient compliance. Assuming that amalgam is used in larger preparations the sheer size of the lesion will dictate greater extension. However, assuming that two identical lesions are to be treated with each material then composite preparations will have less extension because of the properties of the material. For composite, while the internal walls may have minimal extension, any bevels deemed necessary may make the preparation appear to be over-extended compared to an amalgam preparation. In all cases minimal extension is that which is required to remove the lesion.

CRE: Yes - See question #1 response. Rationale - SA adapts better during condensation and carving with the preparation is extended into all embrasures. CR can be polymerized prior to matrix removal, and adapt closely to cavosurfaces even if not extended into all embrasures.

IOWA: More traditional extensions for amalgam preparations including retention grooves.

MAN: No response noted.

MARQ: Yes. We leave the buccal wall of the proximal box in contact with the adjacent tooth in the Sim lab. Applied? Whenever possible as dictated by the carious lesion.

MINN: See question #1 response.

UMKC: Yes. Rational/Evidence - there is no bonding with amalgam so we still teach break contact won gingival, lingual and facial. Unless the facial requires so much destruction of the tooth to break contact that the treatment is worse than the problem. Applied in the clinics - Yes.

UNMC: Yes, see question #1 response.

SASK: Amalgam - many of the faculty would still prefer all contacts carefully broken. However, as we nearly universally bond all our amalgams with light cured 3M Filtec SingleBond prior to condensation, I am sensing that breaking contact is now not as important, and suggest good pre-wedging and very conservative preparations not breaking contact unless the lesion dictated and maintaining enamel to enamel contact where possible. Whatever we can do conservatively to save tooth tissue will reduce the possibility of tooth fracture under loading (which has an evidence base). This move from tradition needs to work itself out in our minds and in all probability, a direct resin is probably the material of choice when such minimal preparations are involved. Stay tuned on this one. Composite -I teach that we only need to break contact if the lesion dictates it or if matrix placement is compromised. In reality many contacts are broken that could be conserved and there is a reality that more conservative preps are more

difficult to finish and mark for part time faculty used to amalgam preps for competency evaluation. We are not consistent, but I think that with magnification and more patients with minimal lesions, this will become the standard rather than the exception. Not sure there is a data base of evidence either way

SIU: See question #1 response.

3. For the anterior Class III, is it required that proximal contact be broken gingivally? Facially? Incisally? Yes/No. Rational/Evidence. Applied?

COLO: No. The preparation form is dictated by the extent of the lesion. In preclinic we provide situations that the students are to treat. These situation lesions are large which forces the walls to break contact. The students were trained to break wall contact only when the lesion dictates such.

CRE: Not necessarily - see responses to questions 1 and 2.

IOWA: No.

MAN: Only gingivally. Preserve as much as the tooth structure as possible, remove unsupported enamel though.

MARQ: Yes, gingivally. No, facially. No, incisally. Whenever possible as dictated by the carious lesion.

MINN: See responses to questions 1 and 2

UMKC: Yes only. We teach to break facial contact for the boards but would not teach it if the boards did not require it. Incisal - No. Rational/Evidence - gingival contact has the most recurrent caries. If teeth are touching facial and incisal then there is no room for plaque and food to accumulate. Applied in clinic - Yes.

UNMC: We teach removing only the caries and unsupported tooth structure or tooth structure that must be removed in order to reach the caries lesion or finish a margin.

SASK: Not sure that we are all, as a faculty on the same page on this one either. Most likely we would not favour breaking any contacts, but would allow the lesion to dictate the cavity dimensions, as well as frankly unsupported tooth structure. Leaving unsupported enamel on the labial wall as much of a problem provided it is not under direct occlusal load.

SIU: Amalgam - yes - extension for prevention and board exam criteria. Composite - optional - bonding supposedly seals margins so they do not leak and to keep composite as conservative as possible.

4. What questions/comments do you have based on the survey results? See CODE web site (<http://www.unmc.edu/code/>)

COLO: No response noted.

CRE: None.

IOWA: No response noted.

MAN: None.

MARQ: No response noted.

MINN: No response noted.

UMKC: All who answered the questions I feel are justified by their answers. We have a problem with the gingival margin not being broken. We see way too much recurrent caries at the gingival margin for all types of restorations when the gingival contact is not broken.

UNMC: No response noted.

SASK: The survey indicates a total lack of evidence-base for the basic principles of cavity design. As a consequence the survey outcome has considerable variance between institutions. It is clear that there is a progressive move to minimally invasive preparations and the conservation of tooth structure over arbitrary standards of practice not supported by scientific evidence but more by convention and tradition

SIU: There seems to be no consensus between schools as to a standard of care. Each has its own philosophy and method of instruction. Our guess is that individual faculty at the same institution will also have different methods of instructions for each individual case.

5. Other comments related to Principles of Cavity Preparation other than those outlined.

COLO: No response noted.

CRE: None.

IOWA: No response noted.

MAN: Follow G. V. Black's principles of cavity preparation.

MARQ: No response noted.

MINN: No response noted.

UMKC: No.

UNMC: No response noted.

SASK: No response noted.

SIU: We tend to follow G. V. Black's principles for amalgam preparations. For composite we tend to do preparations that are "defect specific."

III. Caries - Treatment/Detection

Treatment of deep carious lesions by complete excavation or partial removal - A Critical Review, JADA, Vol 139, 705-712, June 2008

(This is not a repeat of a related agenda question, 1999, 2007)

1. Does your school teach the concept of incomplete caries removal? Yes/No. If YES, for how long? How well accepted and applied by the faculty? If NO, why not? Should it be taught?

COLO: Yes. It is taught in both restorative and endodontic courses. We believe that exposure of the pulp is more harmful than leaving some obviously affected dentin (caries?) in the preparation before restoring. We do not reenter these restorations at some later date. If the tooth shows clear evidence of irreversible pulpitis or necrotic pulp then endodontics is performed without hesitation. Widely accepted by full or part-time faculty, but less applied by older part-time or volunteer faculty. Our endodontic faculty are advocating the use of MTA (Pro Root) 4 in these lesions.

CRE: As a general rule - No. Why not? The faculty believes in removing all diseased tooth structure; skepticism about attaining true isolation (and sealing the bacteria; and limited experience by the student to distinguish shallow decay from deep decay; therefore, the threat of leaving decay in all preps.

IOWA: Yes, since 2003. After 5 years it is well accepted by most faculties in all departments. Now, some faculties in endo do not support the idea completely, but we are working on in-service seminars and discussions with the department. Operative department fully supports the concept and teaches stepwise excavation since 2003, but it has been a process of calibration to make sure we are applying the concept with the right clinical cases and the same procedures and codes. Should it be taught? We believe that it should be taught in all dental schools and we are in the process of evaluating data about our stepwise procedures since 2003.

MAN: Yes, if the tooth is asymptomatic, young and imminent pulp exposure will occur with further caries removal. A caries control procedure is taught to the students. This has been implemented into the curriculum for approximately 12 years. It is widely accepted by the faculty, however, the requirements for such a procedure must be adhered to in order to ensure tooth success (pulp vitality). *Source: Links Jordan RE, Suzuki M. Conservative treatment of deep carious lesions. J Can Dent Assoc (Tor), 1971 Sept;37(9):337-42. No.*

MARQ: Yes, two years.

MINN: This question is not clear. It is assumed this is in reference to pulp capping. We teach that it is preferable to leave a small amount of carious dentin rather than expose the pulp. Carious tissue removal is always complete peripherally, establishing a stain-free DEJ and sound peripheral dentin. Carious dentin is left in a very thin layer only directly over the pulp. This is subsequently covered with calcium hydroxide and, if amalgam is the restorative material, a hard liner. We do not teach the technique of incomplete caries removal and sedative filling placement with subsequent reentry to complete carious dentin removal and place a definitive restoration. Such treatment supplies a double insult to the pulp. Parenthetically it should be mentioned that we are attempting to avoid the term caries removal and prefer carious tissue removal. The old terminology creates a subliminal message that surgical treatment removes or cures the caries problem.

UMKC: Yes.
3 months to 1 year; (Pedo at 6 weeks)
Accepted by some and not by others
Definitely yes. Procedure taught – do indirect pulp cap lay down CaOH; temporize with IRM, Glass ionomer or glass ionomer silver; 2nd appointment remove rest of caries; CaOH in thin layer; followed by Glass ionomer resin base then restore

UNMC: Concept is taught in the cariology course, but not generally done in clinic.

SASK: For at least 20 years we have been teaching indirect pulp capping with incomplete caries removal, followed by IRM or calcium hydroxide (Dycal) followed by IRM. Leave for 8 weeks or longer, then retreat, for more complete caries removal (ideally to remove infected dentin but not always affected dentin- not as easy as it sounds and students have a lot of problems with this, as do faculty!). This is generally well accepted by all but the interpretation is a bit more problematic. The notion of leaving caries intentionally, followed by finishing the rest of the walls of the cavity, placing bases, liners and completing the preparation and not re-entering the tooth is discussed with students, but is not the operating philosophy. It obviously takes place frequently in practice unintentionally and perhaps by design where further intervention would cause a pulp exposure and condemn the tooth to root canal and expensive build up procedures.

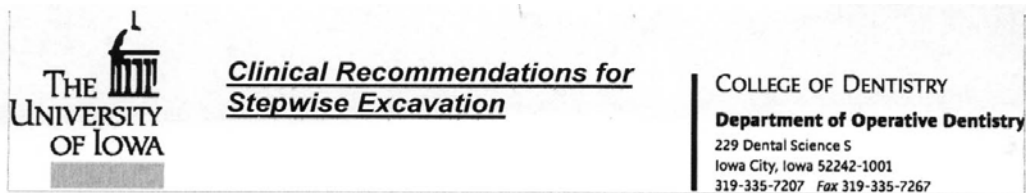
SIU: In general, we teach the concept of complete caries removal. There are, however, clinical situations where we may do indirect pulp caps.

2. Other comments related to the meta-analysis on this topic?

COLO: Complete caries removal is rarely accomplished. Based on several caries removal studies most trained practitioners fail to completely remove all caries, Our long-term success rate is too high to assume that all caries must be removed.

CRE: In deep preps, on asymptomatic teeth, some professors do leave some questionable dentin over the pulp chamber and base with some combination of Dycal and Resin-modified glass ionomer. The analysis appears to prove the effectiveness of this method.

IOWA: Clinical Recommendations for Stepwise Excavation



November, 2008

Introduction

Step wise excavation is an alternative technique for removal of deep caries lesions that involves 75 % or more of the total dentin thickness

When a conventional caries removal technique is used, the risk of pulp exposure increases. Evidence indicates that a complete caries removal procedure may be detrimental to the pulpo-dentinal complex and does not take into consideration the biological natural response of the tooth to caries stimulus.

When using a conventional caries removal technique, the pulpo-dentinal complex is not able to react and can be severely and irreversible affected.

Rationale

The progression of caries into the dentin may be slow or rapid depending on different factors such as lesion activity and dentin permeability.

The lesion activity is related to the status of the cavity. For instance, in a closed ecosystem the lesion is rapidly progressing (soft – yellow dentin) in contrast with an open environment where the lesion can be arrested (dark-brown). In slowly progressing lesions, changes in the dentin as a protective response may occur. In rapidly progressing lesions no protective changes in the dentin occur and the odontoblast may be irreversible affected.

The permeability of dentin also affects the progression of the caries process. Greater permeability will accelerate the caries progression increasing the risk of pulp exposure; as in the case of newly erupted teeth.

Dentinal tubule sclerosis is a natural reaction of the pulp dentin complex to a physiological (age) or pathological stimulus (attrition or caries). When acids from bacteria penetrate into the dentin, deposition of apatite and whitlockite crystals produces tubule sclerosis and decreases the permeability of the dentin retarding penetration of bacteria. Parallel to this reaction, tertiary or reparative dentin forms and may be deposited within the pulp chamber by the odontoblast.

These pulp-dentin reactions can occur in a tooth with a healthy pulp and where the caries process has a slow progression. If bacterial invasions, as well as the byproducts, are not eliminated, an inflammatory reaction with irreversible damage to the pulp can occur.

The Purpose of the step wise excavation approach is to change the cariogenic environment removing only the soft infected dentin and sealing the remaining demineralized dentin with a transitional restoration. The goal is to arrest the active caries lesion and stimulate dentinal tubule sclerosis and the formation of reparative dentin while maintaining pulp vitality. This leads to a decrease in the number of pulp exposures compared with a conventional caries removal technique.

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Criteria and Clinical Indications:

Case selection and preliminary planning of the procedure are critical steps to achieve success using a step wise approach. The following guidelines are important for case selection:

- Young patients with permanent teeth and young pulps may respond better.
- Deep caries lesions at risk of pulp exposure during caries removal (75% of dentin involved radiographically).
- No symptoms of irreversible pulpitis such as spontaneous pain or provoked pulpal pain that lingers.
- No swelling or tenderness to percussion.
- Periapical radiograph with no evidence of periradicular pathosis.
- Vitality test (CO2 and EPT) to confirm positive pulp status.
- Evaluate restorability of the tooth prior to performance of step wise procedure.
- Selection of a long-term temporary material as a transitional restoration which provides a good seal and avoids leakage. Fluoride release may be beneficial. (Fuji Triage or Fuji VII, Fuji IX, Fuji II LC)

Technique for Stepwise Excavation

After a detailed evaluation and correct case selection using the previous criteria, the stepwise approach is performed in two separate appointments with an interval of 6 to 8 months.

First Appointment

- Inform the patient about the treatment options including benefits and possible drawbacks and allow the patient to be part of the decision.
- Rubber dam isolation is highly recommended
- Access to the caries lesion, peripheral excavation should be completed cleaning the DEJ, removing the very soft, necrotic and infected dentin and leaving the soft, discolored yellow or dark leathery dentin over the pulpal floor and axial walls.
- Avoid excavating close to the pulp during this first step to reduce the risk of pulp exposure.
- Restore with a temporary material. First using Fuji Triage as a liner (color code for re-entry) and Fuji IX or Fuji II LC as a restorative material.
- Adjust contours and occlusion
- Inform the patient to call back if symptoms occur
- Record detailed information in CRT, visit slip and treatment plan using red stamp and code: 02940.1 STEPWISE.Sedative filling –caries remains. Needs Re-eval.
- **Schedule re-call appointment (6-8 months) for re-entry**

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Second Appointment (Re- Entry)

The patient should be notified (card or call) to return for the re-evaluation and re-entry appointment after 6 to 8 months. The protocol to follow is similar to the one recommended for the first appointment:

- Re- evaluate history of symptoms
- Clinical exam to preclude swellings or tenderness
- New periapical radiograph
- Pulp vitality tests (CO and EPT)
- If vitality test are normal RD isolate teeth preferable with Rubber Dam.
- Carefully remove the sedative filling especially when approaching the Fuji triage.
- Dentin assessment and careful removal of any remaining soft dentin.
- Placement of glass ionomer liner (vitrebond)
- Restore with the material of choice for final restoration
- **6 months recall (vitality tests) and PA at least once a year.**

Evidence Supporting Step Wise Approach

1. Ricketts D. Management of the deep carious lesion and the vital pulp dentin complex. British Dental Journal. 191(11):606-10, 2001.

“The activity if a deep carious lesion in dentin can be preferentially modified, by sealing in the dentine caries. This allows the reparative pulp-dentine complex reactions to take place. When such lesions are re-entered after six months or more the risks of directly exposing the pulp are reduced”.

2. Bjorndal L, Kidd E. The treatment of deep dentin caries lesions. Dent Update. 32: 402-413,2005.

“The aim of the first excavation is primarily to make a change within the cariogenic environment, and not to remove carious dentine close to the pulp because this risks an iatrogenic pulp exposure. Microbiological and clinical studies have shown that the number of bacteria decrease during stepwise excavation procedures and the lesion clinically arrest”

3. Kidd, E. How “Clean” Must a cavity be before restoration?.Review. Caries Research.38:305-313,2004.

Four studies met the inclusion criteria for this review. Two step wise excavation studies and two ultraconservative caries removal studies.

“This cautious approach may be preferable to vigorous excavation because fewer pulps will be exposed and sealing the dentin from the oral environment encourages arrest of lesion progression. The reparative processes of tubular sclerosis and tertiary dentin are encouraged, thus reducing the permeability of the remaining dentin. The residual microorganism are entombed by the seal of the restoration on one side and the reduced permeability of the remaining dentin on the other”

“There is no clear evidence that it is deleterious to leave infected dentin, even if it is soft and wet prior to sealing the cavity”

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- Ricketts D, Kidd E, Innes N, Clarkson J. Complete or ultraconservative removal of decayed tissue in unfilled teeth (Review).Cochrane database of Sustematic Reviews . Issue 3, 2006.

“This review found no evidence that incomplete caries removal is deleterious. In fact the reverse is true as complete caries removal is more likely to result in carious exposure of the pulp”

“Whilst there is insufficient evidence to know whether it is necessary to re-enter and excavate further in the stepwise excavation technique, the studies that did no re-enter, reported no adverse consequences”

- Bjorndal L, Larsen T. Changes in the cultivable flora in deep carious lesions following a stepwise excavation. Caries Research. 34:502-508,2000.

“This study examined the cultivable microflora before and after stepwise excavation in deep carious lesions of 9 permanent teeth. The final excavation was performed 4-6 months after the initial treatment. Dentin color and consistency was assessed as well as microbiological samples were obtained. The microbial alterations during the treatment showed a substantial reduction in the frequency and proportions of lactobacilli, reflecting a change towards a non-acidic environment.”

“In conclusion, the cultivable flora detected following the treatment interval had declined substantially, and the distribution of bacterial species did not represent a typical cariogenic microbiota of deep lesions, confirming the clinical findings of arrested caries progression”

- Bjorndal L, Thylstruyp A. A practice-based study on stepwise excavation of deep carious lesions in permanent teeth: a 1-year follow-up study. Community Dental Oral Epidemiol. 26: 122-8, 1997

This is a practice-based study in which deep carious lesions were treated by general dental practitioners using stepwise excavation. The treatments were done by 24 dentists over 2 year period. 94 teeth with deep carious lesions were included in the study. The final excavation was completed after a treatment interval ranging from 2 to 19 months.

“The central dentine was significantly browner and less softened after the sealing period. Only five cases resulted in pulp perforation during the final excavation. The high success rate of teeth surviving the final treatment without pulp exposure after 1 year of observation shows that it was possible for dentists in general practice to administer and manage the treatment of deep carious lesions.”

- Ngo H, Mount G, McIntyre J, Tuisuva J, Von Doussa, RJ. Chemical exchange between glass-ionomer restorations and residual carious dentine in permanent molars: An in vivo study. Journal of Dentistry, 34:608-613, 2006

The purpose of this study was to evaluate the chemical interaction (ion exchange) between glass-ionomer and partially demineralized dentine under in vivo conditions.

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“Fuji IX was selected as the restorative material, because, like all glass-ionomers, it contains fluoride but it also contains strontium glass rather than conventional calcium glass. This means that there will be strontium ions deposition if remineralization occurs. In fact, this study showed that a substantial amount of both strontium and fluorine crossed the interface into the partially demineralized dentine adjacent to the restorative material.

The presence of strontium and fluorine in the remineralized dentin is most likely controlled by both diffusion and remineralization. The results from this study demonstrated that at least partial remineralization is possible in an in vivo model”
“However, there are two important requirements for this to happen; firstly the restoration has to provide a total seal to the external environment and secondly there is intimate contact between the glass-ionomer and the partly demineralized dentin”

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MAN: No response noted.

MARQ: No response noted.

MINN: The evidence is compelling that complete removal is unnecessary, but the surgical training in the past and clinical experience precludes many dentists from listening to this evidence.

UMKC: No.

UNMC: No response noted.

SASK: A diversity of views are found in the literature concerning pulp capping techniques, material choices (calcium hydroxide, direct etch and bond or MTA) as well as temporization and retreatment vs. immediate restoration which suggests that the evidence-base has not been convincingly established. There is a consequent plurality of approaches that requires resolution.

SIU: There are too many variables involved in clinically comparing direct versus indirect pulp capping procedures. It is difficult to get reliable data on which works best.

3. Is Atraumatic Restorative Treatment (ART) taught for root caries? What has been the experience?

COLO: No response. Unfamiliar with this term or technique.

CRE: No.

IOWA: It is taught in special care clinic and pediatric dentistry; it is presented in the operative seminar for third year students but it is not fully applied in the operative dentistry clinics.

MAN: ART is only taught for pediatric teeth in special circumstances. Not for root caries.

MARQ: No.

MINN: No.

UMKC: Yes. Use of resin-modified glass ionomer as a restorative. FUJI IX or Geristore.

UNMC: Not as a separate method. Certainly at times we will remove the caries with only hand instruments, but generally we suggest a combination of rotary and hand instrumentation.

SASK: It is mentioned to the students as an approach to carious lesions more likely occlusal than root caries. It is usually favoured in remote locations where dental services may be provided by specially trained auxiliaries such as Mozambique, where our College has a long standing relationship. It may have application as a temporization technique in special settings such as geriatric care home and outreach programs where normal dental facilities are not available. It is not a significant part of the curriculum, nor within the average student's experience. Hopefully they know about it and can use it if necessary. We are experiencing a renewed interest in Glass Ionomers as restorative materials in a variety of high risk for caries situations such as root caries for the elderly

SIU: This is not taught as a specific topic, but it is performed in our clinic when appropriate.

4. What methods of caries detection are taught in schools (e.g., Explorer (how used), visual, Diagnodent, transillumination, fluorescence, other?)

COLO: Assuming this question refers to initial caries lesion detection, then we do not use a dental explorer for pit and fissure exploration but may use it for smooth surface exploration. On the smooth surface we use it only to determine the surface "feel" of the lesion but avoid penetrating into the lesion. We also use DIAGNOdent, transillumination, magnification, good lighting, and careful visual observation.

CRE: Radiographs, tactilely with an explorer; visual changes in tooth surface texture or color; transillumination.

IOWA: We are starting to teach ICDAS for early caries detection but working on standardization within our department and other departments in the school. This is the main concept of caries detection in the operative department:

- Identify if there is plaque in the plaque stagnation areas – i.e. below proximal contacts, along the gingival margins, in any deep pit and fissures.
- Then thoroughly remove plaque either with a probe(gently), or gauze, tooth brush or prophyl cup
- Completely dry the tooth
- Evaluate visually the dry tooth with good illumination
- If they feel it is necessary to use a probe or explorer – i.e. around a crown margin, a current restoration or fissure, then do so very gently...do not use a sharp explorer with a lot of pressure, be gentle and use the side of the instrument. We teach the use transillumination as an aid or tool mainly for anterior teeth or proximal lesions sometimes.

MAN: Explorer tip in a clean, dry field with adjunctive radiographs.

MARQ: Explorer; caries detection solution; transillumination.

MINN: Diagnosis/Treatment Decisions:

Didactic :

non-cavitated pits and fissures: based on caries risk status

Low/no risk, intervention: none,

Moderate /High risk,

Visual : color change,

Explorer : deep anatomy,

Intervention: caries control measure and sealant

non-cavitated smooth surface, facial: based on caries risk status:

Low/no risk: Record size and location and hardness; intervention: none, if there is esthetic concern lesion specific composite,

Moderate /High risk, Record size and location and hardness intervention: caries control measure,

Recall: increase in size or soft surface intervention: control measure and restore.

non-cavitated smooth surface, proximal: Based on caries risk status:

Low/no risk, Radiographs or transillumination E1 E2 and D1 intervention: none,

Moderate /High risk, Radiographs or transillumination E1 E2 and

D1 intervention: Initial visit control measure recall : if lesion progress

restore Radiographs or transillumination: D1 (dentin outer third) or deeper

intervention: initial visit control measure and restore Contemporary

diagnostic tools such as Diagnodent, electrical conductance, QLF, etc., are

mentioned in lecture but are not used on the clinic floor due to concerns

about over-treatment and the cost of the diagnostic instrument.

Cavitated: Caries risk is considered high : control measure instituted

Restore

Clinic floor: Due to variability between instructor experience, risk assessment and control measure are sometimes overlooked. The explorer method is widely used for the diagnosis of both non-cavitated and cavitated lesions. However, the explorer is not poked or jabbed into tooth structure to find caries lesions. Rather we teach that a very gentle grasp is used to maximize tactile sensitivity, and that one senses the drag on the tip of the explorer as it is moved laterally across the surface being assessed. For pits and fissures, retention or sticking of a sharp explorer tells us nothing about the caries status of the feature. Rather we teach the importance of visual inspection.

UMKC: Visual in a dry field first, transillumination, explorer when necessary. (Keep explorer out of Class 5 intact lesions).

UNMC: Combination of radiography, visual, transillumination, and rarely DIAGNOdent for initial recognition of a carious lesion. Visual, explorer, spoon excavator and occasionally caries detection dyes during the excavation of caries.

SASK: Visual, transillumination and routine use of magnification supplemented by judicious use of the explorer are taught here. Bitewing and periapical radiography is of course a standard adjunct and we are moving towards digitization but are not there yet.

“Diagnosis of Occlusal Caries: Part 1 and 2. D. McComb and Laura Tam: J.Can.Dent Assoc: 2001, 67, 454-463

SIU: Explorer - pit and fissure
Spoon - gross decay
Round bur and slow speed handpiece - final decay removal
Radiographs - Class II lesions
Radiographs and transillumination - Class III lesions
DIAGNOdent is available but used seldomly.

5. Does your school use caries detection dye? (Please list product(s). Do students and/or faculty use caries detection dye? What are the criteria?

COLO: We do not routinely use caries detection dyes. We have some around but it is rarely used. Students are taught the technique and rationale. We are not comfortable with what the dye demonstrates and the treatment ramifications based on that interpretation.

CRE: Yes, both students and faculty may use it; however, not when prepping for composites. A local pharmacy makes it.

IOWA: Product: Cari-D-Tech (Gresco). Sometimes, but not often. Some faculty use it as a diagnostic tool but not everyone uses it. We teach that this is another diagnosis tool to help in areas where it is difficult to see and get access (i.e., undermined cusps, deep proximal boxes at gingival floor) but we emphasize that they have to be very careful during the removal because they can be very aggressive with it and remove healthy demineralized tooth structure which was also stained by the detection dye.

MAN: Yes, students are introduced to Caries Detection Dye preclinically on extracted teeth operative procedures as well as clinical utilization. Faculty advocate the use of caries detection dye to students who are having difficulty in identifying and removing carious dentin.

MARQ: Yes - Ultradent Seek. Both. It is used as a teaching aid. The student removes all of the caries, then the faculty and the student will use the caries indicator and visualize the remaining caries or the false positive created by deep dentin, debris, etc.

MINN: No, this method is not accepted as a diagnostic tool.

UMKC: Occasionally they use SableSeek (Ultradent) - green in color; especially at board times since they allow its use.

UNMC: Yes, but not routinely. SableSeek (green in color) is the brand we use. The faculty will often recommend its use to a student, but a student may request it from our dispensary. There are no established criteria, however, it may be used in suspected areas of decay where there is some uncertainty. It is also useful to help early clinical students identify caries and learn what to look for in future cases.

SASK: No, it is not a reliable tool for caries detection. Students may play with dyes pre-clinically. Favored product: SableSeek from Ultradent.
“Caries-Detector Dyes- How accurate and useful are they?” D. McComb, J.Can.Dent.Assoc.: 2000,66, 195-198

SIU: Yes - Seek. Some faculty and students use it more than others.

IV. Health and Safety Issues Related to Teaching/Practicing Dentistry

1. How are **extracted teeth** with amalgam handled and stored? How long has the protocol been in place? What is the basis/science behind your school's protocol? Are the protocols different for amalgam-free extracted teeth?

COLO: We do not use extracted teeth in our courses.

CRE: Contaminated contact SA is separated and stored in a dry container until the refining company picks it up. This protocol has been in place for many, many years, SA-free teeth are handled differently, and separately.

IOWA: New protocol: formalin for 2 weeks then water. Formalin is well known for preservation of pathologic specimens. Fall of 2008 started this protocol. All teeth treated the same.

MAN: Extracted teeth with amalgam are initially stored in hypochlorite, followed by storage in formalin. Students are not allowed to prepare teeth with pre-existing amalgam restoration. All teeth are prepared at the student station with the use of a bench-top vacuum.

MARQ: Extracted teeth with any metal (amalgam, gold, alloys) are treated as hazardous material therefore are stored and disposed of in plastic jars made by Star Refining Company of London(out of California). They are stored in the jars and when full are mailed back to the company for refining and then the school gets a check (\$) for the amount of precious metals. Teeth are appropriately disposed of. Extracted teeth without metal are stored in glass jars of 10% formalin solution and subsequently disposed of as biohazard waste. (According to OSHA, extracted teeth can be given back to the patient). The protocol behind these policies is driven by OSHA standards and CDC guidelines. I am not sure, but think these protocols have been in place for at least 5 years.

MINN: Extracted teeth with amalgam are handled in one of 2 ways:
1. Cleaned & disinfected and returned to patient when requested.
2. Cleaned & disinfected and put into hazardous waste amalgam scrap containers.

Amalgam scrap containers are in each operatory. When full they are picked up by the University's Hazardous Chemical Waste Management department. This protocol has been in place since approximately 1988. Proactive School of Dentistry policies about heavy metals disposal, past & current federal & state EPA regulations and CDC recommendations in Oral Health.

Amalgam free teeth are disposed of in one of 3 ways.

1. Cleaned & disinfected and returned to patient when requested.
2. Cleaned & disinfected and put into Bio-hazard sharps containers.
3. Cleaned & fixed in 10% neutral buffered formalin for use in pre-clinical labs

UMKC: Protocol has been in place for many years. See Attachment below. Are the protocols different for amalgam-free extracted teeth? We are aware of the ADA best practices for handling amalgam and separating contact from non-contact amalgam. Practically contact and non-contact amalgam goes into the same container since our scrap recycler DRNA Inc. permits collection in this fashion.

GUIDELINE 8: USE OF EXTRACTED TEETH

ATTACHMENT

Requirement	Extracted teeth used in education should be considered infective and classified as clinical specimens. Extracted teeth should be cleaned and disinfected.
Procedures/Rationale	Extracted teeth used in education should be considered infective and classified as clinical specimens because they contain blood. All persons who collect, transport, or manipulate extracted teeth should handle them with the same precautions as a specimen for biopsy.
Universal Precautions	Universal precautions should be adhered to whenever extracted teeth are handled; because preclinical educational exercises simulate clinical experiences, students enrolled in dental educational programs should adhere to universal precautions in both preclinical and clinical settings. In addition, all persons who handle extracted teeth in dental educational settings should receive Hepatitis B vaccine.
Cleaning & Storage	Before extracted teeth are manipulated in dental educational exercises, the teeth should be cleaned of adherent patient material by scrubbing with detergent and water or by using an ultrasonic cleaner. Teeth should then be stored, immersed in a fresh solution of sodium hypochlorite (household bleach diluted 1:10 with tap water) or any liquid chemical germicide suitable for clinical specimen fixation.
Use of PPE	Persons handling extracted teeth should wear gloves. Gloves should be disposed of properly and hands washed after completion of work activities. Additional personal protective equipment (e.g., face shield or surgical mask and protective eyewear) should be worn if mucous membrane contact with debris or spatter is anticipated when the specimen is handled, cleaned, or manipulated. Work surfaces and equipment should be cleaned and decontaminated with an appropriate liquid chemical germicide after completion of work activities. Extracted teeth may be given to the patient after removal.
Reference	<i>Recommended Infection-Control Practices of Dentistry 1993</i> (Morbidity and Mortality Weekly Report, May 28, 1993, pp. 1-8).

UNMC: We do not use extracted teeth with amalgams in any of our courses. Some of our students will bring teeth with amalgams into the school, along with other non-restored teeth. These are separated out from the non-restored teeth and placed in sealed bags. These bags are collected by an outside company that incinerates the teeth and traps the released mercury. The protocol has been in place for several years. Amalgam free extracted teeth are also bagged for disposal and incinerated separately from the amalgam containing teeth.

SASK: All extracted teeth have been stored until very recently in 10% buffered formalin. We are changing over to a non-formalin type of storage medium because of concerns over the toxicity of aldehydes.

Disinfection/Sterilization of Extracted Teeth for Dental Student Use.
Dominici J.T. et al., J.Dent.Educ. 2001,65,-1278-1280

SIU: All extracted teeth are stored in a 10% bleach solution.

2. Have there been **air-quality issues** with fumes and/or particulate matter? What is/are the specific issue? How did the issue surface? (Inspector, complaint, etc.) What was the resolution?

COLO: Our school is new and was engineered to handle air-quality issues properly. Our systems have been tested for proper control. The only issue we have is with acrylic monomer but only if a bottle is spilled. For that reason, only small amounts of liquid are dispensed to students to reduce the volume of vapors.

CRE: No.

IOWA: Nothing really, occasionally a complaint of acrylic monomer but no practices were changed.

MAN: There have been issues with regards to use of monomers for final tray fabrication. Especially with students fabricating custom trays who are pregnant. Adequate air ventilation was present in the laboratories that used the monomer materials, however, the faculty adopted the use of VLC tray material to reduce this risk.

MARQ: I don't know of any "air-quality" issues in our school.

MINN: We recently renovated our preclinical facilities. Because of the introduction of water spray, suction, fume hoods, and dust collectors the air quality is vastly improved. We have also eliminated the use of methyl methacrylate for provisional restorations.

UMKC: Yes. Tooth dust during endo and methyl methacrylate during crown and bridge lab and less irritating but irritating - dentofom dust in operative. Lab issues surfaces through complaints. Suffer through it until the air handler can clear the air, don't go into the lab or down the hallway. Wear masks in labs.

UNMC: Yes, both fumes and particulate matter. We have had complaints from students, faculty and staff regarding dust (dentiform, grinding and polishing various materials) and fumes (methacrylate monomers and odors from casting burnout procedures.) Currently under evaluation, preliminary air quality testing has been completed, additional testing yet to come this academic year.

SASK: This has not been raised as an issue. We expect students to use face masks, gloves, clinical scrubs and low volume suction to remove as much particulate matter as possible from their work area and clothing. We do not cut teeth, plastic or natural extracted, without water cooling. Certain procedures generate a fair amount of dust such as temporary crowns.

SIU: No formal issues. Extracted teeth are prepared over a vacuum so that dust and fumes are immediately removed.

3. Have there been issues with **noise**? If YES, please respond per the questions asked in the air quality issue.

COLO: None have been reported. We do use electric handpieces and are reducing the use of turbine handpieces.

CRE: No.

IOWA: No.

MAN: No.

MARQ: I don't know of any "noise" issues in our school.

MINN: The preclinical laboratory renovation included thicker sound dampening ceiling tiles which has made a substantial difference in the sound volume when nearly 100 high speed handpieces are operating.

UMKC: No.

UNMC: Generally no. Dust collection equipment and handpiece noise is noticeable, but no complaints currently.

SASK: No issue raised.

SIU: No formal issues.

4. What are your school's protocols for dealing with **student** accidental needle sticks, bur punctures, and blade cuts?

COLO: See attached document. (*No Document Attached*)

CRE: Student and patient have blood tested for communicable diseases.

IOWA: Send to student health, we support their management/counseling of situation. Ask for blood sample from patient, take at school if agreed.

MAN: We referred to these accidents as “significant exposures”:
Protocols involve:

1. Inform the patient.
2. Inform the instructor.
3. Apply first-aid - if cut to student’s tissues, induce bleeding by pressure and rinsing wound with running water and soap.
4. Determine if a significant exposure has occurred.
5. Phone: Occupational environmental Medicine to inform them of the exposure
6. Go to emergency room with patient.
7. File a faculty incident report.

MARQ: The School has a definitive post-exposure protocol for potential risk to blood borne pathogen transmissions. Both the exposed student and source patient are encouraged (we really can’t require them) to go for follow-up blood testing. Students are sent to MU Student Health Services and patients are sent to an Occupational Health clinic. Both parties are tested for Hepatitis B, Hepatitis C and HIV. Results are shared appropriately from the medical providers. All exposures are logged and filed.

MINN: Students are to go to Boynton Health Service within two hours of the incident if the accidental needle stick occurs between the hours of 8:00 am-4:30 p.m. They are to complete an I incident Report Form (SD130) and submit form to 8-434 Moos Tower. Accidental needle sticks that occur after 4:30 p.m., students are asked to call 612-625-7900 within two hours of the incident for step by step directions to follow.

UMKC: See the following.

OCCUPATIONAL EXPOSURE PROTOCOL

Introduction

Significant Exposures:

- Contaminated needle-stick.
- Puncture wound from a contaminated sharp instrument.
- Contamination of any obviously open wound or the mucous membranes by saliva, blood, or a mixture of both saliva and blood.

Exposure to the patient’s blood or saliva on the unbroken skin is not considered significant.

If you have been exposed to blood or body fluid from a patient, you may be at risk of exposure to bloodborne pathogens (disease-causing germs carried by blood, such as Hepatitis or HIV). Since we never know whose blood may carry germs, we need to take precautions regarding your exposure.

Risk of Infection After Exposure

While the risk is very low, it is not zero.

- Exposure from needle sticks or cuts cause most infections. The average risk of HIV infection after a needle stick/cut exposed to HIV infected blood is about 1 in 300. 99.7% of needle stick/cut exposures do not lead to infection.
- The risk after exposure of the nose or mouth to HIV infected blood is estimated to be about 1 in 1,000.

Exposure Accident Protocol

1. Immediately cleanse the wound thoroughly with soap and water.

2. It is recommended that you seek evaluation/treatment **AS SOON AS POSSIBLE**. If you are treating a patient, we recommend you stop dental treatment and take the patient to Oral Surgery to have their blood drawn. You can then dismiss the patient and proceed to Truman Medical Center Occupational Health Department for evaluation/treatment.
3. If the source patient is unavailable or unknown, it is still imperative that you report to Truman Occupational Health Department as soon as possible for evaluation and determination of prophylactic drug regime.
4. If Truman Medical Center Occupational Health Department is closed, you should report to Truman Medical Center Emergency Department.
5. **If the source patient of the body fluids is known, please take the patient to Oral Surgery to have blood drawn.** The following tests will be done on the patient:
 - a. HIV — Consent is required.
 - b. HbsAG (Hepatitis antigen) — to see if the patient is a Hepatitis B carrier
 - c. HCV — to see if patient is a Hepatitis C Carrier.
6. The student will report to Truman Medical Center's Occupational Health Department with the patient's blood for counseling and blood work assessment. You may obtain a map to the Occupational Health Department from Oral Surgery; Ms. Dana Linville, room 168B; Ms. Kathy Adolphsen, room 168; or Dr. Harvey Eplee, room 123A.
7. In order to assess whether the student has been previously exposed to Hepatitis or HIV, the student's blood will be drawn at Truman Medical Center and tested for the following:
 1. HIV (Human Immunodeficiency Virus), consent is required
 2. HbsAB (Hepatitis Antibodies)
 3. HCV
8. When you return from Truman Medical Center Occupational Health, report the exposure incident to Dana Linville in Room 168B, phone x2124, or to Dr. Eplee in Room 123A, phone x2152, or Kathy Adolphsen in Room 168, phone x2136. If these individuals are not available, please see Jennifer Smith, RN in Oral Surgery.
9. After-Hours Exposure: In the event of an after-hours exposure, please call Truman Medical Center Emergency Department (TMC ED) at 816-404-1500. The supervising faculty should speak to the charge nurse so that care can be expedited when you arrive at TMC ED.

HIV Blood Test Results and Treatment Recommendations

Source Patient

1. Diagnosed AIDS; HIV positive; refuses testing; or unknown source
2. Anti-HIV negative

Student or Worker Exposed

1. Receive counseling and medical evaluation for post-exposure medication
2. Receive counseling and optional follow-up at 3 and/or 6 months

If Post-Exposure Medication is Indicated

The short-term and long-term harmful effects of taking antiviral medication by a non-infected individual is uncertain at this time. The adverse effects of taking antiviral medication during pregnancy is not fully known at this time.

When taking post exposure prophylactic medication, you should be aware of the following side effects of each drug.

- Upset stomach (e.g. nausea, vomiting, diarrhea), tiredness, or headache for people taking ZDV
- Upset stomach and, in rare instances, pancreatitis for people taking 3TC
- Jaundice and kidney stones in people taking IDV, although these side effects are infrequent when IDV is taken for less than one month. The risk of kidney stones may be reduced by drinking 48 oz. of fluid per 24 hour period.

Is post-exposure treatment recommended for all types of occupational exposures to HIV?

No. Because most occupational exposures do not lead to HIV infection, the chance of possible serious side effects (toxicity) from the drugs used to prevent infection may be much greater than the chance of infection from the exposure. The risk of infection and possible side effects of the drugs should be carefully considered when deciding whether to take the medication. Exposures with a lower risk for infection may not be worth the side effects associated with these drugs.

What about exposures to blood for which the HIV status of the source patient is unknown?

If the source individual cannot be identified or tested, decisions regarding follow-up should be based on the exposure risk and whether the source is likely to be a person who is HIV positive.

Follow-up HIV testing is available to all workers who are concerned about possible infection through occupational exposure.

Hepatitis B Blood Test Results and Treatment Recommendations

Exposed Worker	Treatment When Source Is Found To Be:		
	HbsAg-positive	HbsAg-negative	Unknown or not tested
Previously Vaccinated¹			
1. Known Responder ²	No treatment	No treatment	No treatment
2. Known Non-Responder ³	1. Worker should receive two (2) doses HBIG (give second dose one (1) month after first dose) - OR - 2. Worker should receive one (1) dose HBIG plus one (1) dose Hepatitis B vaccine	No treatment	If known high-risk source, may treat worker as if source were HbsAG-positive
3. Response Unknown ⁴	Test exposed worker for anti-HBs: 1. If inadequate ⁵ , dose HBIG plus Hepatitis B vaccine booster dose 2. If adequate ⁵ , no treatment	No treatment	Test exposed worker for anti-HBs: 1. If inadequate, initiate revaccination 2. If adequate, no treatment

¹ Exposed worker has already been vaccinated against Hepatitis B.
² Anti-HBs were > to 10 milli-international units (Antibody Positive)
³ Anti-HBs were < 10 milli-international units (Antibody Negative)
⁴ Individual's antibody level was never tested
⁵ Adequate anti-HBs is > 10 milli-international units

**Hepatitis C Blood Test
Treatment
Recommendations**

- For the source, baseline testing for anti-HIV
- For the person exposed to the HCV-positive source, baseline and follow-up testing including:
 - baseline testing for anti-HCV; and
 - follow-up testing for anti-HCV at 12 weeks and 6 months
- Confirmation by supplemental anti-HCV testing of all anti-HCV results reported as positive by enzyme immunoassay

Definitions

1. HBsAg refers to the Hepatitis B surface antigen.
2. Anti-HBs refers to the antibody to the Hepatitis B surface antigen.
3. HBIG refers to Hepatitis B immune globulin.
4. Anti-HIV refers to the antibody to the human immuno deficiency virus.
5. Anti-HCV refers to the antibody to the Hepatitis C antigen.

References

Public Health Service Guidelines for the Management of Health-Care Worker Exposures to HIV and Recommendations for Post-exposure Prophylaxis; MMWR 47 (RR-7); 1-28; Publication date 5/15/1998

Truman Medical Center-West Blood/Body Fluid Exposure on Health Care Workers

MMWR Oct. 16, 1998; 47 (RR-19); 1-39 Recommendations for Prevention and Control of Hepatitis C (HCV) Infection and HCV-Related Chronic Disease

MMWR 1997; 46 (RR-18); 23 Immunization of Health-Care Workers; Recommendations of the Advisory Committee on Immunization Practices (ACIP) and the Hospital Infection Control Practice Advisory Committee.

- UNMC:** If the offending agent is contaminated, the student will file an incident report with the Assistant Dean for Patient Services (Dr. Molvar). Then call for an appointment as soon as possible after the injury. If at all possible, the appointment should be scheduled within 24 hours of the injury.
1. The College strongly recommends that any faculty, staff or student who has an injury with possible exposure to the blood or body fluids of another person seek medical care. Treatment as soon as possible is imperatively for those exposed to blood/body fluid from patients with known serious infectious disease such as HIV. However, the decision on whether or not to seek medical care rests ultimately with the injured person.
 2. The College will cover the cost for the injured COD personnel and source patients for initial medical care and recommended follow-up for clinical injuries with possible exposure to the blood/body fluid of another person when provided by St. Elizabeth Company Care.
 3. The injured person and/or source patient may seek medical Care from another physician but this may lead to delays due to lack of familiarity with UNMC protocols for treatment and payment. In such cases, the Assistant Dean for Patient Services should be notified and the treating physician must complete the “Physician’s Findings and Recommendations” section of the UNMC “Occurrence” Report. If the source patient seek a blood test from another physician:
 - A. Blood tests should include rapid/confirmatory HIV, Hep B and Hep C
 - B. The results of the blood test should be called in by the treating physician to Company Care at (402) 475-6566 as soon as possible.
 - C. When reporting for the appointment at St. Elizabeth Company Care, bring the following:
 1. The UNMC Confidential Report of Occurrence
 2. A copy of the medical history and medical history notes of the patient (if the patient is known).
 3. UNMC COD HBV Immunization Status Report for exposed person (available in Room 105)
 4. UNMC COD Patient Consent for Blood Test form signed by the patient, if patient is known and available to sign the form (Available in Room 105).
 - D. The treating physician will determine the need and provide or arrange for:
 1. Laboratory procedures for the injured person and the source patient (if known and willing to undergo lab tests. The College will cover costs for laboratory procedures for source patients.
 2. Medications and/or immunizing agents.
 3. Counseling related to the injury/exposure
 4. Follow-up care.
 - E. The treating physician will maintain the confidentiality of records of care (including results of tests). As required by OSHA regulations, the treating physician will return the UNMC “Confidential Report of Occurrence” including Physician’s Findings and Recommendations to the COD. The COD sends the “Confidential Report of Occurrence” to UNMC as per OSHA regulations and UNMC policies.

- SASK:**
- a. Remove contaminated clothing or gloves. For skin wounds, ensure area bleeds and wash with antiseptic soap.
 - b. Immediate contact with Public Health Services where assessor guides individual through risk assessment and protocols involved.
 - c. Baseline blood test for student: HbsAg, anti-HbsAg, HCV Ab and /or HIV antibody, if requested by a clinician
 - d. Source patient serology (Must obtain consent) HbsAg, HCV Ab, HIV antibody
 - e. Complete a Student Accident Report Form and follow up from Student Health Centre on Campus
 - f. Follow up with serological testing 6 weeks, 3 months, 6months, 1 year
Confidential file kept at Student Health Centre

SIU: The student reports to the clinic director and has blood tests done. The patient is also asked to have blood tests done to determine if there are any problems.

5. What are the protocols for **patients** injured during procedures by burs, diamonds, disks, blades?

COLO: See attached document. (*No Document Attached*)

CRE: Protocol depends upon the extent of the injury. An Incident Report is completed, and it is also recorded in the dental record.

IOWA: We deal with it or send to UIHC.(University of Iowa Health Center). Record incident in patient chart.

MAN: Similar to what is written in questions #4, except that reporting to an emergency room is not required if the injury is minimal. We have had patients who swallowed their crowns or else, aspirated them into their lungs requiring surgery to retrieve them. If this is the case, steps 1 through 7 are followed.

MARQ: Patient injuries if a dental-related nature are first managed by supervising faculty. Minor cuts, lacerations, incorrect tooth preparations are addressed immediately on the clinic floor. In cases where a patient may swallow something in the clinic, they are sent to the occupational health clinic for follow-up (x-ray, medical evaluation, etc).

MINN: Patients are to go to Fairview University Hospital Emergency Room if an accidental injury occurs between the hours of 8:00 a.m. - 4:30 p.m. If an accidental injury involving a needle stick, patients are to go to Boynton Health Service. If the needle stick occurs involving a patient after 4:30 p.m., contact Boynton Health Center at 612-625-7900 within two hours off the incident for step-by-step directions. Staff, students, and/or faculty are asked to complete an Incident Report Form (SD 130) and submit form to 8-434 Moos tower.

UMKC: See Attachment below.

MANAGEMENT OF UNUSUAL EVENTS OR OUTCOMES

Introduction

The office of Dr. Harvey Eplee functions as the coordinating point for those activities related to incident reporting and management of unusual events or outcomes.

REPORTING UNUSUAL EVENTS AND OUTCOMES

Definitions

An unusual event is a physical accident not directly induced or caused by treatment rendered to the patient. The result may or may not involve physical injury.

An unusual outcome is the result of treatment rendered to a patient where the outcome exceeds the normal expectations.

Class of 2009
Clinic Orientation Manual

RISK MANAGEMENT

Sec. 7.2
(Revised 5/07)

The result may or may not involve physical injury to the patient. For a list of reportable unusual outcomes see Attachment #1 in this risk management section.

A non-employee is a patient, student, volunteer, visitor or outside contractor.

Risk management is a broad-based program — an ideal by-product, of which, is improved quality of patient care — which identifies and attempts to contain, reduce, prevent, eliminate, or manage the risk of financial loss to the School and its faculty due to unusual events, incidents and outcomes.

Reporting Requirements

All unusual events and outcomes which may involve injury, possible injury or alleged injury to non-employees that occur in the Dental School and/or Clinics must be reported to the Coordinator of Patient Services **WITHIN 48 HOURS**. If any question of need exists, the office of Dr. Harvey Eplee should be notified.

Note

All threats of legal action against the University, the School of Dentistry, the faculty, employees or students must be reported as soon as possible to Dr. Harvey Eplee, the Risk Management Officer, Room 123A.

Purpose

The purpose of the policy is to provide a mechanism for documenting and reporting incidents occurring in the University of Missouri-Kansas City School of Dentistry. The primary intent is use in patient care, but is applicable to all non-employees, including visitors and students delivering health care.

The documentation and reporting of incidents is a Quality Assurance effort in which all professional, administrative, technical, and clerical staff participate to reduce the number of incidents and unusual outcomes and to reduce exposure to litigation. The primary purpose for reporting is to provide an informational base from which corrective and preventive action can be taken and to comply with the terms of the School's Professional Liability insurance.

Report Maintenance

The School shall maintain a current complete file on all reported incidents which could involve either court action, reimbursement, adjustment or charges rendered, arbitration, or conciliation.

Reports shall be filed with the office of Dr. Harvey Eplee and a copy of the report shall not be included in the patient's record.

Class of 2009
Clinic Orientation Manual

RISK MANAGEMENT

Sec. 7.3
(Revised 5/07)

Objective facts of the incident or unusual outcome shall be reported in the patient's record as appropriate to patient treatment, diagnosis, and documentation requirements.

Facts of occurrence shall be discussed with the patient, as appropriate, by attending treatment faculty. The reports are confidential and non-discoverable to the extent provided by the law for such Quality Assurance efforts.

Patient records shall not be revealed unless proper forms are signed by the patient according to HIPAA guidelines.

Use of Reports

Filing a report shall not, in and of itself, subject faculty, students or staff to punitive or disciplinary actions. The Office of Risk Management shall analyze and categorize all reports and issue statistical data summarizing the types, numbers and locations of incidents and unusual outcomes for the Risk Management Committee.

UNUSUAL EVENTS AND OUTCOMES REPORTING PROCEDURE

Non-Emergency Situations The student must report the incident to the faculty supervising the patient's care. The Office of Risk Management must be notified. Appropriate incident reports and record data entries must be completed.

If treatment is required, the student should follow the direction of the supervising faculty.

Emergency Situations Follow the instructions for a Code Blue Alert. The office of Dr. Harvey Eplee must be notified and appropriate incident reports and record data entries must be completed.

UNUSUAL EVENTS AND OUTCOMES REPORTED BY TELEPHONE

Non-Emergency Situations Report the incident the next clinic day to the faculty supervising the patient and the Risk Management Officer. Appropriate incident reports and record data entries must be completed.

Make arrangements with faculty if treatment is required. Follow the direction of the faculty in treating the patient.

Emergency Situations

Please be informed and inform your patients of the following after-hours emergency procedure for patients being actively treated:

1. Provide your patients with your home phone number. Ask them to call you first if any problems arise. If you cannot solve their problems,
2. Call the appropriate Team Coordinator or team faculty member. If the faculty member cannot solve the problem, have the patient call 816-235-2011 and leave their number or you call and leave the patient's number.
3. Emergency personnel will call and give directions to the patient.

If the emergency requires medical attention, direct the patient to the nearest hospital.

Report the incident to the office of Dr. Harvey Eplee the next clinical day. Appropriate reports and record data entries must be completed.

INCIDENT REPORT PROCEDURES

Types of Forms

1. Form #200 Non-Employee — Unusual Event (Attachment #2)
2. Form #192 Patient — Unusual Outcome (Attachment #3)
3. Form #3 Employee — Unusual Event (Attachment #4)

All forms are obtained from the office of Dr. Harvey Eplee, Room 168.

Form #200

This form is used for students, faculty and general public in reporting incidents not related to dental treatment (i.e. a person falls out of a chair in the lobby, slips on the floor, etc.). In most instances, the reception desk will handle filling out the necessary forms for general public.

If a student or faculty is injured, they will fill out the form themselves.

This form should be returned to Room 168.

Form #192

This form should be used for reporting all unusual outcomes involving patient treatment. The form should be filled out by

the attending faculty member with the student listed as a witness. Return the form to the office of Dr. Harvey Eplee.

Form #3

Used for reporting an employee injury. **The employee does not fill out the report.** His/her supervisor or the Code Blue team must fill out the report. Return completed form to the office of Dr. Harvey Eplee.

Attachment #1

UNUSUAL REPORTABLE OUTCOMES

- Abandonment Claims
- Allergic reaction (from drugs or materials)
- Anesthesia (wrong quadrant or tooth)
- Aspiration or swallowed substances (instruments, restorations, etc.)
- Broken instrument (unable to locate broken part, in root canal, etc.)
- Burns
- Complaints (dissatisfied patient or parent)
- Damage to patient-owned appliance
- Damage from failed product (headrest failure, etc.)
- Drug (abuse, allergy, reaction)
- Excessive pain, bleeding or swelling during or following treatment
- Extraction (wrong tooth)
- Fracture as a result of treatment (bone or tooth)
- Lacerations as a result of treatment
- Lack of informed consent (even with a signed consent form)
- Medical complications resulting from or during treatment
- Misadventure in the execution of a procedure
- Oral-antral fistula
- Paresthesia (severed or damaged nerve)
- Perforation (bur, file or instrument)
- Prescription (incorrect drug, dose, instructions)
- Post-operative instructions (lack of, or wrong regimen given)
- Treatment (wrong tooth restored, endodontics, etc.)

Attachment 2 (front)

UNIVERSITY OF MISSOURI

Hospital — Columbia — Kansas City — Rolla — St. Louis — UM

**STUDENT OR GENERAL PUBLIC INJURY AND PROPERTY DAMAGE REPORT
(DO NOT USE FOR VEHICLE ACCIDENTS)**

INSTRUCTIONS: Accidents and incidents resulting from, arising out of and directly relating to the University's premises (owned, rented or leased) and operations; or resulting from, arising out of and directly relating to an employee's position of employment by the University, are to be reported on this form, provided:

(1) the accident caused
 (a) bodily injury to or the death of any person, excluding patients in any University Medical Facility and University employees, or
 (b) damage to property owned by any person, excluding property owned by patients of any University Medical Facility and University employees;
 or
 (2) the incident resulted in a threat or utterance of intent to take legal action against the University or an employee due to an alleged Personal Injury. (See Item 16 below for kinds of Personal Injury.)
 In the event the accident caused bodily injury to or the death of any person, the Campus Business Officer shall be notified by telephone immediately.
This form shall be submitted by:
 (1) The academic staff member in charge of the student's activities at the time of the accident or incident or to whom the accident or incident was reported; or
 (2) the person in charge of the building or facility or the person sponsoring the meeting or event attended by the student or general public at the time of the incident; or
 (3) any employee who witnesses an accident or incident or to whom the accident or incident is reported or to whom a threat or utterance of intent to take legal action was made due to an alleged Personal Injury; or
 (4) the Campus Police, if called to investigate the accident or incident.
 This form shall be **TYPED** with original only, signed by the person submitting the form and forwarded to the Office of the Business Officer or if Central Administration, to the Director of Property and Risk Management **WITHIN 48 HOURS AFTER THE ACCIDENT OR INCIDENT**. This report is intended solely for internal use by the University's Office of Property and Risk Management and the Office of the General Counsel.
 In completing the report below, "accident" and "incident" will be referred to as "occurrence." The name to be indicated in Item 5 shall be the name of the person who sustained bodily injury, had property damaged or alleges to have sustained Personal Injury.

INDICATE WHETHER THIS IS A REPORT OF AN ACCIDENT OR INCIDENT OR BOTH: <input type="checkbox"/> ACCIDENT (complete applicable items 1 through 17) <input type="checkbox"/> INCIDENT (complete applicable items 1 through 12, 15, and 16)		1. DATE OF REPORT	
2. DATE OF OCCURRENCE	3. TIME OF OCCURRENCE	4. PLACE OF OCCURRENCE (name of bldg., room No., or describe University property)	
5. FULL NAME OF INJURED OR AGGRIEVED PERSON		6. TELEPHONE	7. SEX
9. ADDRESS (if student, give campus address)		10. MARRIED	11. STATUS
12. DESCRIBE DETAILS OF THE OCCURRENCE, INCLUDING YOUR OPINION AS TO HOW BODILY INJURY, PROPERTY DAMAGE OR PERSONAL INJURY OCCURRED AND HOW YOU OBTAINED THE INFORMATION. ATTACH COPIES OF ANY CORRESPONDENCE, POLICE REPORTS OR ANY OTHER INFORMATION AVAILABLE WHICH MIGHT ASSIST IN THE INVESTIGATION OF THIS OCCURRENCE.			
13. DESCRIBE FULLY THE SPECIFIC PART OF THE BODY INJURED AND NATURE OF INJURY			
14. WAS THE INCIDENT AN OCCUPATIONAL EXPOSURE? COMPLETE THE FOLLOWING QUESTIONS IF THE INCIDENT WAS AN OCCUPATIONAL EXPOSURE: WHAT TYPE OF INCIDENT OCCURRED? TYPE OF INSTRUMENT INVOLVED IN EXPOSURE? WHAT TYPE OF BODY FLUID WAS INVOLVED? AMOUNT OF FLUID? WAS THE SOURCE PATIENT TESTED FOR HIV, HEPATITIS B, HEPATITIS C? DOES THE STUDENT REQUEST TO UNDERGO OSHA RECOMMENDED BLOOD TESTING?			
15. DESCRIBE DAMAGE TO PROPERTY OF OTHERS AND ESTIMATE COST TO REPAIR OR REPLACE PROPERTY			

Attachment 2 (back)

16. NAMES AND ADDRESSES OF WITNESSES		TELEPHONE
17. INDICATE BELOW THE NATURE OF THE ALLEGED PERSONAL INJURY RESULTING FROM THE INCIDENT		
<input type="checkbox"/> False Arrest <input type="checkbox"/> False Imprisonment <input type="checkbox"/> Malicious Prosecution and Humiliation <input type="checkbox"/> Libel <input type="checkbox"/> Defamation of Character <input type="checkbox"/> Wrongful Eviction <input type="checkbox"/> Wrongful Detention <input type="checkbox"/> Assault and Battery <input type="checkbox"/> Slander <input checked="" type="checkbox"/> Invasion of Right of Privacy <input type="checkbox"/> Discrimination as Prohibited by Law		
THIS REPORT HAS BEEN REVIEWED AND ACCURATELY REFLECTS ALL OF THE INFORMATION KNOWN REGARDING THE ACCIDENT OR INCIDENT		
SUBMITTED BY (Typed name of person submitting report)		TYPED TITLE OF PERSON SUBMITTING REPORT
SIGNATURE OF PERSON SUBMITTING REPORT		TYPED NAME OF DEPT. OF PERSON SUBMITTING REPORT AND TELEPHONE NO.

Report of Accident Investigation

18. WHAT ACTION HAS OR WILL BE TAKEN TO PREVENT RECURRENCE:		
INVESTIGATED BY (Typed name of person investigating report)	TYPED TITLE OF PERSON INVESTIGATING REPORT	DATE
SIGNATURE OF PERSON INVESTIGATING REPORT	TYPED NAME OF DEPT. OF PERSON INVESTIGATING REPORT AND TELEPHONE NO.	

UNIVERSITY OF MISSOURI
PATIENT INCIDENT REPORT

(FOR USE BY UMC MEDICAL CENTER ONLY)

INSTRUCTIONS: This form is to be used to report an incident, which is defined as any happening which is not consistent with the routine of commonly practiced care of a particular patient, including an accident or a situation which might result in an accident. This form is to be used to report an incident of an accident involving either an Out-patient or In-patient which occurs on a hospital or medical facility owned or used by the University. This form is also to be used to report damage to personal property of a patient. This form is NOT to be used to report an incident or accident occurring during a therapeutic or diagnostic procedure.

This form shall be submitted by:
(1) the physician whose name appears in item 21, or if not applicable, by
(2) the employee who witnessed or who was first advised of the incident or accident.
One TRIPLED copy of this form is to be signed by the person submitting the form and forwarded to the Office of the Business Officer WITHIN 48 HOURS AFTER THE ACCIDENT OR INCIDENT.

This is a CONFIDENTIAL report for use by the medical facility and by the University's insurance Department, Legal Department and its insurance company and as such, the copy retained by the hospital or medical facility shall NOT be made a part of the patient's medical records.

1. NAME OF PATIENT		2. <input type="checkbox"/> MALE <input type="checkbox"/> FEMALE	3. DATE OF BIRTH	4. PATIENT NUMBER
5. HOME ADDRESS			6. HOME PHONE NO.	7. ROOM NUMBER
8. STATE CAUSE FOR HOSPITALIZATION OR TREATMENT:				
9. PATIENT'S CONDITION BEFORE INCIDENT: (TO BE COMPLETED ONLY BY A PHYSICIAN) <input type="checkbox"/> Normal <input type="checkbox"/> Senile <input type="checkbox"/> Disoriented <input type="checkbox"/> Sedated <input type="checkbox"/> Other _____				
10. WERE BED RAILS PRESENT? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Up <input type="checkbox"/> Down <input type="checkbox"/> Ordered		11. WAS HEIGHT OF BED ADJUSTABLE?		12. DATE & TIME OF INCIDENT _____, _____ _____, _____
13. EXACT PLACE OF INCIDENT.				
14. DESCRIPTION OF INCIDENT OR COMMENTS BY PATIENT INVOLVED:			15. DESCRIPTION OF DAMAGE TO PATIENT'S PROPERTY & ESTIMATED COST TO REPAIR OR REPLACE PROPERTY.	
16. DESCRIBE DETAILS OF THE OCCURRENCE, INCLUDING YOUR OPINION AS TO WHAT HAPPENED, WHY IT HAPPENED, AND THE CAUSE. IF AN INJURY, STATE PART OF BODY INJURED.				
17. NAME, ADDRESS AND PHONE NUMBER OF WITNESSES:				
18. WAS PATIENT INVOLVED SEEN BY A PHYSICIAN AFTER INCIDENT? <input type="checkbox"/> Yes <input type="checkbox"/> No Date _____		19. TIME SEEN _____, _____ _____, _____	20. WHERE	
21. PHYSICIAN'S NAME				
22. STATEMENT OF PHYSICIAN				
DATE OF REPORT		SIGNATURE & TITLE OF PERSON SUBMITTING REPORT		
NAME OF HOSPITAL OR MEDICAL FACILITY SUBMITTING REPORT				

UM-UW FORM NO. 192 (REV MAR 73)

UNIVERSITY OF MISSOURI

Hospital — Columbia — Kansas City — Rolla — St. Louis — UM

**STUDENT OR GENERAL PUBLIC INJURY AND PROPERTY DAMAGE REPORT
(DO NOT USE FOR VEHICLE ACCIDENTS)**

INSTRUCTIONS: Accidents and incidents resulting from, arising out of and directly relating to the University's premises (owned, rented or leased) and operations; or resulting from, arising out of and directly relating to an employee's position of employment by the University, are to be reported on this form, provided:

(1) the accident caused
 (a) bodily injury to or the death of any person, excluding patients in any University Medical Facility and University employees; or
 (b) damage to property owned by any person, excluding property owned by patients of any University Medical Facility and University employees;

or

(2) the incident resulted in a threat or utterance of intent to take legal action against the University or an employee due to an alleged Personal Injury. (See Item 16 below for kinds of Personal Injury.)

In the event the accident caused bodily injury to or the death of any person, the Campus Business Officer shall be notified by telephone immediately. **This form shall be submitted by:**

(1) The academic staff member in charge of the student's activities at the time of the accident or incident or to whom the accident or incident was reported; or
 (2) the person in charge of the building or facility or the person sponsoring the meeting or event attended by the student or general public at the time of the incident; or
 (3) any employee who witnesses an accident or incident or to whom the accident or incident is reported or to whom a threat or utterance of intent to take legal action was made due to an alleged Personal Injury; or
 (4) the Campus Police, if called to investigate the accident or incident.

This form shall be **TYPED** with original only, signed by the person submitting the form and forwarded to the Office of the Business Officer or if Central Administration, to the Director of Property and Risk Management **WITHIN 48 HOURS AFTER THE ACCIDENT OR INCIDENT**. This report is intended solely for internal use by the University's Office of Property and Risk Management and the Office of the General Counsel.

In completing the report below, "accident" and "incident" will be referred to as "occurrence." The name to be indicated in Item 5 shall be the name of the person who sustained bodily injury, had property damaged or alleges to have sustained Personal Injury.

INDICATE WHETHER THIS IS A REPORT OF AN ACCIDENT OR INCIDENT OR BOTH: <input type="checkbox"/> ACCIDENT (complete applicable items 1 through 17) <input type="checkbox"/> INCIDENT (complete applicable items 1 through 12, 15, and 16)			1. DATE OF REPORT
2. DATE OF OCCURRENCE	3. TIME OF OCCURRENCE	4. PLACE OF OCCURRENCE (name of bldg., room No., or describe University property)	
5. FULL NAME OF INJURED OR AGGRIEVED PERSON	6. TELEPHONE	7. SEX	8. AGE (actual or apparent)
9. ADDRESS (if student, give campus address)		10. MARRIED	11. STATUS
12. DESCRIBE DETAILS OF THE OCCURRENCE, INCLUDING YOUR OPINION AS TO HOW BODILY INJURY, PROPERTY DAMAGE OR PERSONAL INJURY OCCURRED AND HOW YOU OBTAINED THE INFORMATION. ATTACH COPIES OF ANY CORRESPONDENCE, POLICE REPORTS OR ANY OTHER INFORMATION AVAILABLE WHICH MIGHT ASSIST IN THE INVESTIGATION OF THIS OCCURRENCE.			
13. DESCRIBE FULLY THE SPECIFIC PART OF THE BODY INJURED AND NATURE OF INJURY			
14. WAS THE INCIDENT AN OCCUPATIONAL EXPOSURE?		COMPLETE THE FOLLOWING QUESTIONS IF THE INCIDENT WAS AN OCCUPATIONAL EXPOSURE.	
WHAT TYPE OF INCIDENT OCCURRED?			
TYPE OF INSTRUMENT INVOLVED IN EXPOSURE?			
WHAT TYPE OF BODY FLUID WAS INVOLVED?			
AMOUNT OF FLUID?			
WAS THE SOURCE PATIENT TESTED FOR HIV, HEPATITIS B, HEPATITIS C?			
DOES THE STUDENT REQUEST TO UNDERGO OSHA RECOMMENDED BLOOD TESTING?			
15. DESCRIBE DAMAGE TO PROPERTY OF OTHERS AND ESTIMATE COST TO REPAIR OR REPLACE PROPERTY			

UNMC: OCCURRENCE REPORTS

The following protocol must be followed for incidents at the College of Dentistry that do not involve occupational blood exposures.

1. Notify the following individuals of incidents as soon as possible:
 - If patient notify Supervising Faculty
 - If student notify- Supervising Faculty
 - If faculty notify Department Chair or Dr. Molvar
 - If staff notify Staff Supervisor or Dr. Molvar
2. Report incidents that do not involve occupational blood exposures on the UNMC Confidential Report of Occurrence form. a. Patient Incidents such as:
 - Iatrogenic damage to hard or soft tissue during the provision of care, such as iatrogenic pulp exposure, soft tissue lacerations, fracture or other damage to adjacent teeth or bone during dental procedures.
 - Swallowing or inhaling an object during dental care such as
 - Dental instrument (such as a clamp or endodontic file)
 - Extracted tooth
 - Indirect restoration or appliance
 - Significant piece of debris (for instance, a piece of a restoration or material used in a procedure)
 - Injuries to patients in the College of Dentistry building or on the grounds surrounding the building, including the patient parking lot
 - Unusual verbal communications between the patient and any faculty, staff or student, or any other unusual interaction, including physical altercations or threats involving patients and faculty, staff or students
 - Unusual patient systemic responses during the provision of care
 - CODE Blue incidents
 - b. COD faculty, staff or student incidents such as:
 - Injuries in preclinical or research laboratories
 - Non-clinical injuries on the premises of the COD
 - CODE Blue incidents
3. If a patient swallows/inhales an object
 - a. The supervising faculty, and if needed, a full-time faculty member from Oral Surgery should examine the patient as soon as possible to determine if there is a possible airway obstruction. If there is an airway obstruction, the CODE Blue system should be activated.
 - b. The treating student/supervising faculty member must make the following arrangements immediately by calling the Radiology Department at the University Health Center (472-7455):
 - Assuming that the patient accepts the recommended care, the patient must report to the University Health Center as soon as possible on the same day of the incident for radiographic location of the object.
 - If the patient does not have transportation to the University Health Center, or if there is any question of the patient's ability or safety driving (as a result of the injury), the University Taxi Service (see Dr. Molvar or Jan John in room 105 for account #) or a College of Dentistry car driven by student, staff or faculty should be utilized.

- A date and time should be established for the patient to have a follow-up x-ray to confirm the object has passed. This should be 10-15 days after the incident.
 - The COD will pay the University Health Center for all expenses for radiographic or other follow-up to locate and follow the progress of the swallowed/inhaled object.
4. If the x-ray at University Health reveals that a patient has aspirated an object, the patient should be sent immediately to the emergency room at a hospital of their choice.
 5. The COD faculty, staff or student directly involved in the incident should prepare the UNMC Confidential Report of Occurrence form.
 - a. If the incident occurred while a faculty member was supervising care, that faculty member should review and sign the form in section F on the front page.
 - b. If the incident was related to patient care, an entry about the Occurrence Report for the incident should be made in the Daily Treatment Report, page 15 of the patient record.
 6. Responsibility for payment for care related to injuries to patients other than radiography for a swallowed object:
 - a. Any injury to a patient must be reviewed by a full-time faculty member from Oral Surgery or by the chair of the department involved.
 - b. If the injury requires treatment outside of the College, the Administrative Director for Business and Clinical Affairs or his/her designee must consult with the reviewing faculty member to determine if the COD will accept responsibility for any portion of medical expenses for such care.
 7. The completed UNMC Confidential Report of Occurrence form must be turned in to Room 105 as soon as possible after the incident. It will be forwarded to UNMC.

Questions should be addressed to Dr. Michael Molvar in Room 105 or (402) 472-1339.

SASK: On the assumption that universal precautions have been taken in the preparation of the clinical work area and instrumentation, then immediate first aid and management of an injury would be appropriate. In the event of a cross-contamination with blood/bodily fluids from the student operator, then the procedure outlined above would be followed

SIU: The student reports to the clinic director and has blood tests done. The patient is also asked to have blood tests done to determine if there are any problems.

6. Does your school have concerns with **Bisphenol A** in resin restorations? What is the evidence? If YES, please explain:

COLO: No. Apparently not an issue with faculty and patients. We will continue to review the data.

CRE: We are alert to the fact that Bisphenol A is widespread in our environment through the use of plastics. The health threat in composites remains an

unknown. Recent studies seem to indicate that dental composites pose no threat.

IOWA: No.

MAN: No.

MARQ: No response noted.

MINN: No.

UMKC: Not yet but we are watching.

UNMC: Not really. We are aware of the continuing evidence that surfaced recently in journal articles and in the media and we will continue to follow new developments. It is interesting Canada has a partial ban on the chemical and is considering a total ban. If this will have an effect on dental composite resin use in Canada will be seen later. Since government policy and court decisions generally have no basis in science anything could happen. Phthalates have been restricted from products intended for children under the age of 12. If the government further restricts the use of this group of chemicals it could require reformulation of some of our materials as these chemicals are used as plasticizers in some denture resins and poly sulfide impression materials.

SASK: There is no expressed concern. However, as this is a very active area of public interest over the use of Bisphenol A in products such as Baby Bottles and an impending ban of such products by Health Canada, the issue will be raised for student awareness and the literature watched.

SIU: No.

V. Curriculum

1. Has your pre-clinical or clinical operative curriculum recently undergone a significant revision? What changes did you make (additions or deletions)? Why did you make the changes and what positive or negative outcomes have you seen?

COLO: Not recently. We made several significant changes to the curriculum about 5-7 years ago. We continue to “tweak” the curriculum every year.

CRE: The 2008 addition of a new summer course for D-2s entitled “Intro to Clinic.”
This course takes place during the summer between Freshman and Sophomore year, and runs from Memorial Day to mid-July (7 weeks). The students are taught the fundamentals of dental assisting, and spend 3 half days a week assisting upperclassmen in the clinic. They spend 3 half days performing simple preps and restorations using the typodont in the manikin. They learn to scrub for surgery, and the technique for making diagnostic casts is revisited. FCC prep completed on the desktop.

IOWA: We have significantly revised our entire curriculum during this past year. We are currently in the process of implementing the changes.

Our primary reasons to do the revision were:

- to insure better continuity and coherence from the first to the fourth year of our undergraduate program;
- to put more emphasis on current evidence-based concepts related to caries detection, diagnosis and management, as well as preventive and remineralization therapies;
- to reinforce minimally invasive concepts and techniques at all levels.

The changes made were:

- Stronger emphasis on:
 - Caries risk assessment and management
 - CRA forms must be completed for all Operative patients
 - Caries detection and diagnosis
 - ICDAS classification
 - Preventative approach and Remineralization therapies
 - Strong emphasis on high fluoride toothpastes, fluoride varnish, Recaldent pastes (Mi paste), diet changes, xerostomia therapies
 - Caries removal (more conservative approach; proper technique)
 - More conservative approach
 - Changes in technique: reinforcement of usage of excavators; burs used with minimal pressure and with caution, mostly in periphery of prep
 - Stepwise caries removal
 - Posterior composites
 - For small to moderate lesions
 - Minimally invasive dentistry
- Less emphasis on:
 - gold restorations

Positive outcomes: Students have developed a more comprehensive approach to Operative Dentistry in general, and a defect-specific approach to carious lesions.

Negative outcomes: Some concepts (stepwise caries removal for example) are not accepted by other departments and students sometimes receive conflicting information.

MAN: Introduction of less complex competencies into the third year operative curriculum with a gradual increase of complexity in the competencies as the year progresses. For instance, a sealant competency occurs before a Class I composite competency. However, the student must pass a Class I competency before they attempt a Class II competency. We found that students were not passing their competencies due to lack of experiences. Hence, we instituted more competencies that ranged in complexity. Thus, students became competent with more practice and competencies they had completed.

MARQ: 5 years ago - unsure, before my time at MUSoD.

MINN: No.

UMKC: No.

UNMC: No.

SASK: Change in Faculty within the Operative Division has led to changes in approach to the teaching of Operative. There has been a de-emphasis on the use of artificial caries lesions in dentiform teeth for day to day operative teaching in Year 1. Students now cut ideal preps following instructions on as many teeth as they feel necessary to produce the desired outcome. Innovative techniques for teaching dexterity skills as well as correct posture and positioning are emphasized. In didactic teaching, a problem oriented approach is being used progressively replacing more formal lectures. The use of pre-packaged CD-Rom or Web based dissemination of basic principles and topics in Operative supplements the problem based approach.

The relative outcomes are not being measured as the changes are more the result of faculty turnover than any perceived inadequacy with the pre-existing program. A positive outcome of the problem-oriented approach is seen by the willingness of students to ask probing questions and to engage topic materials more enthusiastically.

We have recently dropped an expectation that each student in Years 3 and 4 do a Competency based evaluation of a Class II amalgam or composite restoration on a patient using two faculty to mark the stages compared to the usual one. This was dropped because it told us little more about students than we already knew, It also induced some stress affecting some students more than others and this leads to ethical issues surrounding patient care. We prefer to consider each preparation students perform as a daily reflection of emerging competency.

We retain the right to insist that a student prepare one or more teeth under competency conditions, with two examiners at the discretion of the senior faculty involved.

There is a progressive switch to more composite restorations than amalgam in the clinic in part due to patient expectations and also a reflection of the smaller size of carious lesions, better dental health etc. Having said that, there has been introduced an excellent amalgam carving exercise for large complex amalgams in the pre-clinical program that provides a much higher degree of confidence for students approaching large preparations in the clinic.

SIU: We have basically removed gold inlay and onlay procedures and replaced them with CEREC instruction. Changes were made to stay current with existing normal operative procedures. This change is too new for us to assess any positive or negative outcomes.

2. What is the time gap (in semesters or quarters) between the end of pre-clinical operative dentistry and the start of clinical operative experiences for your students? Describe the curricular progression of your students in operative dentistry (Example- Freshman pre-clinical operative, Sophomore block clinic rotation, Junior-Senior clinics, or Junior clinic, Senior Comprehensive / General Dentistry clinic). Is there any concern with diminishing knowledge or skills between pre-clinic courses and pre-clinical practice? What types of knowledge or skill erosion did you observe and what have you done about it?

COLO: Students begin clinical treatment of patients immediately after operative dentistry preclinic courses end, but before all restorative preclinic courses have ended.

D1 Fall	Dental Morphology
D1 Spring	Principles of Operative Dentistry Direct Restorations 1
D1 Summer	Principles of Operative Dentistry Direct Restorations 2
D1 Summer	Indirect Single Tooth Restorations 1
D2 Fall	Indirect Single Tooth Restorations 2
D2 Fall	Indirect Single Tooth Restorations 3
D2 Spring	Fixed & Removable Partial Dentures courses
D2 Spring	Clinic Operative Dentistry Treatment begins
All Semesters	Cariology courses
D2-D4	Comprehensive Care Clinic- all restorative and operative techniques

Yes, there is some loss of knowledge but not skills. Most of the problems seems to be more with the technical issues such as how to place a matrix band in a retainer, how to mix certain materials. However, there are quickly recovered. Biggest problem is with decision making which is why we have clinic courses.

CRE: No time gap - it is continuous.

D-1	1 st sem	Dental Anatomy, Dental Materials (focus on materials)
D-1	2 nd sem	Dental Materials (focus on Class I operative procedures)
D-2	Summer	Intro to Clinic (focus on restorative procedures)
D-2	1 st sem	Operative Dentistry Lecture & Lab
D-2	2 nd sem	Operative Dentistry Lecture & Lab (first Class 1 on a patient)
D-3	1 st sem	General Dentistry Clinic, Operative Dentistry Lecture
D-3	2 nd sem	General Dentistry Clinic, Operative Dentistry Lecture
D-4	Summer	Esthetic Dentistry Lecture & Lab (ceramic veneers and onlays, CEREC, build-a-tooth exercise)
D-4	1 st sem	General Dentistry Clinic, Operative Dentistry Lecture
D-4	2 nd sem	General Dentistry Clinic

IOWA: Students finish their preclinical operative training in June of their first year and start clinical operative dentistry in September of their second year (2 months gap).

- Curricular Progression:
 - Freshman Dental Anatomy (waxing projects) (August to November, twice a week)
 - Freshman Preclinical Operative Dentistry (simulation clinic) (November to June, twice a week)
 - Sophomore Clinic (minor Operative clinic) (all year long, twice a week)
 - Sophomore Esthetic Course (demos and simulation clinic exercises on complex esthetic techniques)
 - Junior block clinic rotation (major Operative clinic, blocks of 10 weeks)
 - Senior Family Dentistry (comprehensive care)
- Knowledge or skill erosion:

It happens mostly during their second year (Sophomore clinic), between preclinical Operative and Major Operative clinic. During their second year, students are exposed to minor Operative problems and tend to forget about more complex procedures and concepts. We require them to do preclinical work (complex procedures such as cuspal coverage amalgams, indirect preps and restorations on dentoforms) to compensate for the lack of clinical exposure to complex situations.

MAN: At the beginning of the student's first year, the Dentistry I students have a clinical course entitled "Early Clinical Experiences" in which the dental students work in partners and learn to perform simple procedures. For example: charting, clinical exams, taking bitewings, alginate impressions, anesthesia, basic periodontology (probing, supra-G and sub-G scaling). In the second year, Dentistry II students start a course called "Introduction to Comprehensive Care". In this course in first semester, they review some of the skills taught in the first year course "Early Clinical Experiences", however, more in depth. They start seeing patients for operative procedures as of second term/semester for simple operative procedures (Class I, V, II, bleaching, treatment planning, sealants, Pr2, etc.) This proves to be an excellent transition through the Year 1-2 as the curriculum becomes more clinical in third and fourth year dentistry.

MARQ:

- 3 semesters/ 6-9 months.
- D1 - preclinic instruction, D2 - spring/summer sessions simple operative, D3/D4 - Comprehensive Care Clinics/Block Rotations to Satellite clinics.
- Yes.
- Hand skills, didactic knowledge - implemented a mini review operative course that emphasized handskills and didactic knowledge of operative dentistry

MINN: No gap.

UMKC: Time gap is 5 months.
Freshman winter semester - lab and lecture preclinical
Sophomore - fall semester Operative Lecture II and lab - preclinical
Sophomore winter semester - Operative Lecture III preclinical - Board Preparation National Boards
Yes, there is a concern about diminishing skills. Instituted a bridge course during the beginning summer of students 3rd year before they start the clinic in the summer. Give a clinic experience during Fall semester 2nd year during their operative lab.

UNMC: The only gap would be the break between the first and second semesters (two - three weeks).
Progression of our curriculum:

- D-1 year, 1st sem Dental Materials and Techniques (introduction to operative techniques)
- D-1 year 2nd sem Operative I
- D-2 year 1st sem Operative II

4. D-2 year 2nd sem Enter Operative Clinic (one half day per week in operative, Perio or Complete Dentures)

5. D-3 and D-4 years Clinics continue except for a few weeks when students are on rotations such as pediatric clinic.

Since there is no break between their Operative courses and their clinical experiences, we don't see an erosion in their skill level.

SASK: Students enter the clinic in the final quarter of 2nd Year, hopefully doing relatively simple procedures such as preventive resins and smaller preparations. Due to the high amount of other clinical and pre-clinical courses impacting the first term of 3rd year, students only have 4 hours in the clinic doing operative on patients in the first term of 3rd year. Loss of skills over the summer vacation and a slow start to 3rd year leaves students somewhat tentative and challenged for more difficult cases in early part of 3rd Year. However as the second half of 3rd year takes hold with two clinics per week, momentum gains as well as confidence and by 4th year there is a discernable sigh of relief from our part time instructors. Skill erosion may be a factor between 2nd and 3rd year, but I tend to think it is a crisis of confidence and just an issue of the accumulation of repetitive experiences (from local anesthetic, rubber dam placement, caries removal problems, matrix problems to material mixing and handling). The only way you can build confidence is by repetitively doing tasks. However there is a reality that we must compete with other disciplines for the student's time and concentration.

We would like to have comprehensive care clinics throughout the clinical curriculum, but we are not there yet. We retain discipline oriented clinics until second half of the 4th and final year.

SIU: Freshman - 1st sem Operative I
Sophomores - 2nd sem Operative II
Juniors - enter clinic in the summer (one week after semester 2 ends) -
Advanced Operative Dentistry (didactic) - semester II
Seniors - Advanced Operative Dentistry II - semester
Students enter clinic 1 week after Operative II ends. There is virtually no erosion of skills or knowledge.

Regional CODE Agenda

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

No responses noted

Suggestions for CODE.

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

No responses noted

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

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

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

No responses noted

3. Other comments/suggestions?

No response noted

CODE REGIONAL MEETING REPORT FORM

REGION III South Midwest

LOCATION AND DATE OF MEETING:

University: Tennessee College of Dentistry

Address: 875 Union Avenue

Date: Memphis, TN 38163

CHAIRPERSON:

Name: Dr. Janet Harrison Phone #: 901-448-6692

University: Tennessee COD Fax #: 901-448-1294

Address: Memphis, TN 38163 E-mail: jharrison@utmem.edu

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

Suggested Agenda Items for Next Year:

Is there a need for a standardized curriculum, across the schools, in operative dentistry and development of such?

LOCATION AND DATE OF NEXT REGIONAL MEETING:

Name: Dr. Scott Phillips Phone #: 601-984-6042

University: Mississippi School of Dentistry Fax #: 601-984-6039

Address: Jackson, MS 39216-4505 E-mail: smphillips@sod.umsmed.edu

Date: TBA

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

Deadline for return: 30 Days post-meeting

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

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

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

CODE Region III Attendees Form

NAME	UNIVERSIT	PHONE #	FAX #	E-MAIL ADDRESS
Terry Fruits	Oklahoma	405-271-5735	405-271-3006	terry-fruits@ouhsc.edu
Colin Foster	Oklahoma	405-271-5735	405-271-3006	colin-foster@ouhsc.edu
Lynn Montgomery	Oklahoma	405-271-5735	405-271-3006	C-lynn-
Chris Beninger	Baylor	214-828-8211	214-874-4544	cbeninger@bcd.tamhsc.edu
George Cramer	Baylor	214-828-8468	214-874-4544	gcramer@bcd.tamhsc.edu
Bill Tate	Texas-Houston	713-500-4264	713-500-4108	William.H.Tate@uth.tamhsc.ed
Gary Frey	Texas-Houston	713-500-4475	713-500-4108	Gary.N.Frey@uth.tamhsc.edu
Ryan Quock	Texas-Houston	713-500-4276	713-500-4108	Ryan.Quock@uth.tmc.edu
Robert Sergent	Louisiana	504-941-8257		rserge@lsuhsc.edu
Alan Ripps	Louisiana	504-941-8261	504-941-8218	aripps@lsuhsc.edu
William Yeadon	Louisiana	504-941-8263		wyeado@lsuhsc.edu
James Fitchie	Mississippi	601-984-6030	601-984-6039	jfitchie@sod.umsmed.edu
Scott Phillips	Mississippi	601-984-6042	601-984-6039	smphillips@sod.umsmed.edu
James Lott	Mississippi	601-984-6030	601-984-6039	jrlott@sod.umsmed.edu
Janet Harrison	Tennessee	901-448-6692	901-448-1294	jharrison@utmem.edu
Scott Hollis	Tennessee	901-448-6288	901-448-1294	whollis@utmem.edu
James Simon	Tennessee	901-448-6641	901-448-1294	jfsimon@utmem.edu
Joseph Connor	Texas-SA	210-567-3693		connorj@uthscsa.edu
Dave Overton	Texas-SA	210-567-3705	210-567-6354	overtonj@uthscsa.edu
Rita Parma	Texas-SA	210-567-3533		Parma@uthscsa.edu
Karen Troendle	Texas-SA	210-567-3653		troendle@uthsca.edu
Larry Haisch	UNMC	402-472-1290	402-472-5290	lhaisch@unmc.edu
Steve Magee	Mississippi	601-984-6046	601-984-6039	smagee@sod.umsmed.edu

**2007 NATIONAL CODE AGENDA
REGION III
SUMMARY RESPONSES TO NATIONAL AGENDA**

(Editor note: Questions condensed for printing purposes)

I. Use of Simulation in Teaching and Testing: Now and in the Future.

All seven responding schools used simulation labs for preclinical teaching in some capacity. All used it for operative, crown and bridge, endodontics and implants, while 4 did not use it for periodontics and oral surgery and 1 did not use it for pediatrics and esthetic dentistry. For most schools the majority of procedures taught during simulation were experienced by students clinically, with the exceptions of pin placement, veneers, implant placement and some C&B procedures. Three schools had a required clinical competency that was tested on typodonts rather than patients and all used sim labs for preclinical endodontic procedures. Most schools felt that at least to some degree, student performance in simulation did mirror clinical performance. And in regard to evidence that a manikin crown procedure is not a valid way to test competency for licensure, no schools had any references regarding validity specifically.

II. Principles of Cavity Preparations - Outline Extension

Four of the 7 schools did not require extension to break all contact with the adjacent tooth if not dictated by caries, with 2 of those requiring the extension for amalgam preparation as opposed to composite preparations. Five of the 7 had different extension criteria between Class II amalgam and composite preps. For the Class III prep, none of the schools required incisal contact to be broken; all but one required gingival contact to be broken and 4 of the 7 required facial contact to be broken.

III. Caries - Treatment/Detection

All schools taught the use of incomplete caries removal while 3 of the 7 schools taught didactic information on ART. Most schools taught caries detection through the use of visual, transillumination, radiographic and very limited explorer probing techniques. One school did not allow any use of the explorer for probing. None routinely used Diagnodent or fluorescence techniques. Four of the schools used caries detection dyes while all have taught it didactically or had faculty demonstrations of the technique.

IV. Health and Safety Issues Related to Teaching/Practicing Dentistry

All schools disinfected or sterilized extracted teeth for preclinical use. Three schools used a formalin solution, 2 used bleach, 1 used bleach, then formalin, and 1 autoclaved only. None allowed teeth with amalgam to be autoclaved. All were following CDC guidelines for disposal of teeth. Only 1 school reported an air quality issue and that was addressed through the placement of charcoal filter boxes attached to the vacuum system. No schools reported a noise issue, though 1 replied that noise is greatly reduced in the sim labs after installation of all electric handpieces. All schools have a very specific and published protocol for management of needle sticks of students, faculty, staff and patients.

V. Curriculum

Most schools have seen at least a slight reduction in the number of preclinical hours allotted to operative and have used innovative methods to meet increasing needs, such as new video “snippets” and podcasts sent out to students demonstrating various operative procedures. Most schools have tried to either reduce the time gap between preclinical and clinical experiences so that knowledge transfers more efficiently or they have instituted an intro to clinic course allowing students to assist in clinic or treat a simulated patient immediately prior to entry to clinic.

2007 NATIONAL CODE AGENDA
REGION III RESPONSES
(Evidence cited where applicable)

Region III School Abbreviations

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

2007 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. Use of Simulation in Teaching and Testing: Now and in the Future.

Typodonts and simulation have been an accepted protocol for training and measuring competency for dental students prior to performing procedures on patients. In addition, simulation has been used for over ten years as a means to evaluate competency by licensing agencies. Simulation includes not only the standard surgical procedures as crown preparations, but also restorations and endodontic procedures. Simulation is used as a default option in order to provide training for students when there are insufficient patient resources; i.e., porcelain veneer procedures, ceramic inlay/onlays, etc. The ADA, ADEA and other dental organizations have expressed opposition to the use of human subjects for licensing examinations.

It would be appropriate to discuss the use of simulation in Teaching and Testing especially as relates to validity and reliability.

1. What procedures are you currently simulating in the pre-clinical laboratory?

BAY:	Yes	No	Comments
Operative	X		Use of personal barrier Patient and operator positioning and use of mirror for indirect vision Rubber dam application 1 st & 2 nd year (D1 &D2): CI I, II, V composite and amalgam preps and restorations CI III & IV composite preparations and restorations Pin amalgam build-up and reinforced resin build-ups CI II gold inlay and onlay preparations and restorations Impression techniques Decay removal, liner and base placement, indirect and direct pulp capping. Calcium hydroxide and RMGI liner placement CI II gold inlay and onlay preparation and

Crown & Bridge	X	<p>Use of personal barrier protection</p> <p>Full gold crown, 3/4 crown, and 7/8 crown prep and restorations</p> <p>All ceramic crown preparation and anterior veneer preparation</p> <p>Fabrication of interim restorations</p> <p>Post and core buildups</p> <p>Pin -amalgam build-ups and reinforced resin build-ups</p> <p>Diagnostic evaluation, treatment planning and preparation design on extracted teeth where caries has been excavated.</p> <p>Exercises on collapsed arch to: reestablish occlusal plane; establish correct pontic length in ridge augmentation cases; diagnostic wax-up to reestablish esthetics and plane of occlusion</p> <p>Fabrication of surgical and radiographic guides for implant placement</p> <p>Fabrication of soft tissue casts</p> <p>Impression techniques</p> <p>Impression and restoration of implants</p> <p>Fabrication of bleaching trays</p>
Endodontics	X	<p>2nd year dental (D2) :</p> <p>Rubber dam application</p> <p>Use of personal barrier protection</p> <p>Access opening, cleaning and shaping canals, obturating canals for anterior teeth, bicuspid and molars</p> <p>3rd year dental (D3) and 4th year dental (D4) -</p> <p>Progress exam: natural extracted teeth (anterior and posterior) mounted in block, access opening, all canals identified, one canal cleaned, shaped, and obturated.</p>
Periodontics	X	<p>2nd year dental (D2):</p> <p>Periodontal instrumentation identification and usage</p> <p>Scaling and root planing on typodonts with simulated calculus and periodontal pockets</p> <p>Use of Cavitron in gross scaling on typodonts with simulated calculus</p> <p>Surgical techniques:</p> <p>On a typodont with gingiva simulated with impression material, the student practices external bevel incisions, internal bevel incisions, open flap debridement and apically positioned flaps.; suturing</p>
Oral Surgery	Some	<p>Suturing simulated on black mounted surgical tubing</p>
Pediatrics	X	<p>Interviewing the parent of a pediatric patient</p> <p>Interacting with a pediatric patient, explaining treatment procedures, techniques for calming the apprehensive patient</p> <p>CI I, II, V amalgam preparations and restorations</p> <p>CI III and IV composite preparations and restorations</p> <p>ART technique</p> <p>Pulpotomy techniques</p> <p>Stainless steel crown preparation and placement</p>

Esthetic Dentistry	X		PFM anterior and posterior preparations and restorations All ceramic crown preparation and anterior veneer preparation Fabrication of bleaching trays
Implants	X		Fabrication of surgical and radiographic guides for implant placement Fabrication of soft tissue casts Impression and restoration of implants

LSU:	Yes	No	Comments
Operative	X		Fundamentals of Operative Dentistry- teach and test isolation, preparation and restoration with composite, amalgam, glass ionomer
Crown & Bridge	X		Introduction to Fixed Prosthodontics - preparation, provisional restorations, impressions for single crowns and bridges, preparation of post space
Endodontics	X		CITA mock board prep for access, instrumentation and obturation
Periodontics		X	
Oral Surgery	X		Extractions
Pediatrics	X		
Esthetic Dentistry	X		Preparation, temporization and placement of ceramic veneers, onlays, and crowns
Implants	X		

MISS:	Yes	No	Comments
Operative	X		
Crown & Bridge	X		
Endodontics	X		
Periodontics		X	
Oral Surgery		X	
Pediatrics	X		
Esthetic Dentistry	X		
Implants		X	

OKU:	Yes	No	Comments
Operative	X		

Crown & Bridge	X		
Endodontics	X		
Periodontics		X	
Oral Surgery		X	
Pediatrics	X		
Esthetic Dentistry		X	
Implants	X		

TENN:	Yes	No	Comments
Operative	X		preps, restorations for composite, amalgam, GI, isolation, projects and testing - we use a sim lab in conjunction with the computer-assisted manikin lab (DentSim-referred to as DS)
Crown & Bridge	X		Preps, cementation, provisionals, impressions, PFMs, FGCs, all ceramic-procera; single and multiple units, CERECs, survey crowns
Endodontics	X		Access prep of max molar on DS, then in sim lab access through obturation
Periodontics			Probing, instrumentation, root planing and scaling using tyodonts with calculus
Oral Surgery		X	
Pediatrics		X	
Esthetic Dentistry	X		Complex composites anterior and posterior - prep and restore, including veneers - porcelain and composite; CEREC preps
Implants	X		Surgical placement, impressions, restoration

UTSA:	Yes	No	Comments
Operative	X		
Crown & Bridge	X		
Endodontics	X		
Periodontics		X	
Oral Surgery		X	
Pediatrics	X		
Esthetic Dentistry	X		
Implants	X		

UTH:	Yes	No	Comments
Operative	X		
Crown & Bridge	X		
Endodontics	X		
Periodontics	X		
Oral Surgery	X		
Pediatrics	X		
Esthetic Dentistry	X		
Implants	X		

2. Are there any procedures taught in simulation that a majority of your students do NOT perform in the clinic? Please list

BAY: As of this year, gold inlay and onlay restorations are not a clinical requirement for our students therefore not likely to be performed by the majority of our students. At this point in time, all students do not surgically place implants.

LSU: Veneers

MISS: No, the possible exception is some of the esthetic composites bonding procedures. Students are taught direct laminate veneers, diastema closures, peg lateral management, etc. These are procedures that every student may not see in their patient family during clinical treatment. Pin retention is also taught preclinically along with bonded amalgam restorations. There are no specific clinical guidelines, so some students may or may not do these procedures clinically.

OKU: No.

TENN: Veneers (direct and indirect); porcelain inlay/onlays; stain & glaze crowns; implant surgery.

UTSA: Some students only veneer experience is in the simulation lab.

UTH: Perhaps pin placement in terms of a majority of students (some place pins, others may not - difficult to say which is in the majority; often depends on the supervising faculty). Implants.

3. Are you utilizing simulation to teach some or all of your PRE-CLINICAL endodontic procedures? Yes/No. If YES, please list.

- BAY:** Yes. Rubber dam application for endodontic treatment, use of personal barrier protection, access, canal cleaning, shaping and obturating are all taught in pre-clinical endodontics using simulation.
- LSU:** Yes, in preparation for CITA board only because the CITA examination is given in the simulation lab. However, by this time, the students have treated a few patients in the clinic.
- MISS:** Yes, all endodontic preclinical procedures are performed using manikin and typodont following aseptic techniques. Students will access and obturate a maxillary incisor, maxillary premolar, maxillary molar, mandibular molar and a maxillary canine using simulation. Digital radiography is used by accessing the Dentoform as a patient in our clinical software package.
- OKU:** Yes, some of the endodontic exercises use the simulators (rather than having the teeth mounted in a block). The exercises that use a simulator involve two Ivorine maxillary incisors, and a canine natural tooth and a mandibular premolar natural tooth. These projects are done using the ACCADENTAL - ModuPro typodont in the simulator. FPD teaches custom cast dowel core on the simulator. This is done using the ACCADENTAL - ModuPro typodont and an Ivorine tooth.
- TENN:** Yes. Access, clean & shape, obturation, core buildup.
- UTSA:** Yes, one of the WREB type models is used to mount teeth in anatomic positions for pre-clinical endodontics.
- UTH:** Yes, the endodontic department teaches the basics of root canal therapy (instruments, instrumentation, fill procedures, and techniques).

4. Are there any required CLINICAL competencies that you test on typodonts rather than patients? Yes/No. If YES please list.

- BAY:** Yes. At Baylor we test the D3 students on the gold inlay and onlay by having the students prepare, impress and restore teeth on the typodont. D3 and D4 clinical endodontic competencies are tested in the Sim lab on extracted teeth mounted in a block.
- LSU:** No.
- MISS:** No.
- OKU:** All clinical competencies are completed on live patients. We have some simulation competencies that must be passed prior to allowing students to proceed with patient care in the clinics:
- a three-unit FPD is a required competency for third year students before they can proceed to Fixed Pros clinic in the fall semester of their fourth year.
 - a Class II amalgam preparation and insertion, along with a Class III composite preparation is required on a simulator for second year

dental students before they can proceed to treat patients in the operative clinic in the spring semester of their second year.

TENN: Yes. Fixed Pros - bridges. Endo - D2 students treat maxillary premolar in lab; D3 students treat tooth in clinic under clinical conditions; SRTA mock board exam in lab.

UTSA: No at this time. There has been mild discussion of making the fixed partial denture senior competency a typodont examination to the exclusion of a clinical competency. For 2008-2009 there is still a clinical senior FPD competency but it could well be the only fixed partial denture the students does at UTHSCSA. The junior FPD expectation was deleted in 2007 because implants have made FPD's more difficult to find..

UTH: The third and fourth year students have competencies at the beginning of the year to get them thinking about ideal again, third years do an amalgam prep and fill, and an inlay prep. The fourth years do an amalgam prep and fill and onlay prep with temporization. They can substitute a clinical competency on a dentoform if they do not have the correct type of patient, normally it is an inlay comp that they are doing.

5. Besides the standard uses for typodonts and simulation that most schools are teaching such as cavity preparations, crown preparations, etc. what innovative or new techniques have you incorporated into your simulation laboratories?

BAY: Restoration of dental implants was incorporated into the preclinical Fixed Pros curriculum a number of years ago. Endodontics is teaching Themofil techniques. Oral Surgery is teaching medical emergency clinical scenarios using Resusic-Annie manikins.

LSU: Extractions, calculus removal.

MISS: We treat our clinical simulation lab like it was a clinical encounter with a patient. Universal precautions and standard clinical protocol are required. All other procedures are performed using traditional techniques to teach the classes.

OKU: None. We do have simulated patient projects that require students to diagnose caries, plan treatment, and make decisions concerning pulp protection and restorative materials.

TENN: Operative - combined use of DS for prepping at the beginning of the semester with restorations on prepared teeth in the sim lab simultaneously. 1/3 of the class works on preps in the DS while the other 2/3 works in the sim lab on restorations, then after a 1 hour session on DS, the groups switch out. This methodology is used for the first 3 months of the semester with the students preparing Class I, II, III and an all ceramic and FGC in DS lab.
Fixed pros - adjust, stain and deliver anterior/posterior all ceramic crowns using CEREC software; wax & cast survey crowns.
Endo - use of DS to cur endodontic access preparation.

UTSA: We place simulated caries (Triad stained with Cari-D-Tect) bonded into the Kilgore teeth with bonding agent. The students are told that this blue stuff represents soft dentin. They are then instructed to prepare the plastic teeth for restorations. A lesion near the pulp they might leave blue stuff. All other restorations should have all of the blue stuff removed as part of the preparation. (We) have acquired a new typodont that has periodontally involved teeth with simulated calculus. The typodont is being used to teach measuring pocket depth, furcation evaluation and scaling.

UTH: None that come to mind. We are very happy if they develop a solid foundation within the basic skills (good conceptual development, understanding proper procedures and/or techniques along with rationale, steady and progressive handskill development).

6. Do you use performance in the simulation lab as a means to identify superior students? (For example selection into honors programs). Yes/No. If YES please explain:

BAY: No.

LSU: No.

MISS: No.

OKU: No.

TENN: No.

UTSA: There is no clinical honors program at UTHSCSA.

UTH: Student performance and development (or lack of or delayed development) within the simulation lab is obviously a means to identify weak and strong students. The course faculty observe/realize the level of student performance in terms of conceptual understanding, handskill development, responsibility, and so forth; often times this realization is intrinsic in nature (by faculty). In many ways, it is more important to quickly identify the weaker student than the stronger student. We do not incorporate an honors program into our preclinical teaching.

7. Is it your observation that student performance in simulation mirrors their performance in the clinics with similar procedures? Yes/No. Please explain:

BAY: To some degree, yes. Simulation does not address working with a difficult patient, working on a tooth in which access is difficult, or working on a tooth in which isolation is difficult. Students who have not yet developed stress management skills may perform well in simulation lab but have difficulty in the clinical setting.

LSU: Yes. Student performance in simulation lab does seem to translate to initial performance in sophomore operative clinic. Students who become goof at applying rubber dam in simulation clinic take less time with isolation in the clinic.

MISS: Yes, the stronger student preclinically tends to be the student(s) seen to excel clinically and the weaker preclinical student tends to be the student who will start slower and performs weaker initially. We have only had two class move from preclinical simulation to clinic so more observation is needed to assess any benefits over the traditional head on a stick.

OKU: Generally yes. Student habits and attention to detail while working through the projects are identified. However, we have seen some students who perform excellently in the preclinic simulation labs that struggle in the live patient clinical situations.

TENN: No definitive evidence, but the better students in lab seem to be more self confident and can communicate better with regard to the procedure they want to perform. Also, it seems that the more often they have practiced placing the rubber dam in labs, the faster they are in clinic.

UTSA: No, we have been tracking performance fro the past 2 years and can find no correlation with the students that eventually pass sophomore preclinical operative dentistry compared to their junior clinical performance. In the last 5 years we have had six students that did not pass sophomore operative dentistry and never progressed to work on patients.

UTH: To an extent and in general, yes; however, some weaker preclinical students actually, oftentimes and surprisingly, elevate their clinical performance to a level not achieved preclinically (the contrary situation is usually slight, but has been observed). For the most part, after the somewhat cumbersome transition from preclinic to clinic, good operators usually remain relatively good operators an weal operators usually remain relatively weak operators (again, a generalization).

8. Has it been your observation that students who perform better in the simulation laboratory are more successful in licensing examinations? Yes /No Comments:

BAY: No. Students performing well in the simulation laboratory transition into the clinic more easily than student who have not had the simulation lab experience or who have not performed well in the simulation lab. We have drawn no parallels regarding students with sim lab experience and success in licensing examinations.

LSU: No.

MISS: No, with the first class to use simulation now in their fourth year, we have no data to support this. The CITA testing agency does use the same simulators our students train on for the tyodont portion of their examination, so this may be an advantage to our students as far as comfort in the environment which the examination is taken.

OKU: No, we do not have evidence that performance in simulation laboratories is correlated with success on licensing examinations.

TENN: Operative - not necessarily. Endodontics - yes. Fixed Pros - not definitive.

UTSA: No.

UTH: Not particularly... often it is the very competent student who has a misstep fro whatever reason and the weaker students is successful, especially with the criteria of today's licensing examinations - perhaps more misstep types of problems than overall skill related problems.

9. The Western Regional Boards is reluctant to adopt a simulation crown preparation as part of their examination even though other testing agencies with results accepted by over forty states have used simulation for over 10 years. Is there any evidence that would demonstrate that the manikin crown procedure is not a valid or reliable way to test competency for a licensure candidate? Please explain and provide references.

BAY: Manikin crown procedures as a measure of competency fir dental licensure is not unprecedented. Preparation and impression of an anterior maxillary tooth for a PFM restoration and preparation and impression of a maxillary first molar for a 3/4 or 7/8 crown was required for licensure in the state of California in the 1970s.

LSU: No, not that we are aware of.

MISS: Mississippi participates in CITA. Students perform a bridge preparation, crown preparation and endodontic procedure. I have no evidence performance based on tyodont vs. live patient examination, but a dentoform procedure does remove the stress of having to rely on measures outside their control for licensure. Patient selection, compliance and follow-up treatment if necessary are eliminated with tyodont procedures. Licensure should show competence in performing a procedure and this is achievable by tyodont exam. Practice management should not be the goal of licensure examination.

OKU: Not aware of any evidence to definitively demonstrate that a manikin crown procedure is or is not a valid and reliable way to test competency for a licensure candidate.

TENN: Personal communication from Chad Buckendahl (psychometrician for SRTA) to Dr. Mike McBride, Division Director of Fixed Prosthodontics
“This is actually an area where more research is needed (like the mode effects studies that I have talked about for the last few years). Anytime we use a simulation, there needs to be a compelling rationale. This is true for SRTA or any of the testing agencies. Here are the set of questions the examination committee fro SRTA considers, but I suspect similar discussions are held by most organizations:

1. Is it a skill that was rated highly on the job analysis as being important for entry-level participation?

2. Is it an important skill that is performed frequently enough in practice to verify candidates' abilities on the skill?
3. Are we already sufficiently measuring the skill or is the skill nested in something else we are already testing on the exam?
4. Are we able to reasonably measure as it is performed in practice?
5. If we are not able to reasonably measure the skill as it is performed in practice, is there a simulated environment where we could test the core skills?

Question 5 is where most of the agencies concluded that these skills are important enough for entry level practice to measure them, but too difficult and varied (and painful?) To measure on a actual patient versus a simulated one. In the prioritization of content on the exam, the conclusion has been that a less than perfect simulation of these skills is a better alternative than on measurement at all. I think an alternative example that would make it through most of the questions before getting held up on #5 is entry-level oral surgery skills (e.g., extraction). From what I have heard from educators and practitioners, extraction is an important entry-level skill, but there are not great ways to measure it on an exam whether real-world environment or simulation.

Hopefully this provided a little information. The types of studies that would actually evaluate this questions involve having the same students perform skills on actual patients and then on simulated patients. If the results are comparable, the simulation has the potential to provide similar information in a more controlled environment. When tests started to shift from paper-pencil to computer 20+ years ago, researchers were concerned about whether one group would have an advantage over the other group, so there "mode effects" studies occurred to see how randomly assigned groups would perform each mode. "

UTSA: This source showed no correlation between crown preparation in simulation and clinical performance. Curtis DA, Lind SL, Brear S, Finzen FC. *The Correlation of student performance in preclinical and clinical prosthodontic assessments*. J Dent Educ. 2007 Mar;71(3);365-72.

UTH: We are not aware of any published evidence, but there is likely much opinion, both ways. Most patients have tongues, saliva, move around, have periodontal structures, bleed, cough, and may even gag during impression taking, but most importantly, most, if not all, do not come with plastic (viade) teeth. All of these variables (some of which comprise integral considerations within competent patient treatment) would be removed when working on a manikin. A manikin-based examination would separate the students who could competently prepare a plastic tooth and impress a plastic model from those who cannot show competency or perhaps more accurately (for many), from those who have a misstep in achieving the same on that particular day; there may actually be little correlation between the two groups in terms of overall dental competency. However, the same could be argued when attempting to examine competency when the procedures are patient-based; here, there are simply more variables for the student to address. In many ways, any attempt at assessing overall dental competency based upon a limited number of dental

procedures is very constricting in terms of assessing the student's overall level of professional development. Diagnostic skills, conceptual knowledge, decision making, critical thinking, patient management, ethics, level of empathy and compassion, the ability to mentally and technically perform and succeed, the ability (in general) to "do no harm," all based upon sound, fundamental principals of dentistry and a high level of patient care and concern are addressed/observed only on a very superficial level, if at all. The technical procedures observed within the examination are only a small snapshot in time, a very limited view of the student's true range of ability and knowledge that they have acquired in school to efficiently manage the complexities associated with the dental profession, a view which may or may not accurately represent the entire picture. Basically, do practical board exams like WREB and the others; truly say everything (or anything) about the competency of the candidates? As noted earlier, most of our student failures on the WREB are due to mental/situational missteps (as far as we can tell) and are not ability based. Is dentistry any better or worse in the various states, dependent upon what licensing board they accept? More specifically, is there a discrepancy in the quality of crown preps/restorations between non-WREB and WREB states? Anecdotally, there may be no significant difference (it would be very difficult to design a reasonable, objective scientific study, which would yield definitive answers). If this is true, then adding a typodont crown prep to the test would only add stress, time, and cost to the examination.

II. Principles of Cavity Preparations - Outline Extension

Earlier this year the following questions were asked and the results were posted on the CODE web site (<http://www.unmc.edu/code/>). Schools should again respond and expand on as requested. Answer each questions and provide the rational/evidence for each answer. Are these conceptions taught in the pre-clinics then applied in the clinics? If NO, please comment.

1. Must facial, lingual, and gingival walls be extended to completely break contact with the adjacent tooth if not dictated by varies/penetrable decalcification? Yes/No. Rational/Evidence. Applied?

BAY: Basically, no for composites and yes for amalgams. However, in pre-clinical Operative dentistry, we do require students to break contact with the adjacent tooth in all directions for amalgam and composite CI II preparations. In the case of a CI III preparation, we require the students to open the contacts facially, lingually and gingivally but not incisally. The rational is that when the student is learning to restore these preparations, the extension will allow the faculty and students to evaluate the restoration for marginal seal and proper condensation or lack of voids in the restorative material. Clinically speaking, depending on the situation, students may be asked to extend a preparation in order to break contact with the adjacent tooth but not necessarily so for composite restorations. Amalgam restorations require facial/lingual/gingival margins to be opened unless a significant amount of enamel supported by sound dentin would be required to be removed to eliminate the contact. This allows the margins to be carved and burnished. (Summitt p. 348)

- LSU:** No. Rational/Evidence. Applied? Conservation of tooth structure, better anterior esthetics, and easier to achieve proximal contact.
- MISS:** AMALGAM Preclinical- Yes, F/L/G contact all barely broken to allow for matrix insertion and adaptation and contour of restoration. Rational for gingival contact to be broken is decay typically occurs gingival to contact area and this is simulated in preclinical courses. Clinical- Decay dictates more of the prep design. Typically gingival contact is broken since decay is gingival to the contact area; F/L may or may not be depending on the clinical situation. If tooth is rotated, and significant tooth structure needs to be removed to open the contact, students are encouraged to be conservative and not open the contact. And also for esthetics, if the amalgam margin will be visible from the facial margin. Matrix can be applied with some separation of teeth due to PDL expansion as needed in these cases.
Summitt JB, Osbourne JW, Schwartz RS (eds,) Fundamentals of Operative Dentistry, Chicago: Quintessence 2001:315.
- OKU:** In the case of a Class II cavity preparation, we prefer our students to minimally break contact at the facial, lingual and gingival proximal walls. Our rational is to place the margins where they may be carved or finished, be inspected for marginal defects at completion of the procedure and for future recall examinations, and provide better access for cleansing. We feel that the minimal amount of tooth structure removed to achieve this extension is more than compensated for by the aforementioned benefits. In some cases, where a more significant amount of tooth structure must be removed to break these contacts, we will not remove an excessive amount of tooth structure to break the contacts.
- TENN:** For all preps, the gingival contact must be broken as caries initiates slightly gingival to the proximal contact. For Class III preps: facial, lingual and incisal contact does not have to be broken unless dictated by the carious extent, thus providing a more esthetic and conservative restoration. As per Sturdevant 5th edition. The same prep design is taught in clinic as in lab.
- UTSA:** No, (our) protocols prohibit opening a contact that is not de-mineralized. Removal of de-mineralized enamel and dentin determines the extent of the preparation. Our textbook shows an IPC instrument as the minimal acceptable opening (11.4.3). We have reversed that opinion and expect some preparations to be in contact with the adjacent tooth as long as the enamel is sound. Most Class 2 preparations will open the gingival contact because that is where the carious process most commonly begins. A fractured marginal ridge may not require opening of even the gingival contact. Students are taught to prepare a tooth as conservatively as possible starting in the pre-clinical labs and continuing into the clinic. Pre-clinically, simulated caries are placed into prefabricated defects of the dentoform teeth prior to tooth preparation to allow the students to use "caries" to dictate extension of the preparation.
Osborn JW, Summitt JB. Extensions for prevention: Is it relevant today? Am J Dent 1998 Aug;11(4):189-96. ([We] are more conservative in

preparation extension now than ten years ago when this manuscript was written)

UTH: This question depends upon the type of cavity preparation. In general, preclinically, students are instructed to provide (measurable) separation from the adjacent tooth, facially, lingually, and gingivally. This is required mostly to standardize the preparations from student to student. Further, it is often beneficial for the students to have access to margins, both in the preparation stage (visualization) and in the restoration stage (finishing). Extension to break contact aids in allowing the student this access. Clinically, considerations and subsequent preparations are more caries directed (in general, depending on instructor). The clinical situation encountered, more or less, often directs the preparation. This direction, based upon the extent of carious (demineralized) tooth structure, may or may not require the same separation as is required in the preclinical laboratory. However, the preparation and all cavosurface margins must be adequately accessible to allow proper restoration. For example, separation may be required to provide room for the placement of a band prior to restoring or be required to properly bond to and/or finish a cavosurface margin

2. Is there a difference in extension criteria between Class II amalgam and Class II composite preparations? Yes/No. Rational/Evidence. Applied?

BAY: Yes. Pre-clinically in the case of a CI II amalgam, the preparation may need to be extended simply to remove unsupported enamel while this will not necessarily be the case for a CI II composite preparation. This may be the case clinically as well depending on the situation. Amalgam restorations require facial/lingual/gingival margins to be opened unless a significant amount of enamel supported by sound dentin would be required to be removed to eliminate the contact. This allows the margins to be carved and burnished. (Summitt p. 348. Also see Summitt p. 307 for recommendations for beveling cavosurface margins for composite restorations.)

LSU: Yes. Rational/Evidence. Applied? No extension for prevention, but Class II amalgam prep entirely removes unsupported enamel

MISS: Preclinical - We expect same or similar prep design minus the retention grooves since we are bonding restorations in composites. We are also simulating decay, therefore we expect students to go as deep occlusally to access decay in dentin. Clinical - For amalgam restorations the criteria include: Convergent facial and lingual walls, smooth pulpal and gingival floors, occlusal depth at least .5 mm into dentin for a thickness of at least 1.5mm or amalgam may fracture, retention grooves in box, 90 degree cavosurface margin, no unsupported enamel, contact with adjacent teeth should be barely broken for ease of cleansing cavosurface, application of matrix, and contour of restorations.
For Composite restorations the criteria include: Preparation design is dictated mainly by decay making this more conservative than the amalgam preparation. No occlusal or gingival bevels, some faculty may request

facial or lingual walls beveled. May have unsupported enamel, may not require to be as deep occlusally as an amalgam prep. Facial and lingual walls in proximal may be parallel or diverge occlusally slightly. The facial and lingual walls of the box can be left in full contact with the adjacent tooth as long as the caries/ previous restoration can be removed, the matrix can be applied, and the composite can be inserted and contoured.

Sturdevant's Art and Science of Operative Dentistry, 4th Ed. Roberson, TM, Heymann HO, Swift EJ (eds.)2002 Mosby

OKU: No, however, we would be interested in learning what the rationale would be for making the criteria different for the two materials.

TENN: No. It is felt that, in general, the students are not able to visualize margins in the posterior well enough to ensure a good marginal finish unless contact has been broken with the adjacent tooth. Slot preps are taught didactically, but generally not performed clinically and are not allowed on our licensing board exam

UTSA: No. The only difference in the extension of a Class II amalgam preparation relative to the resin composite Class II preparation would be to ensure adequate depth of the preparation for the physical requirements of amalgam.

UTH: Preclinically, no, clinically, yes (again, with some dependence on the instructors preferences). Clinically, extension criteria for amalgam is a little more aggressive than for composite. This assures that the proper cavosurface angle is achieved, that proximal margins can be smoothed (any flash removed), and that the patient can adequately clean the margins. Using composites and bonding systems, preparations are often not extended to the same degree as when using amalgam as the restorative material. This approach is based upon the ability to achieve a clinically effective/significant bond between the composite and the tooth structure (the preparations are more conservative in nature, especially when all margins lie within healthy enamel). Failure of the restoration at the tooth-restoration interface with a well bonded composite is not as much of a concern as margins restored with amalgam (criteria more classically/traditionally based when using amalgam).

3. For the anterior Class III, is it required that proximal contact be broken gingivally? Facially? Incisally? Yes/No. Rationale/Evidence. Applied?

BAY: Pre-clinically, when preparing anterior Class III lesions, the students are required to break contact facially, lingually, gingivally but not incisally. This allows access and convenience form for restoration placement and creates a situation in which the beginning student can evaluate the quality of the marginal integrity of their restorations. Voids and underfilled or overfilled margins can easily be detected visually and tactilely when these margins are accessible. Clinically speaking, whether a contact is broken is more case based. Typically the preparation breaks contact with the adjacent tooth in a lingual direction for access and usually in a gingival

direction to include decay and/or decalcification. The CI III preparation does not usually break contact in a facial direction unless dictated by decay or decalcification.

LSU: Gingivally – Yes. Rational – Location of lesion. Facially – No. Rational – Esthetics, preservation of tooth structure. Incisally – No. Rational – Preservation of tooth structure and contact. Guideline for class III preparations is that the preparation extension is determined by the location and size of the lesion.
“*Outline form for resin composite restorations is determined solely by the extent of the caries lesion(s) and access for removal of carious tooth structure.*” Chapter 9, Summitt, James B.. *Fundamentals of Operative Dentistry: A Contemporary Approach*, 3rd Edition. Quintessence Publishing (IL)

MISS: Preclinical- For lingual approach Class III: Required that contact is broken gingivally, barely facially (1/3rd tip of the explorer, not necessary to break contact incisally. Rational is that typical decay pattern occurs gingival to the contact area. Clinical- Guided by decay and hypocalcification areas. Ideally would like to have healthy enamel and dentin for bonding. Preparation design also influenced by existing caries, recurrent caries, or enamel defects. Recommend that all cavosurface is on sound enamel structure free of hypocalcifications and defects. Since prep design is guided by decay, it is not always the case that proximal contact is broken gingivally, facially, incisally. We recommend for competencies that students pick for ‘ideal’ class III (lingual approach) where they can demonstrate their ability to break gingival contact, barely break facial contact, and may not need to break incisal contact.
Sturdevant’s Art and Science of Operative Dentistry, 4th Ed. Roberson, TM, Heymann HO, Swift EJ (eds.)2002.
Mosby, Baratieri. L.N, (1993). *Advanced Operative Dentistry*. Sao Paula, Brasil. Quintessence Editora Ltd.

OKU: In the case of a Class III cavity preparation, we prefer our students to minimally break contact at the facial, and gingival proximal walls but not the incisal. Our rational is to place the margins where they may be finished, be inspected for marginal defects at the completion of the procedure and at future recall examinations, and provide better access for cleansing. We feel that the minimal amount of tooth structure removed to achieve this extension is more than compensated for by the aforementioned benefits. In some cases, where a more significant amount of tooth structure must be removed to break these contacts, we will not break the contacts. We do not require students to break the incisal wall contact in order to preserve the strength of the tooth in the incisal area so that it may better withstand any stresses from incisal biting forces. Another reason that we do not break the incisal contact is that caries most often originates in or apical to the contact area, thus making the risk of recurrent caries at the incisal cavosurface margin fairly low.

TENN: Due to better visualization and therefore better ability to finish the restoration in the anterior, it is permissible to leave contact with the

adjacent tooth on the facial and incisal margins. Gingival is broken to ensure that no caries remain gingival to the contact area.

UTSA: No to all. San Antonio's philosophy to not create a standardized rule for extension of a cavity preparation when caries or demineralization do not dictate it, extends to the anterior teeth. Preclinical simulations using artificial caries are used for Class III preparations.

UTH: Preclinical: gingivally – yes, facially – yes, incisally – no
Clinically: extensions are based upon the clinical situation and the instructor's preference

4. What questions/comments do you have based on the survey results? See CODE web site (<http://www.unmc.edu/code/>)

BAY: None.

LSU: None.

MISS: No comments.

OKU: None.

TENN: No response noted.

UTSA: We expected more across the board “No’s”. The comment “long shallow bevels usually break contact” is a concern on two levels. First, how does the student get composite to cover this long shallow bevel when the matrix is covering the bevel? Second, microfilled resin composites are tolerant of long shallow bevels but hybrid resin composites are not. Are these schools only using Heliomolar for the posterior restorations?

UTH: No specific comments.

5. Other comments related to Principles of Cavity Preparation other than those outlined.

BAY: Consider the use of hand instruments to smooth cavosurface margins and remove loose enamel rods created by rotary instrumentation. This aids in better marginal adaptation of the restoration.

LSU: No.

MISS: No comments.

OKU: None.

TENN: No.

UTSA: None.

UTH: No specific comments.

III. Caries - Treatment/Detection

Treatment of deep carious lesions by complete excavation or partial removal - A Critical Review, JADA, Vol 139, 705-712, June 2008

(This is not a repeat of a related agenda question, 1999, 2007)

1. Does your school teach the concept of incomplete caries removal? Yes/No.
If YES, for how long? How well accepted and applied by the faculty?
If NO, why not? Should it be taught?

BAY: Yes, especially in Pedodontics where deep caries in a permanent tooth is present. An indirect pulp cap can be placed and the tooth be temporarily restored until which time reparative dentin can be laid down, then in 12 weeks or so when the tooth is re-treated, the remainder of the decay can be removed without pulpal exposure. There are times when this same approach is taken with a teenager or an adult in his/her early twenties. This technique is also taught didactically in third year operative dentistry (course # 8220). Should it be taught? Consider Summitt p. 112 for rationale for indirect pulp capping.

LSU: Yes. If YES, for how long? We do not teach routine reentry for teeth that are asymptomatic and retain normal vitality. By Comprehensive faculty yes. Endodontic faculty agrees when current pulp tests and radiographs lead to a diagnosis of a normal pulp vitality and the marginal seal remains intact. However, other factors must be considered: patient age (younger patient has a better prognosis), compliance with follow-up over time (monitoring is essential), and the final restoration planned (the strategic value of the tooth). The Endodontics department feels indirect pulp caps respond better with calcium hydroxide or zinc oxide-eugenol and direct pulp caps with MTA (mineral triaggregate). Large posterior resin-composite restorations are a significant concern due to frequent marginal microleakage.

MISS: Yes, with qualifications, under certain clinical circumstances we do teach incomplete caries removal especially when considering indirect pulp capping. We do teach that peripheral caries away from the pulp should be removed, however, if there is some caries remaining near the pulp that may be left in an attempt to avoid exposure and then capped with calcium hydroxide covered with GI liner. All circumstances for a good prognosis must be in place such as lack of symptoms and vital pulp testing, if we leave a slight amount of decay in an indirect pulp capping procedure. In addition, we do believe in leaving affected dentin whenever possible but not leaving any carious (infected) dentin especially near the DEJ. This concept is fairly well accepted by our faculty and applied clinically as well. We have been doing this for a significant amount of time.

OKU: Yes, but only in the case of an indirect pulp cap procedure. Indirect pulp caps are utilized in teeth that are good candidates for this procedure based on the diagnostic signs and symptoms for that tooth. We prefer to remove as much of the carious tooth structure as possible. If the situation meets our criteria for a suitable situation to utilize a pulp cap, our faculty members are very willing to apply the concept of an indirect pulp cap. Our criteria for the consideration of using a pulp cap include the following:

- Tooth must be vital (all questionable teeth should be tested for vitality prior to treatment)
- No periapical lesion
- No history of spontaneous pain
- No history of abnormal responses to stimuli (cold, hot, electrical)
- No history of prolonged pain to normal stimuli (cold, hot, sweet)
- Will not be an abutment tooth for prosthesis
- In the case of a direct pulp cap, the following also apply:
 - Limited to small “pin-point” exposures.
 - Exposed pulpal tissue appears vital and any bleeding is easily controlled

TENN: Yes in specific situations where the pulp is vital and the diagnosis is reversible pulpitis and periapical diagnosis is normal. Indirect pulp cap is left for 2-3 months. There seems to be agreement on this issue among the endodontic and operative faculty and most follow these recommendations.

UTSA: Yes. Since 1999 there has been a protocol for incomplete caries removal with permanent restorations coordinated with endodontics, restorative, general dentistry and prosthodontics. It is not openly challenged by the faculty but some instructors are reluctant to apply it on the clinic floor. There is a wealth of research about deep caries and Class 1 restorations. The research is not so clear with direct restoration margins on cementum or dentin. We chose to possibly make the error on the conservative side. Antidotal observations suggest that in the student clinic we are very successful with preservation of pulpal health when the margins are clean but deep de-mineralized dentin is retained over the pulp.

UTH: Yes and No ... if all caries are not removed, it is usually due to the expectation of a pulpal exposure and the caries remaining is very slight (only in that one area). We would then place an indirect pulp cap over the area in question (these decisions would be made using the presented clinical circumstances such as the tooth being asymptomatic, the tooth's role in the overall, treatment plan, and so on. The patient's financial situation may also play a role in the decision making process. We do not leave frank caries. Most faculty would prefer and attempt to remove all caries. Incomplete caries removal is something that is discussed in lecture, mostly based upon Lussi's work.

2. Other comments related to the meta-analysis on this topic?

BAY: None.

LSU: Vital pulp therapy with incomplete caries removal is probably not indicated in cases where the tooth will be restored with an indirect restoration. The additional preparation trauma for a crown may lead to pulpal death (Abou-Rass M. *The stressed pulp condition: an endodontic-restorative diagnostic concept.* J Prosthet Dent. 1982 Sep;48(3):264-7) and the issue of making an access preparation through and possibly having to replace a recently delivered crown make the decision to leave caries less desirable.

MISS: The conclusions from this article in JADA appear to be accurate in that a requirement for the success of leaving deep caries is that a good seal has to be maintained, and I agree that more clinical trials are needed before this technique is universally accepted. Hopefully the PEARL practice based research group will shed some more information on this subject

OKU: None.

TENN: None.

UTSA: None.

UTH: No specific comments.

3. Is Atraumatic Restorative Treatment (ART) taught for root caries? What has been the experience?

BAY: In general, ART is taught in Pedodontics as well as in second year Applied Preventive Dentistry. It is mentioned in the third year operative dentistry course (Operative #8820). It is not practiced in the operative clinic.

LSU: ART is presented in lecture but not used in the undergraduate clinic. ART is used during dental missions to areas with limited armamentarium.

MISS: We do not teach the atraumatic restorative technique at the University of Mississippi, for root caries or any type of caries. We use #4, #6, or #8 burs on a slow speed handpiece to remove caries, hopefully, only infected dentin. However, some of our faculty have anecdotal experiences in private practice with long term sealing of deep caries with glass ionomer type restorations with no ill effects lasting for several years in teeth that had an initial questionable short term prognosis.

OKU: No.

TENN: No.

UTSA: We do not teach ART in our clinics.

UTH: ART is discussed in preclinical lectures as well as is the treatment of root caries. For root caries, we often use glass ionomer or resin-modified glass ionomer as a final restoration; however, in these situations, all decay is removed (unless it is clinically determined that a small amount of decay should remain due to the clinical circumstance or perhaps due to a financial circumstance involving the patient). The ART concept may be used with rampant caries patients. The glass ionomer may or may not be the final restoration depending upon the clinical situation. Since facilities are available to achieve complete and total dental care, unlike ART situations, any glass ionomer placed over remaining caries as a means to control or stop the disease process, is usually removed at a later date as well as any remaining caries. At that time, a permanent restoration is placed, which again, may be a glass ionomer (if appropriate for that location).

4. What methods of caries detection are taught in schools (e.g., Explorer (how used), visual, Diagnodent, transillumination, fluorescence, other?)

BAY: Students are taught to detect caries visually with the aid of an explorer used carefully so as not to disrupt the enamel surface and cause cavitation. Students use transillumination clinically in the D3 and D4 years to detect caries, particularly under marginal ridges. Use of the Diagnodent is taught in the D4 year. Use of caries indicating dye (Caries Detect) is introduced clinically in the D3 year and also used in the D4 year as an aid in caries detection.

LSU: Visual, transillumination, radiographic and explorer. In operative courses passive use of the explorer is taught. Students are instructed not to “stick” stained grooves to prevent cavitation of enamel lesions.

MISS: We use traditional methods including visual, tactile (explorer) and radiographic all in conjunction with each other and transillumination whenever possible especially in the anterior for class III lesion detection. We use the explorer to check for breaks in the continuity of the enamel / cementum surface and try not to insert into fissures or grooves with excessive pressure. We do have a Diagnodent that is used in special circumstances of questionable defective pits or fissures, that is probably on a limited basis with faculty supervision. We are also looking into getting the new caries detector from Midwest-“Caries ID”.

OKU: Initial carious lesion detection is taught as follows:
Pit and fissure caries detection includes visual examination of a dry tooth with magnification. Bitewing radiographs are also used to aid in the detection of these carious lesions.
Proximal surface caries are detected using bitewing radiographs, visual inspection, and transillumination.
Cervical caries are primarily detected with visual inspection of a dry tooth (an explorer is also used in cases of root caries to detect softness of lesion in dentin).

TENN: Visual, explorer, transillumination and radiographic with diagnodent taught in didactic with very limited clinical use.

UTSA: No explorer on enamel for fear of iatrogenic cavitation. Explorer and or spoon excavator on dentin to verify surface hardness. We teach that the Diagnodent encourages excessive surgical intervention and therefore it should not be used. Transillumination is used during diagnosis for caries and cracks in dentin. We use caries dye as an adjunct to caries removal in posterior teeth.

UTH: We teach visual first with a dry field. Explorers are to be used non aggressively (a relatively gentle approach), perhaps to clear evident fissure debris. We teach transillumination using a transillumination device; however, most instructors, therefore most students, do not often use this technique. Some instructors teach using their mouth mirror to lingually reflect the operatory light to transilluminate anterior teeth. Diagnodents

were available on the senior bays, but due to wide fluctuations in results when used, their use was discontinued.

5. Does your school use caries detection dye? (Please list product(s). Do students and/or faculty use caries detection dye? What are the criteria?

BAY: Yes, Caries Detect™ is used routinely in our clinics to assist the student in caries detection. Caution must be used in deep non-carious dentin (Summitt p. 109 and 112). Careful and thorough visual and tactile criteria provide acceptable assessment of caries status in the cavity preparation. (McComb, Dorothy, *Caries- Detector Dyes-How Accurate and Useful Are They?*: J Can Dent Assoc 2000; 66:195-8.

LSU: No. We have talked about having faculty use dye to demonstrate caries to students but don't want students to "chase" stain.

MISS: We do not routinely use caries detection dyes, however one part-time faculty member uses a caries detection dye "Caries Finder" by Danville engineering with the students under his supervision. We also have SableSeek by Ultradent Products. A few of the other faculty use the dyes in their practices but not a significant number. These dyes supposedly do not stain for bacteria but instead stain for a nonspecific protein in the organic matrix of less mineralized dentin. There may be an apparent lack of specificity for these dyes confirmed by (Yipp and others) 1994 British Dental Journal, and Operative Dentistry (Boston & Graver) Vol. 19(65-69).

OKU: Yes, we use SableSeek by Ultradent to detect caries during the cavity preparation stage. The students and faculty use the dye. The dye may be used to check for complete removal of caries in any preparation, especially along the DEJ. We teach the students to use this as an adjunct to visual and tactile cues in detecting caries. In deep areas that may be close to the pulpal tissue, we advise the students to be conservative in caries removal techniques, especially in conjunction with the use of caries detection dye.

TENN: Yes, we teach its use didactically and clinically with faculty supervision. Used to detect primarily caries remaining at DEJ. We use only the green dye, not the red, Sable-Seek by Ultradent.

UTSA: Cari-D-Tect is expected to be used on all posterior teeth with caries.

UTH: Caries detection dye is not used by most students/faculty, but is available (it may be used from time to time by some part-time instructors). First and foremost, students should learn to competently detect carious/diseased tissue from healthy tissue without the use of a dye. A dye could be used only as an adjunct, after the student has developed the above skill and the clinical instructor is confident of that development and skill (perhaps during the last semester during the 4th year).

IV. Health and Safety Issues Related to Teaching/Practicing Dentistry

1. How are **extracted teeth** with amalgam handled and stored? How long has the protocol been in place? What is the basis/science behind your school's protocol? Are the protocols different for amalgam-free extracted teeth?

BAY: There is no school protocol for storing extracted teeth. Extracted teeth in the Oral Surgery Department are stored in a solution of 50% water and 50% hypochlorite. This includes all teeth, with or without restorations. When the Office of Admissions advises incoming students to collect teeth from private dentists, they are told to store them in a solution of one part bleach to 10 parts water. Teeth that students collect from oral surgeons in private practice are sometimes stored in a 10% Formalin solution to which glycerine has been added. Extracted teeth used in the laboratory are manipulated near bench top vacuum systems and students are required to use full PPE.

LSU: Extracted teeth with or without amalgam are handled and stored the same. Debrided teeth are stored in a weak bleach solution for two weeks for disinfection followed by a neutral buffered formalin solution for an additional least two weeks. After student use, extracted teeth are placed in biohazard sharps containers for pickup and disposal. Procedures have been in place for decades per CDC guidelines.
(http://www.cdc.gov/oralhealth/InfectionControl/faq/extracted_teeth.htm#3)

MISS: Extracted teeth with amalgam are first placed in a solution of diluted bleach for 24 hours. Up until the last couple of months, they were placed in the hazardous waste containers. The new protocol is to soak the teeth with amalgam in Simple Green d Pro 3 for a period of 1 hour. It is then picked up by the medical center staff and transported via PCI (pollution control industries) in Chicago, Ill. The simple green disinfects the teeth. This is a relatively new protocol and is not implemented in all areas of the building as of this date. The teeth without amalgam are being soaked in bleach for 24 hours and then are disposed of in the hazardous waste containers.

OKU: **In regard to storing extracted teeth:**
We have changed this procedure several times over the last decade. We started out having students store teeth in glycerin and formalin. Due to concerns over the formalin being considered a carcinogen, we began having the students store their teeth in a 1:10 bleach to water solution. Last year we went to a system of autoclaving the extracted teeth and storing them in the sterile water (Extracted teeth with amalgams cannot be autoclaved so are placed in Formalin solution for 2 weeks instead). We had a very large increase this year in problems with the extracted teeth chipping or fracturing during the use of natural teeth in our preclinical procedures. The only thing that has changed is the use of autoclaving, so we believe that is the cause of our problems. We are considering going back to storage in 1:10 bleach solution. We have looked at several different articles concerning disinfecting natural teeth, but we have not come up with a definitive answer as of yet. We require our students to use Universal precautions just as they would in the clinic, so the use of natural

teeth should be as safe as in clinical procedures. Gloves, masks, eye-protection are required, and we wipe down the bench-tops and equipment with disinfectant. We are also considering having the students autoclave their cutting instruments after any preclinical procedure using natural teeth.

We do not have different protocols for the storage of extracted teeth with and without amalgams. We do have different protocols for the disposal of waste extracted teeth. Our current policies regarding disposal of waste extracted teeth are as follows:

In regard to disposal of waste extracted teeth:

Tissue and Microbiological Waste Policies

Anyone who collects biopsy specimens should take the following precautions:

1. Use a sturdy leak proof container. Be careful not to contaminate the outside of the container with blood or other body tissues or fluids. Disinfect outside of container if it is visibly soiled.
2. Use appropriate personal protective equipment (PPE)
 - a. Place extracted teeth and pieces of teeth without amalgam in bleach then into sharps container for disposal (unless the patient desires them).
 - b. Teeth containing amalgam must not go in the sharps container. Store in bleach in jar and give to the Infection Control Officer for proper disposal.
3. All microbiological specimens are sterilized (except teeth with amalgam) in Central Sterilization prior to discarding.

Extracted teeth for education uses:

Extracted teeth used for the education of dental health care workers should be considered infective and classified as clinical specimens because they contain blood. All persons who collect, transport, or manipulate extracted teeth should handle them with the same precautions as for biopsy specimens. Standard precautions should be adhered to whenever handling extracted teeth. Because pre-clinical educational exercises simulate clinical experiences, students should adhere to standard precautions with both settings. In addition, all persons who handle extracted teeth in educational settings should receive hepatitis B vaccine.

Before extracted teeth are manipulated, the teeth first should be cleaned of adherent material by scrubbing with detergent and water or by using an ultrasonic cleaner. Heat sterilize teeth that have no amalgam using a liquid autoclave cycle for 40 minutes. Teeth containing amalgam cannot be heat sterilized and therefore should be immersed in a 10% formalin solution for 14 days to disinfect both the internal and external structures (preferably the amalgam should be removed and the teeth sterilized). Persons handling extracted teeth should wear gloves. Gloves should be disposed of properly and hands washed after completion of work activities. Additional PPE (face shield or surgical mask and protective eyewear) should be worn if mucous membrane contact with debris or spatter is anticipated when the specimen is handled, cleaned or manipulated. Work surfaces and equipment should be cleaned and decontaminated with an appropriate liquid chemical germicide after completion of work activities. The handling of extracted teeth used in educational settings differs from giving patients their own extracted teeth. Several states allow patients to keep teeth, because they are not regarded as regulated (pathologic) waste and

because they become the property of the patient and do not enter the waste system. Oklahoma regulations permit patients to keep their extracted teeth.

- TENN:**
1. These teeth should be cleaned of visible blood and gross debris and maintained in a hydrated state in a well-constructed closed container during transport. Extracted teeth containing amalgam restorations should not be heat-sterilized because of the potential health hazard from mercury vaporization and exposure. If extracted teeth containing amalgam restorations are to be used, immersion in 10 formalin solution for 2 weeks should be effective in disinfecting both the internal and external structures of the teeth.
 2. Since new CDC Guidelines were in place, 2003.
 3. CDC Guidelines.
 4. Yes. These teeth should be cleaned of visible blood and gross debris and maintained in a hydrated state in a well-constructed closed container during transport. Before being used in an educational setting, the teeth should be heat-sterilized to allow safe handling.

UTSA: Extracted teeth are used in our DS1 dental anatomy, DS2 operative dentistry, and several other predoctoral courses. Students disinfect or sterilize extracted teeth either by fixing them in 10% formalin or autoclaving them in the school's sterilization department. Teeth that have restorations (amalgam and amalgam-free restorations) are only fixed with 10% formalin and not sterilized in an autoclave to preclude the release of mercury vapors into the air. Once the teeth are disinfected or sterilized, they are stored in water. From 2002 through 2007, we based our 10% formalin technique on the results suggested by Dominici;¹ we fixed teeth in 10% formalin for only one week. A recent CDC regulation on handling extracted teeth resulted in a new guideline being formulated by the UTHSCSA Clinical Quality Assurance Committee. Based upon this guideline, we now fix extracted teeth in 10% formalin for two weeks. The specific steps our students use to disinfect extracted teeth are below. The students are provided the Attachment 2 presentation prior to performing these activities.

UTHSCSA Dental Anatomy Manual Protocol: Disinfect Extracted Teeth

We requested that you bring extracted teeth for different projects that you will perform during all four years of dental school. You must assume some of the extracted teeth you brought were taken from individuals who had a contagious disease and some of the teeth have the potential of causing you and your classmates harm. Whenever you work with these potentially hazardous teeth, be careful not to spread fluid that contacted the teeth around your laboratory, and wear the gloves that are available at the dispensary.

These teeth can be disinfected (made harmless) by either fixing them in 10% formalin or autoclaving them in the school's sterilization department. Teeth that have fillings (tooth-colored or silver) should be fixed with 10% formalin and not sterilized in an autoclave. Most of you have the teeth stored in a diluted liquid bleach solution, which needs to be removed. A good technique to remove the solution is to loosen the lid of your storage

jar so the liquid can flow out, but the teeth will not. Pour the liquid into your sink drain, but make sure you do not allow any teeth to fall into the drain. Any contaminated fluid that touches the base of your sink or counters should be cleaned off with soap and water.

Teeth with or without fillings can be fixed by adding enough 10% formalin so they are totally submerged in the solution and letting them soak in the solution for two weeks. The 10% formalin solution is stored under the fume hood (located in each laboratory). When working with this solution, it should be under the fume hood with the fan turned on, and you should wear gloves, safety glasses, and a chemical-resistant apron. During the soaking period, the jar must be labeled with a "10% Formalin" label that is available at the dispensary. After the teeth have soaked in this solution for two weeks, pour the solution into the 10% formalin chemical waste container that is also stored under fume hood. Use tap water to rinse the excess formalin off the teeth, and store the teeth in a clean jar with enough tap water to totally submerge the teeth. Label the jar appropriately, e.g., "Fixed teeth in tap water."

An alternative method for disinfecting teeth that do not have fillings is to sterilize them in an autoclave. Get autoclave bags from sterilization, write your name and bench number on the bag in pencil, place the teeth in the autoclave bags, take the bags to sterilization, and pick them up two days later. Store the teeth in a clean jar with tap water, and label the jar appropriately, e.g., "Autoclaved teeth in tap water."

When grinding or cutting the disinfected teeth, wear a mask and eye protection. If you decide you no longer want certain teeth, dispose of them by placing them in the container marked for disinfected teeth with amalgam (even for the teeth without amalgam restorations), which is under your fume hood .

Do not store teeth in your cubicle that have not been disinfected. If you temporarily have them in the laboratory or clinical areas, make sure the container is appropriately labeled, and disinfect them as soon as possible. If you have questions on this subject, ask Dr. Wright. You can also read the article: Dominici JT, Eleazer PD, Clark SJ, Staat RH, Scheetz JP. *Disinfection/sterilization of extracted teeth for dental student use*. J Dent Educ 2001;65(11):1278-80. The two-week 10% formalin soak is based upon the January 4, 2008 UTHSCSA Clinical Quality Assurance Committee meeting agreement.

Attachment 2. Dental Anatomy Presentation.ppt

Reference: Dominici JT, Eleazer PD, Clark SJ, Staat RH, Scheetz JP. *Disinfection/sterilization of extracted teeth for dental student use*. J Dent Educ 2001;65(11):1278-80.

UTH: Extracted teeth are handled by gloved hands and are stored in a bleach solution (with regular decanting of the solution and addition of fresh solution). The recommendation: 0.5% sodium hypochlorite (1:10 dilution of commercial chlorine bleach) in wide-mouthed, securely sealed plastic jar(s)

Schulein T: *Infection control for extracted teeth in the teaching laboratory*. J. Dent. Ed. 58:411-413; 1994

Tate, W.H., White, R.R.: *Disinfection of Teeth for Educational Purposes*. J. Dent. Ed. 55:21-23; 1991

We use the same disinfection procedure for amalgam-free teeth

2. Have there been **air-quality issues** with fumes and/or particulate matter? What is/are the specific issue? How did the issue surface? (Inspector, complaint, etc.) What was the resolution?

BAY: A bench top evacuation system is used in the laboratory when extracted teeth are being prepared and restored. Fabrication of custom acrylic trays has presented a problem with fumes. The evacuation system does not seem to be able to handle it. The solution for the latter problem was to minimize the number of times during the semester that the students work with the acrylic monomer.

LSU: None.

MISS: We have not had any air quality issues.

OKU: We have not had any issues raised concerning fumes or particulate matter.

TENN: No response noted.

UTSA: No issues about dust or fumes have been formally evaluated at UTHSCSA with the exception of nitrous oxide. The sniffers that were purchased this year found the levels of nitrous oxide exceeded the time weighted acceptable limits. Right now pregnant students are not allowed to use nitrous oxide. The administration is in the process of retesting since in some instances the scavenger units were not being turned to full capacity (noisy).

UTH: Yes ...Specific concerns: smell, headaches, and allergies. Air-quality concerns have surfaced by way of various faculty and staff complaints. We do use monomer in the preclinical labs (very limited use; however the Prosthodontic Department uses these materials for fabrication of temporaries). As a result of the fumes, some students/faculty displayed an allergy to the material. Special charcoal filter boxes were created/installed to connect to the vacuum system to remove the fumes. These filter boxes are not particularly effective. Most faculty/students within the Restorative Department use the material (monomers) under a ventilation hood in a separate lab area. Particulate matter is addressed by way of a clinical mask that is a requirement for all students during every preclinical project.

3. Have there been issues with **noise**? If **YES**, please respond per the questions asked in the air quality issue.

BAY: No.

LSU: No.

MISS: We have not had any noise issues.

OKU: No issues concerning noise at this time.

TENN: None reported to the Office of clinical Affairs. From Operative: with the use of electric handpieces there has been an noise reduction in the lab and now in the clinic somewhat.

UTSA: No noise issues have been formally evaluated.

UTH: No true concerns about noise although several students used ear plugs (both over the counter and custom with impression made ear molds). However, this may be a concern which needs to be addressed. Some faculty have noticed a decline in their hearing ability over the years (multiple times in the preclinical laboratory every week, exposed to the almost continual sound of 84 handpieces for an extended period of time.

4. What are your school's protocols for dealing with **student** accidental needle sticks, bur punctures, and blade cuts?

BAY: Management of Bloodborne Pathogen (BBP) Exposure Incidents:

- a. A BBP Occupational Exposure Incident is defined as eye, mouth, intact or non-intact mucous membrane, non-intact skin, or parenteral contact with blood, saliva or other bodily fluids; or the puncture of skin or mucosa with any sharp object, such as anesthesia or suturing needles, burs, explorers, probes, and other reusable sharp instruments that have been contaminated with a patient's blood, saliva, or other potentially infectious body fluids.
- b. Exposure to patient's blood or saliva on unbroken skin is not considered a significant or reportable exposure.
- c. Take immediate local care actions for the following incidents and request help in stabilizing patient care activity as needed with the help of faculty:
 - i. Minor skin wound: Immediately wash and rinse the wound thoroughly with surgical soap and water and encourage bleeding with gentle pressure.
 - ii. Mucosa splash: Rinse mouth vigorously with a chlorhexidine mouthwash.
 - iii. Eye splash: Find the nearest eyewash station and irrigate the involved eye thoroughly with water for at least 2 minutes (obtain help from a faculty/staff/student as sometimes as it may be difficult to open eyes).
 - iv. Students/health care providers must immediately advise the nearest faculty of the incident. *Do not dismiss the patient.
 - v. The College Health Nurse (CHN) should be notified immediately (ext. 8253). The injured person (student/employee/volunteer) will accompany the source person (patient) to the College Health Clinic (CHC) or alternative site.
 - vi. An Incident Report is completed by the injured person or the CHN (Form #009 is available in each Department, the Office of Clinical Affairs and the CHC).
 - vii. The CHN will counsel the injured person (Student/Employee/Volunteer) and the source person (patient). Treatment and follow-up care will follow the BCD Exposure Protocol; this includes counseling, signed consent,

- blood testing, medical referral and confidential management of medical records.
- viii. If in the process of an occupational injury the patient is also injured due to use of a contaminated instrument, both parties will require testing as indicated by the event.
 - ix. If the source person is known to be HIV positive, the student, employee, or visiting student, staff, faculty will be referred to doctors in the Infectious Diseases Department, Baylor University Medical Center, for immediate evaluation, counseling, and treatment as indicated. There will be no cost to BCD students and employees for this referral and treatment.

LSU: Exposure Protocol:

EXPOSURE PROTOCOL AND INJURY REPORT

Prepared by Linda Smith, RN

Quick reference

EMPLOYEE/STAFF Exposure for New Orleans and Baton Rouge Campus

First Aid- wash with soap and water DO NOT USE BLEACH OR SQUEEZE

1. Review and answer questions in the exposure packet. Ask the patient to sign the consent for obtaining the quick HIV test. Please review each page and follow the directions. The completed packet is to be sent to Linda Smith, RN.
2. Perform **quick HIV test**. (The individual test and instructions are located in the Central Sterilization area in BR and in each instrument dispensary on the second, third and fourth floors in NO. Allow 10 minutes for blood test result. **Perform the test ASAP** since the recommendation is to start medication within 2 hours for a positive test result. **It is required that blood be drawn from the student and the source for all exposure injuries.**
 - For a **positive quick test** result, the employee must go to Concentra to have blood work drawn immediately and to see if medication is indicated.
 - For a **negative test result**, the employee should go the same day for the blood work.
 - Contact Linda Smith, RN for permission to Sign Employer's Authorization for Examination or Treatment and make a copy. Give the original to the employee to take to Concentra.
 - Send a copy of the incident report and the Treatment Authorization form to Linda Smith, box 145.
 - Send the source to Labcorp or Linda Smith, RN to have the blood drawn. Room 4312K, office phone 504-941-8393, cell 504-289-5915, Fax 504-941-8394. The bill will be paid by LSUSD.

<p>Concentra Medical Center for employee M-F 8-5 318 Baronne Street 70112 Phone 561-1051</p> <p>1600 Williams Blvd Kenner 70062 Phone 468-1506</p> <p>4015 Jefferson Hwy 70121 Phone 837-6447</p> <p>3235 Perkins Rd, BR. 70808 Phone 225-387-3030</p>	<p>Labcorp, New Orleans/ Linda Smith, RN for source 1716 St. Charles Ave. 70130. Phone 525-8033 Mon-Fri 8-5pm Lunch 12-1</p> <p>4330 Loveland St., Ste C Metairie, La 70006 Phone 455-5268 Mon-Fri 7:30-4:30pm Lunch 12-1</p> <p>7525 Picardy Baton Rouge, La. Phone 225-766-9489 Mon-Fri 8-5pm Lunch 12-1</p>
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Protocol for Student Exposure Injuries- LSUHSC Dental School in New Orleans and Baton Rouge South Campus

STOP PROCEDURE AND RINSE THE AREA WITH SOAP AND WATER. DO NOT USE BLEACH OR SQUEEZE THE AREA.

- Review and answer the questions in the exposure packet. These can be found in the central instrument dispensary on the second, third and fourth floors and Central Sterilization in BR. Consents must be signed by both the student and the patient. Student /Faculty please review each page and follow the directions for filling out the forms. Return the completed packet to Linda Smith, RN.
- Quick HIV test. (The individual test and instructions are located in the CSR in BR and in each instrument dispensary on the second, third and fourth floors. in NO. The quick test is the only step that is urgent. It takes 10 minutes for the blood test results. It is important to perform the test quickly because it is recommended that medication be started within 2 hours if the test result is positive.
 - For a positive **HIV quick test**, contact Dr. McLean, Student Health Director, pager 504-679-8357. Enter *** after you put in the return number. She will advise the student on the best post exposure treatment options
 - For a **negative HIV quick test**- it is no longer considered an emergency situation.
- **Blood work** needs to be drawn from student and source either by Linda Smith, RN or by Labcorp. Give the student the lab request forms to bring to Labcorp.
Locations: **Labcorp, New Orleans** Distance 3.81 mi. from school
1716 St. Charles Ave.
NO, LA 70130
525-8033
Mon-Fri 8-5pm
Lunch 12-1
Or
4330 Loveland St. Ste C Distance 5.78 mi. from school
Metairie, La 70006
455-5268
7:30-12 1-4:30
Labcorp, Baton Rouge Distance 5 mi. from school
7525 Picardy
Baton Rouge, La.
225-769-2897
Mon-Fri 8-5pm
Lunch 12-1

- The patient and student should be instructed to return to the NO clinic the following day to have Linda Smith, RN draw the blood work if she is not available at the time of the incident or give the student and source the lab orders found in the packet and send to the nearest Labcorp. The school will be billed for the cost of the source blood work.
- Fill out the names on the lab forms and give to the student to bring to the lab
- If the patient refuses to be tested, a form needs to be signed. The student can see Linda Smith or go to Labcorp to have his/her blood drawn. If the student refuses to go, a paper must be signed for refusing. The lab results will be faxed to Linda Smith, RN.
- Counseling and follow up will be done by LSUHSC Student Health.
- Student fills out LSUHSC employer injury/incident report within 24 hours and sends the completed packet to Linda Smith, RN via campus mail, box 145 or room 4312K.

The student must provide a copy of his/her UnitedHealth Care insurance card and driver's license.

Linda Smith, RN office number 504-941-8393, cell 504-289-5915,
email lsmith9@lsuhsc.edu, fax 504-941-8394

Dr. Angela McLean's office 525-4839, pager 504-679-8357

Enter phone number followed by *** to indicate emergency
3235 Perkins Rd, BR. 225-387-3030

**EMPLOYER REPORT
 OF
 INJURY / ILLNESS
 LDOL-WC-1007**

Employee Social Security Number
Employer UI Account Number
Employer Federal ID Number
Location Code

This report is completed by the Employer for each injury/illness identified by them or their employee as occupational.
 A copy is to be provided to the employee and the insurer immediately. Forms for cases resulting in more than 7 days of disability or death are to be sent to the OWCA by the 10th day after the incident or as requested by the OWCA.

PURPOSE OF REPORT: (Check all that apply)

More than 7 days of disability Possible dispute Medical Only
 Injury resulted in death Lump Sum Compromise/Settlement (no copy needed by OWCA)
 Amputation or disfigurement Other

1. Date of Report MM/DD/YY	2. Date / time of injury: MM/DD/YY Time AM <input type="checkbox"/> AM <input type="checkbox"/> PM <input type="checkbox"/> PM <input type="checkbox"/>	3. Normal Starting Time Day of Accident: <input type="checkbox"/> AM <input type="checkbox"/> PM	4. If Back to Work Give Date MM/DD/YY	5. At same Wage? <input type="checkbox"/> Yes <input type="checkbox"/> No	DO NOT WRITE IN THIS COLUMN
6. If Fatal injury, Give Date of Death: MM/DD/YY	7. Date Employer Knew of injury: MM/DD/YY	8. Date Disability began: MM/DD/YY	9. Last Full Day Paid MM/DD/YY	Date Received	
10. Employee Name: First Middle Last			11. <input type="checkbox"/> Male <input type="checkbox"/> Female	12. Employee Phone # () -	S.I.C.
13. Address and Zip Code				14. Parish of Injury	State-Parish
15. Date of Hire	16. Age at illness/injury	17. Occupation		18. Dept./Division Employed:	Occupation
19. Place of Injury-Employer's Premises? <input type="checkbox"/> Yes <input type="checkbox"/> No		20. If No, indicate Location-Street, City, Parish and State			Nature
21. What work activity was the employee doing when the incident occurred? (Give weight, size and shape of material or equipment involved. Tell what he was doing with them. Indicate if correct procedures were followed.)					Part of Body
					Source
					Event
					NCC
22. What caused the incident to happen? (Describe fully the events which resulted in injury or disease. Tell what happened and how it happened. Name any objects or substances involved and tell how they were involved. Give full details on all factors which led to or contributed to this injury or illness.)					
23. Part of body injured and Nature of Injury or Illness(ex. left leg, multiple fractures)				24. If Occ. Disease- Give Date Diagnosed	
25. Physician and Address street city state zip			26. If Hospitalized, give name & address of facility		
27. Employer's Name				28. Person Completing This Report - Please print	
29. Employer's Address street city state zip				30. Employer's Telephone Number () -	
31. Employer's Mailing Address - If Different From Above city state zip				32. Nature of Business - Type of Mfg., Trade, Construction, Service, etc.	
33. Wage Information Employee was paid <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Other The average weekly wage was \$ per week.					
34. Verification of Employer Knowledge of this Report Name Title Date: DA 1973 R 8/96				OFFICE OF RISK MANAGEMENT P.O. Box 91106 Baton Rouge, LA 70821-9106 Phone No. (225) 219-0168	

EMPLOYER CERTIFICATE OF COMPLIANCE

You must submit this Certification to your workers' compensation insurer. Failure to submit this Certification as required may result in your being penalized by a fine of \$500, payable to your insurer.

You must secure workers' compensation for your employees through insurance or by becoming an authorized self-insured. If you fail to provide security for workers' compensation, you must pay an additional 50% in weekly benefits to your injured workers.

If you willfully fail to provide security for workers' compensation, then you are subject to a fine of up to \$10,000, imprisonment with or without hard labor for not more than 1 year, or both. If you have been previously fined and again fail to provide security for workers' compensation, then you are subject to additional penalties, including a court order to cease and desist from continuing further business operations.

You must not collect, demand, request, or accept any amount from any employee to pay or reimburse for the workers' compensation insurance premium. If you violate this provision, you may be punished with a fine of not more than \$500, or imprisoned with or without hard labor for not more than one year, or both.

It is unlawful for you to willfully make, or to assist or counsel someone else to make, a false statement or representation in order to obtain or to defeat workers' compensation benefits. If you violate this provision, you may be fined up to \$10,000, imprisoned with or without hard labor for up to 10 years, or both depending on the amount of benefits unlawfully obtained or defeated. In addition to these criminal penalties, you may be assessed a civil penalty of up to \$5,000.

EMPLOYER CERTIFICATION

I certify that I can read the English language, that I have read this entire document and understand its contents, and that I understand I am held responsible for this information. I certify my compliance with the Louisiana Workers' Compensation Act.

Preparer Name (PRINT)

Signature

Date

Company Name

Company Address

() -

Phone Number

Insurance Policy Number

Employee Name

Employee Social Security Number

STUDENT EXPOSURE FORMS

Source Risk Assessment Questionnaire

Name: _____

DOB: _____ Date: _____

QUESTION	YES	NO
Have you ever tested positive for HIV?		
Have you ever tested positive for Hepatitis B or Hepatitis C?		
Have you ever had a sexually transmitted disease?		
Did you receive a blood transfusion or blood products between 1978 and 1985?		
Have you ever used needles to inject street drugs?		
Have you ever shared needles to inject street drugs?		
Have you had sex with another person with HIV or Aids?		
Are you a male who has had sex with male partners?		
Have you had sex with a person who injects street drugs?		
Have you ever been a male or female prostitute?		
Have you ever traded sex for money, drugs, food or housing?		
Have you had unprotected sex (of and kind) within the last 10 years with someone other than your spouse?		
Have you ever been sexually assaulted?		
Have you had occupational exposure to blood or body fluids such as a needle stick within the last 10 years?		
Do you have a sex partner with any of the above risks for HIV?		
Are you or may you be pregnant?		
Comments:		

Patient signature _____

Reviewed by: _____

Date: _____

General Health System-Post Exposure Evaluation

Date: _____

Employee information

Name _____

Address _____

Home Phone _____

SS# _____

Work Area _____

Work Phone _____

Hep B Vaccine _____

Body area involved _____

Type/Brand device involved _____

Employee baseline labs:

HIV, Hep B, Hep C, *SGOT, RPR

Source information

Name _____

medical record# _____

Risk Factors _____

HIV quick test results _____

Follow up Lab_

No Follow up lab indicated _____

6 weeks Lab test

Date drawn Results

3 months Lab test

Date drawn Results

6 months Lab test

Date drawn Results

12 months Lab test

Date drawn Results

- Using the algorithm in packet determine the PEP recommendation, if any. Please record any recommendations, treatment or counseling below.

First aid/treatment

Follow up/ Counseling: _____

POST EXPOSURE EVALUATION STUDENT CONSENT

Name: _____ Date: _____
(print your name)

Consent for Bloodborne pathogen testing

I agree to have my blood drawn for Hepatitis B, HIV, Syphilis, and Hepatitis C. The results will indicate the present status of my blood. These tests results are in no way related to the present incident, and are used as a baseline for future testing.

Signature: _____

Receiving blood test results via telephone

I wish to receive the results of my blood tests via telephone. In order to do so, I have been instructed to contact the Student Health Department during normal business hours at 504-545-4839. I will be asked to supply both my social security number and date of birth for verification.

Signature: _____

Receiving blood test results in person

I wish to receive the results of my blood tests in person. In order to do so, I have been instructed to report to the Student Health Department during normal business hours. I should allow at least one business day to return for my results.

Signature: _____

Declination for bloodborne pathogen testing

I do not wish to have my blood drawn at this time for testing.

Signature: _____

POST EXPOSURE EVALUATION SOURCE CONSENT

Name: _____ Date: _____
(print your name)

Consent for Bloodborne pathogen testing

I agree to have my blood drawn for Hepatitis B, HIV, Syphilis, and Hepatitis C. The results will indicate the present status of my blood. These tests results are in no way related to the present incident, and are used as a baseline for future testing.

Signature: _____

Receiving blood test results via telephone

I wish to receive the results of my blood tests via telephone. In order to do so, I have been instructed to contact the Student Health Department during normal business hours at 504-545-4839. I will be asked to supply both my social security number and date of birth for verification.

Signature: _____

Receiving blood test results in person

I wish to receive the results of my blood tests in person. In order to do so, I have been instructed to report to the Student Health Department during normal business hours. I should allow at least one business day to return for my results.

Signature: _____

Declination for Bloodborne pathogen testing

I do not wish to have my blood drawn at this time for testing.

Signature: _____

Important information **GIVE TO STUDENT**

Name: _____ Your CDC HIV algorithm code is: _____

Relative risk for HIV infection in the CDC recommendation for PEP, below. If the HIV risk is significant, PEP is recommended.

CDC recommendation for PEP: Yes No (circle)

The CDC estimates that the average risk of HIV transmission after a percutaneous exposure to HIV-infected blood is approximately 0.3% and 0.09% after a mucous membrane exposure. The risk for transmission is estimated to be less than the risk for mucous membrane exposure.

More information about CDC studies can be found at www.cdc.gov. Use the search function to find specific articles.

PEP will include at least 2 drugs for 4 weeks. We prescribe Combivir which has the 2 Basic PEP medications: Zidovudine 300 mg and Lamivudine 150mg.

PEP is most effective when begun 24-48 hours after exposure, but best when taken within 2 hours. Fill your prescription immediately.

Significant GI symptoms (e.g. nausea/vomiting/diarrhea) are common side effects. Call Student Health if you have side effects that are worrisome.

ALL 4 WEEKS OF TREATMENT ARE REQUIRED FOR PROPHYLAXIS.

Seroconversion usually occurs during the first 6-12 weeks after the exposure, so multiple testing is required.

Blood Monitoring Schedule- **GIVE TO STUDENT**

Initial Draws

HIV-antibody
Hepatitis B core antigen IgG and IgM
Hepatitis B surface antibody
Hepatitis C antibody
Syphilis

If PEP: CBC- liver and kidney functions
IF PEP: Recheck kidney and liver functions in 2 weeks.

At 6 weeks

HIV-antibody

At 3 months

HIV-antibody
Hepatitis C- antibody
Syphilis

At 6 months and 1 year

HIV-antibody

It is **YOUR** responsibility to come for testing. Call Student Health in advance, and your lab slip will be waiting for you.

Give to Student

24 hour Needlestick Hotline

(888) 448-4911

**Established by the CDC and
manned by the physicians of
San Francisco General Hospital**

Available for consultation

FREE!

MISS: The incident is reported to the faculty covering the clinic. Immediate wound cleaning and bandaging, if necessary, are handled in clinic where occurrence occurred. Student injury reports are filed and the injured party reports to employee health. Blood work from the student and patient, if they consent, are followed-up by employee health

OKU: Summary:

- 1 Clean wound with soap and water
- 2 Flush involved mucous membranes with water or normal saline
- 3 Apply bandage
- 4 Immediately notify Health and Infection Control director
- 5 Identify source patient
- 6 Blood will be drawn from source patient with their consent
- 7 Rapid HIV Test is run by Family Medicine Clinic (20-30 minutes results)
- 8 Results of Rapid HIV Test revealed to injured party only.
- 9 Injured party will report to Family medicine Clinic immediately
- 10 If they chose not to report to clinic, they must sign a waiver form.
- 11 Attending physician will analyze the incident and injured party may be offered post-exposure antiviral medications.
- 12 The student may also receive a hepatitis B surface antibody test to determine immunity status and guide treatment unless a positive titer has previously been determined. A tetanus-diphtheria vaccination may be indicated.

**Details: POST-EXPOSURE EVALUATION AND FOLLOW-UP
(AFTER AN EXPOSURE INCIDENT)**

An exposure incident is a specific occupational incident involving the eye, mouth, other mucous membranes, non-intact skin, or parenteral contact with blood, saliva, or OPIM. Minor occupational injuries such as paper cuts or injuries from sterile instruments are not considered exposure incidents. Immediate treatment/care of an exposure incident wound involves:

- [1] Cleaning the wound with soap and water.
- [2] Flushing involved mucous membranes with water or normal saline solution.
- [3] Applying other wound care measures (e.g., bandage).

All exposure incidents require immediate notification of appropriate personnel. Students should notify attending faculty and contact Health and Infection Control director 271-3083. Employees should notify their immediate supervisor and also contact the ICO. A report of the incident will be made documenting the route and circumstances of the exposure. The source patient should be identified, if possible; if unknown, the report will so indicate. Blood will be drawn on source patient with their consent and a consent form signed. The Family Medicine Center is currently using the Rapid HIV Test that gives results on source blood in 20-30 minutes and results are disclosed to the injured party only.

Anyone who receives an occupational blood borne exposure will be encouraged to report immediately (following contact with appropriate personnel) to either the Family Medicine Clinic. If they choose not to report immediately to the respective facility, they will be asked to sign a

waiver form. An attending physician will analyze the incident and the student or employee may be offered post-exposure antiviral medications. When indicated a four week two drug regimen is followed. A third drug may be warranted if a large volume of HIV positive blood is involved. This is the protocol recommended by the CDC. Post-exposure prophylaxis has been associated with a decrease of approximately 79% in the risk for HIV seroconversion after percutaneous exposure to HIV-infected blood.

Prophylactic administration is most effective within 1-2 hours following exposure. Early administration affords the most benefit.

The faculty, staff or student shall receive hepatitis B surface antibody, hepatitis C antibody, and HIV antibody tests in order to determine immunity status, establish base lines, and guide treatment.

Additional tracking measures for exposure incidents will include the following:

1. The employer will attempt to have the source patient's blood tested as soon as feasible to determine hepatitis and HIV status. The patient will be asked to sign a form to either refuse or consent to a blood test (to be paid for by the college). Results of the blood test will be made available to the exposed individual, provided the source patient gives consent.
2. The employee/ student's blood will be collected (with consent) for baseline testing. If there is consent to have blood collected but not tested, the blood will be kept for 90 days after the exposure incident to allow the individual to change his/her mind. The individual will be offered any medically indicated prophylaxis recommended by the U.S. Public Health Service. Counseling and evaluation of any reported illness will also be provided.
3. The exposed employee will be directed to The Family Medicine Center for treatment of any exposure or incident. Associated medical bills and testing will be paid through the OUHSC Personnel Office. The exposed student will be directed to The Family Medicine Center for treatment. Associated medical bills and testing will be paid by student or filed with the student's insurance company.
4. If the individual refuses follow-up evaluation, he/ she must sign an appropriate waiver.
5. If a student experiences a clinical exposure during after-hours, weekends, scheduled holidays, or other times when the Family Medicine Center's clinics are closed, he/ she should immediately go to the University Hospital/ nearest hospital Emergency Department to see a physician. At that facility, the student should receive a hepatitis B surface antibody test to determine immunity status and guide treatment unless a positive titer has previously been determined. A tetanus-diphtheria vaccination may be indicated. Up to 72 hours dosage of HIV post-exposure prophylaxis may be prescribed if appropriate. The following weekday morning, the student should contact the Health and Infection Control director at the College of Dentistry and the at Family Medicine Clinic to complete incident reports and receive instructions for further laboratory tests and medications.

Clinical Incident Reports:

For any exposure incident incurred by a student, staff, or faculty member that is related to clinical patient care, the involved parties must prepare a Clinical Incident Report. The attending faculty, staff supervisor, or ICO must review, approve, and sign the report.

The report must include [1] names and social security numbers of the patient and the individual involved, [2] date, time and location of the incident and the time it was reported; [3] a description of the circumstances and details such as name, size, and brand of instrument causing the injury, and [4] final disposition (including referral to The Family Medicine Center for medical care).

This report will become part of the employee/student exposure record file. These records are confidential and will not be disclosed without the consent of the individual or as required by law.

Any health care professional who performs an evaluation of an individual experiencing a clinical exposure incident will be provided with:

- [1] A description of the exposed individual's duties as they relate to the exposure incident,
- [2] documentation of the route and circumstances of the exposure,
- [3] results of the source patient's blood testing, if available,
- [4] all medical records relevant to the appropriate treatment including vaccination status, and
- [5] A copy of the applicable OSHA standard.

The employer must be provided with a written opinion from the health care professional who provides the post-exposure evaluation within 15 days of the completion of the evaluation. The opinion must document that the individual has been informed of the results of the evaluation and of any medical conditions resulting from the incident that require further evaluation or treatment. All other findings or diagnosis are to remain confidential with the health care professional.

Testing the Source Patient

If the source of the exposure is a known patient, his/her consent for hepatitis and/or HIV testing will be requested. Results of the patient's testing will be made available to the exposed individual. If consent is not obtained, the college must verify that legally required consent cannot be obtained. If the patient is already known to be infected with HIV or hepatitis, re-testing will not be required. The College will pay for the cost of the patient's testing.

Costs

For employees, all initial and follow-up testing, counseling and participation in medical protocols will be without cost under the workman's compensation program. For students, all costs for initial and follow-up testing, counseling, and participation in medical protocols will be paid by the student or billed to the student's insurance company, if applicable.

OCCUPATIONAL EXPOSURES: RECORD KEEPING

A confidential medical record is maintained for each individual with an actual or probable occupational exposure. This record includes the individual's name and social security number, a copy of hepatitis B immunization status, and any of the following that apply:

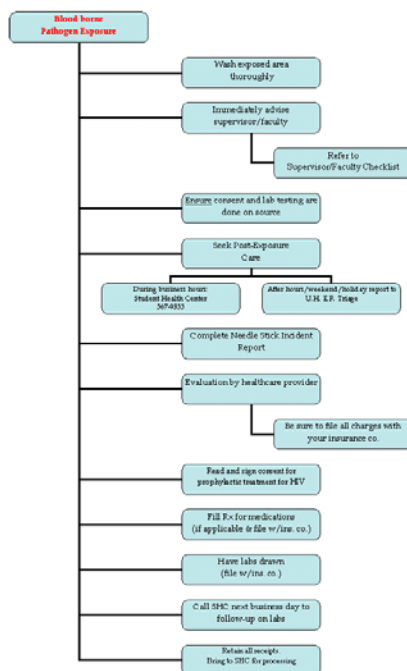
1. Exposure incident report
2. Written opinion of the evaluating health care professional
3. Form refusing hepatitis B vaccination (if applicable)
4. Form refusing post-exposure evaluation and follow-up (if applicable)
5. Documentation of the required training

These records are maintained in the office of the ICO. They will be kept strictly confidential and maintained for the duration of employment plus 30 years. OSHA Standard 1910.20 gives all employees the right of access to their own medical and exposure records.

TENN: Puncture wounds are very possible with sharp dental instruments. Extra precautions are advised to avoid personal injury when using the small, special instruments (such as burs, files, reamers, etc.) as well as larger knives and machinery. If a puncture wound occurs, report it immediately to a member of the faculty or course director. You should then report this injury to the office of Clinical Affairs, in the Dunn Dental building, room C209. Clinical Affairs personnel will write a report and refer you to university health Services (910 Madison, suite 922), with a copy of report.

UTSA: The student is to notify their instructor. They both then work through the protocol. The school will cover up to \$500 per case if the student's insurance does not cover all the expenses provided the student follows all the defined steps. The school will pay for the patient testing.

See following Chart:



University of Texas Health Science Center At San Antonio STUDENT HEALTH CENTER

Bloodborne Pathogen Exposure/Post-Exposure:
SUPERVISOR/FACULTY CHECKLIST

Refer student for post exposure care immediately.

* Student should report to Student Health Center or Emergency

Department as soon as

possible, but at least within 2 hours of exposure.

For students within business hours (8am-5pm)

Student Health Center

(210) 567-9355

For students after hours, weekends, or holidays:

University Hospital Emergency Triage

If seen after hours/weekend/holiday, follow-up in Student Health Center the next business day.

Off-site exposures: Student should report to the Student Health Center or UH if they are within 30-45 minutes (considering traffic). If they are more than 30-45 minutes away from the SHC or UH, they should go to the nearest Emergency Dept.

Obtain source consent and source lab work.

(Source tested for Hep B surface antigen, Hep C antibody, HIV antibody)

Remind student to complete Needle Stick Incident Report. If copy is unavailable you may get one on the UTHSCSA website below or at the SHC.

<http://studentservices.uthscsa.edu/healthcare&counseling/needlestickform.pdf>

For any questions call the Student Health Center during business hours at (210) 567-9355 or after hours at (210) 562-0240.

UTH: Preclinic – medically, addressed by the instructors and/or the clinical nurse (afterwards, an incident report is filed).
Clinically – procedures are followed as set forth within our Clinic Manual (below).

BLOODBORNE PATHOGEN EXPOSURE (“NEEDLESTICK EXPOSURE”)

A "needlestick" exposure is defined as:

- Percutaneous inoculation with a needle contaminated with patient blood or saliva.
- Percutaneous inoculation with any item (bur, scaler, broken glass, etc.) contaminated with patient blood or saliva.
- Patient blood or saliva contact with an open wound, non-intact skin or mucous membrane.

Blood or saliva contact with unbroken skin is not considered to be a "needlestick" type exposure.

The Dental Branch follows the most current recommendation from the Centers for Disease Control for treatment of individuals who have had an exposure or potential exposure to bloodborne pathogens, i.e., HIV, HBV, and HCV viruses. This regimen requires that treatment be initiated promptly, preferably within one to two hours after the exposure. When an exposure incident occurs at the Dental Branch:

1. It must be reported immediately to the nearest clinical dispensary.
 2. Do not dismiss the patient.
 3. It is imperative that health professionals evaluate the injured individual as soon as possible but within one to two hours after the exposure in order to implement the appropriate post exposure prophylaxis.
 - a. Dental Branch students (predoctoral, dental hygiene, “postgraduate/graduate”) will be evaluated at the Student Health Service Clinic, U.T. Professional Bldg., Suite 510. Daytime phone number is (713) 500-5171. If the exposure occurs after 5:00 p.m., weekends, or holidays, page (713) 951-8013. If an exposure occurs while on rotation or at other clinics, contact the on site supervisor or page (713) 951-8013 for instructions.
 - b. Dental Branch employees (faculty, staff, designated residents) will be evaluated at the U.T. Health Services Clinic at 7000 Fannin, Room 1620, at (713) 500-3267. If the exposure occurs after hours, weekends or holidays, call (713) 951-8013.
5. What are the protocols for **patients** injured during procedures by burs, diamonds, disks, blades?

BAY: Dental Patient Injury

- i. On-scene faculty determines whether the injury/illness requires medical attention. The CHN should not be called for dental-related injuries. Those should be referred to the Emergency Care Clinic or other appropriate site such as a referral to personal physician.
- ii. If minor medical attention is needed, the student/employee/volunteer should escort or take the patient via wheelchair to the CHC for consultation, or the CHN can be accessed to the scene for consultation (ext. 8253).
- iii. The student/employee/volunteer involved will complete an Incident Report, with the assistance of involved faculty and/or the CHN.
- iv. A detailed note of the incident should be entered into the progress notes of the patient’s dental record for dental related injuries.

LSU: Same answer as question 4.

MISS: The incident is reported to the faculty covering the clinic. Immediate wound cleaning and bandaging is handled in the clinic where the occurrence occurred. An incident report is filed and patient follow-up is done in the dental clinic, patient’s physician, or emergency room if necessary.

OKU: When it comes to a patient or visitor being injured there are two separate protocols. If a patient is injured during a procedure, due to the nature of these types of incidents each one has to be managed on an individual basis. Attending faculty will be responsible for determining the best course of action to resolve the situation. An individual in the Clinic Operations department has been designated as the Patient Advocate and she can be contacted in regards to issues such as this for input and guidance on resolving the issue.

In conjunction with this course of action there is a form that is called a Clinical Incident Reporting Form. This report should be given to the patient advocate after it has been completed. She will share the report with OUHSC Legal Counsel and OUHSC Risk Management as needed.

If a patient or visitor is injured while in the building but not during treatment, then Health and Infection Control director should be contacted to access the situation and the course of action will be determined in accordance with the situation. The patient or visitor will be asked to fill out an incident report. If they decline then the incident will be recorded as an undocumented incident with details and times on the log.

Medical emergencies, whether during treatment or not should be handled by following emergency protocol posted through out the building which says to call 1-4911 for an ambulance. Then someone should go and wait for emergency responders to arrive. The AEDs in the hall are available if needed and Oral Surgery should be called in the event of a life-threatening emergency. The Health and Infection Control director should also be informed of medical emergencies so that she can document them appropriately.

TENN: NEEDLE STICK OR SHARPS INJURY: Report all needle sticks or skin punctures from contaminated instruments or objects IMMEDIATELY to a faculty member. Do not dismiss your patient. If the injury occurs during school hours, 8:00 a.m. to 5:00 p.m., the health care worker and the patient must go to one of the following individuals: Becky Hawes or Linda Ramat (2nd floor, Clinical Affairs); Kim Sproulls (2nd floor, Oral Diagnosis); Candice Robinson (3rd floor, Oral Surgery); Amy Carver (3rd floor, Orthodontics); Betty Eason and Karen Grisham (4th floor, DAU); Robin Gray (4th floor, Endodontics); Mary Scallions and Dianna Echols (5th floor, Graduate Prosthodontics).

After regular school hours, after 5:00 p.m., use the after-hours emergency procedures.

1. When a medical emergency occurs, the student should remain with the patient if at all possible. He/she should summon the closest faculty member utilizing another student if necessary. The student should begin taking the vital signs.
2. When the faculty member has arrived, an assessment of the emergency will be made, the vital signs established, and the student should be prepared to move the Emergency Cart to the unit. The faculty member should assess any immediate patient needs and begin any necessary emergency steps to treat or relieve the emergency status of the patient.

UTSA: An incident report is completed by the student and the supervising instructor. Needed follow-up or care is paid for by the clinic.

UTH: Protocols are determined by the nature of the clinical situation. If it is determined that a serious injury has occurred, faculty from the Department of Oral Surgery may be called. Patients are evaluated similar to the protocol above. If it is believed that the patient may have been subjected to infectious material, treatment may include immediately being taken to a hospital for a blood test (as is discussed in the above protocol).

6. Does your school have concerns with **Bisphenol A** in resin restorations? What is the evidence? If YES, please explain:

BAY: No. Estrogenicity in cured commercial composites has not been demonstrated but could possibly pose a risk. (JADA, vol. 130, No.2, p.201-209). Students must wear PPE and patients are protected with rubber dam isolation and protective eye wear during restorative procedures. Students are cautioned not to contact composite components with bare skin (Söderholm KJ, et al., BIS-GMA-BASED RESINS IN DENTISTRY: ARE THEY SAFE?: J Am Dent Assoc, Vol 130, No 2, 201-209)

LSU: No.
See ADA Position Statement, May 12, 2008:
<http://www.ada.org/prof/resources/positions/statements/bisphenola.asp>
See JDR 87(7):661-665, 2008, Analysis of the degradation of a model dental composite. <http://www.ncbi.nlm.nih.gov/pubmed/18573987>

MISS: No.

OKU: None that I am aware of.

TENN: No. Dr. deRijk, our biomaterials division director, indicates that only one sealant had BPA present in its formula, that was Delton. We do not have that sealant in our clinics. In addition the ADA released the following statement:
Of the 12 brands of dental sealants that currently carry the ADA Seal of Acceptance, 11 of the 12 materials leached no detectable BPA on first analysis; on second analysis, one sealant leached a trace amount of BPA within the test sensitivity (5 parts per billion). The manufacturer of this sealant was contacted. After additional quality control procedures were implemented in the manufacturing process, detectable BPA was successfully eliminated in the final product. (BPA is not a direct ingredient of dental sealants; it is a starting raw chemical that appears in the final product only when the raw materials fail to fully react.²)
Hence, none of the dental sealants that carry the ADA Seal release detectable BPA, although it must be emphasized that there is no evidence to suggest a link between any adverse health condition and BPA leached out of dental sealants.
The ADA also looked beyond product chemistry for the presence of BPA in dental sealants. The association tested the blood of dentists who had dental sealants on their teeth and those who did not. The ADA examined 40 blood samples: 30 were from dentists with one to 16 sealed surfaces, and ten samples were from dentists who had no sealants. BPA was not found in any of the blood samples from either group, suggesting that if BPA is leached from dental sealants it is not detectable in blood tests; thus, it does not present an estrogenic hazard.³
In addition to its laboratory studies, the ADA worked with researchers at University of Nebraska Dental School on a clinical project to measure BPA exposure during and after sealant application. Dental sealants were applied to test subjects, then saliva and blood samples were collected at various time intervals after sealant application. This study showed that BPA

released orally from a dental sealant may either not be absorbed or is not detectable at or above 5ppb when measured in systemic circulation.⁴

An article in the Journal of American Dental Association corroborates ADA findings regarding BPA and dental sealants. Researchers at Boston University School of Dental Medicine who tested seven brands of sealants confirmed that none released any BPA.⁴⁻⁵

1. Olea N, Pulgar R, Perez P, Olea-Serrano, Rivas A, Novillo-Fertrell, Pedraza V, Soto A, Sonnenschein C. Estrogenicity of resin-based composites and sealants used in dentistry. Environ Health Perspect, 1996;104:298-305.
2. Bowen RL. Use of epoxy resins in restorative materials. J Dent Res, 1956;35:360-369.
3. Siew C, Miaw CL, Chou HN, Gruninger SE, Geary R, Fan PL, Meyer DM. Determination of bisphenol A in dentist serum samples (Abstract 1070). J Dent Res, 1998;77 (Special Issue A).
4. Fung EYK, Ewoldsen NO, St.Germain HA, Marx DB, Miaw C-L, Siew C, Chou H-N, Gruninger SE, Meyer DM. Pharmacokinetics of bisphenol A released from a dental sealant. J Amer Dent Assoc, 2000;131:51-58.
5. Nathanson D, Lertpitayakun P, Lamkin M, Edalatpour M, Chou LL. In vitro elution of leachable components from dental sealants. J Amer Dent Assoc, 1997;128(11): 1517-1523.

UTSA: No.

UTH: No true concerns at this time. Bisphenol A release was mainly observed with older formulations of Delton Sealants. Older versions of this product were manufactured using bisphenol A dimethacrylate (bis-DMA), a compound that hydrolysis by way of nonspecific salivary esterases into BPA, causing high but temporary elevations in blood levels of BPA; however, newer versions of Delton that have either the plus sign (+) or the word “plus” in their name do not contain bis-DMA that breaks down into BPA

V. Curriculum

1. Has your pre-clinical or clinical operative curriculum recently undergone a significant revision? What changes did you make (additions or deletions)? Why did you make the changes and what positive or negative outcomes have you seen?

BAY: The pre-clinical operative curriculum has recently undergone a minor revision, increasing the number of posterior composite restorations while slightly decreasing the number of posterior amalgam restorations. It is too soon to see either positive or negative outcomes resulting from this change. The clinical operative curriculum has recently changed in that we no longer require the third year dental students to restore patients' teeth with cast gold inlays and/or onlays. This change stemmed from the unwillingness of many patients to have their teeth restored with gold restorations. Coinciding with the deletion of the gold inlay/onlay restoration from our essential experiences, we added additional CI II direct restorations to the essential experiences. In the event that a patient desired a gold inlay/onlay

restoration, the cast restoration would count as a Class II direct restoration plus two additional miscellaneous restorations thereby acting as an incentive for the student to restore teeth with conservative cast gold restorations. It is too early to determine the positive or negative consequences of this change, but it is interesting to note that many students are finding patients that wish to have these conservative gold restorations.

- LSU:** Reduced time in freshman operative has led to no cast gold in the course for the last 3 years. This year students will prepare and wax-up onlays but will not cast them so they will get no instruction from us on manipulation of the metal. They do have experience with cast gold crowns in fixed prosthetics. In the pre-clinical esthetics course for sophomore students CEREC onlay preparation and restoration is taught for the first time this year. Students will prepare, temporize, fabricate, adjust and deliver CEREC 3 fabricated porcelain onlays in the simulation laboratory. A reduction in the number of clinic sessions in both the junior and senior years has resulted in a decreased expectation of clinical experiences in both years.
- MISS:** The most significant revision has been the recent renovation of preclinical simulation suites the last 2 years, allowing for more video recording of lectures and live demonstrations that students can view on their monitors at each pod. Also, we have incorporated more critical thinking skill exercises on written exams and on practical exams. We made these changes due to a national push toward increasing critical thinking skills of our students on national board exams (case based sections). Also, it will be interesting to see if CODA will place an emphasis on critical thinking skills in their standards. A little too early to tell of any positive or negative outcomes yet.
- OKU:** Two years ago, we reorganized the curriculum to present the material based on addressing different clinical problems rather than based on types of cavity preparations and restorative materials. We think that this has allowed the students to incorporate diagnostic techniques, material selection, and restorative techniques in a sequence that will allow them to assimilate the material and make clinical decisions more effectively. Instead of teaching amalgam restoration one portion of the course and resin composite in another portion of the course, the curriculum addresses clinical problems and the various options for diagnosing, preventing, healing, and restoring the problems associated with dental disease.
- TENN:** As stated previously we have combined use of DS for prepping at the beginning of the semester with restorations on pre-prepared teeth in the sim lab simultaneously. 1/3 of the class works on preps in the DS while the other 2/3 works in the sim lab on restorations, then after a 1 hr session on DS, the groups switch out. This methodology is used for the 1st 3 months of the semester with the students preparing Classes I, II, III and an all ceramic and FGC in DS lab. The net result is that we have not lost hours for preparing teeth and have found that the information and skills concurrently being learned in dental morphology is transferring over to the early exposure to composite resin materials. In addition we have seen improvement in the skills that students present with regard to composite manipulation in both the complex restorations course and the esthetics course, both of which occur later in the curriculum.

UTSA: Several years ago we had a spring semester Freshman course and a fall semester Sophomore course. The lag time between the end of the sophomore fall semester until the beginning of the next fall semester when students entered into the junior clinic to begin their clinic treatment of patients was unacceptable as far as keeping up the student's skill sets. We were able to adjust the curriculum to delete the Freshman course and run the Sophomore course for the entire year, which shortened the lag time significantly. The break between the spring and fall semesters has continued to decrease until now there is only about a 5 to 6 week period before students finishing their second year enter into the junior clinical experience. Three years ago we introduced the routine use of simulated caries in the daily tooth preparation exercises that our pre-clinical students were exposed to. They had to "solve the puzzle" of extending a preparation based on "caries involvement". This is our second year of being in our new simulation labs. Using the A-dec simulator with the Kilgore NisSIM head, has significantly improved making the experience more realistic for the students. Clinically we modified the way we conduct our junior skills-assessments. We assigned at least two calibrated faculty to cover each of the examination sessions and make every effort to pair students up with faculty that did not work with them on a daily basis. We also photographed key steps in the procedure to review. Reviewing the results from last year seemed to support the fact that the students with the strongest deficiencies were identified. The remedial intervention that those students received before their next attempt at the exam was still too variable last year and needs to be addressed further and improved this year.

UTH: No specific changes at this point other than annual revisions of some material in consort with the changes made within the dental continuum (mostly involving products).

2. What is the time gap (in semesters or quarters) between the end of pre-clinical operative dentistry and the start of clinical operative experiences for your students? Describe the curricular progression of your students in operative dentistry (Example-Freshman pre-clinical operative, Sophomore block clinic rotation, Junior-Senior clinics, or Junior clinic, Senior Comprehensive / General Dentistry clinic). Is there any concern with diminishing knowledge or skills between pre-clinic courses and pre-clinical practice? What types of knowledge or skill erosion did you observe and what have you done about it?

BAY: Our pre-clinical operative course begins in the spring semester of the first year (D1) and concludes in the fall semester of the second year (D2) with a three month summer break separating the two halves of the course. A number of years ago, our curriculum changed; the pre-clinical operative course had been taught solely in the D2 year but was then split between the second half of the D1 year and the first half of the D2 year. There was great concern regarding diminishing knowledge of skills between pre-clinic courses and clinical practice. We observed that although the D2 students returning from summer break were somewhat rusty, at the same time a maturation process seemed to occur resulting in students who perhaps could not cut the best preparations when first back but who could self-assess their restorative shortcomings. It only seems to take a couple of

weeks in the D2 fall semester before the students are back on track and expanding their skill sets. In the spring semester of the D2 year, the students do not have a formal course in Operative Dentistry. Concerned about the erosion of skills before beginning treatment of patients in the summer session of the D3 year, some years ago we instituted a block rotation, Introduction to Clinical Practice, in which the student simulates a clinical patient appointment in the simulation lab using the typodont mounted in a sim head. In this rotation, the student has an established restorative treatment plan for the simulated patient. He/she reviews the patient medical and dental histories and simulates taking vital signs. The student presents the case to assigned faculty members and proceeds to perform operative procedures using rubber dam, barrier protection and personal protective equipment. The rotation consists of six such sessions per student during the course of the semester. In the third year (D3), the students perform comprehensive patient care to include operative treatment as necessary on their patients of record. Superimposed on the comprehensive patient care program is a certain number of minimum essential experiences in Operative Dentistry and progress exams on clinical patients which must be completed at a clinically acceptable level in order for the students to be deemed competent to proceed to the fourth (D4) year. The D4 curriculum is driven by comprehensive patient care but with a greater emphasis on production.

LSU: Freshman operative ends in early May and sophomore clinic does not begin until November. There is deep concern about loss of psycho-motor skills in that break. We have modified the sophomore curriculum to include simulation lab sessions immediately before beginning clinic to augment didactic lectures, reintroduce and evaluate isolation, preparation and restoration skills before beginning patient treatment.

Curricular progression:

Freshman Pre-clinical operative dentistry
 Sophomore Block clinic rotation
 Junior-Senior Comprehensive dentistry clinic

MISS:

- 1) Freshman (D-1) Fall -Morphology & Occlusion
 (D-1) Spring-Caries I – Amalgam Course
- 2) Sophomore (D-2) Fall–Introduction to Esthetics–(Composite Course)
 (D-2) Winter–Caries III–Indirect Restorations, Cast Gold (full crowns)
- 3) Juniors (D-3) Summer (June and July) – Operative Clinic
 Orientation course, class I and II amalgam, class III composite and pin amalgam preparations & restorations reviewed and then completed on mounted ext. natural teeth in dentiform.
- 4) Junior operative clinic D-3 year - #650 (June thru May)
- 5) Senior operative clinic D-4 year - #675 (June thru May)

With the junior summer orientation course in June, we do not see a big drop off of hand skills which may be due partially to the crown and bridge course just ending in May and the indirect restorations course ending in February. However, the student's knowledge of dental materials does seem to drop off; therefore, in the clinic orientation course we review some of the more commonly used materials. However, there seems to be some confusion about specific dental materials such as liners and bases that have been reviewed several times and tested accordingly. We also give a comprehensive didactic exam with all clinical departments. input at the end of the D-2 year to determine student's ability to relate didactic information to actual clinical situations. This exam, the "Capstone Examination" students must pass to enter the D-3 clinic. This exam attempts to measure critical thinking skills. Capstone has been given only twice so no correlation to final clinical grades has been evaluated.

OKU: Our last pre-clinical operative dentistry course ends at the end of the second year fall semester (December). The second year students are eligible to treat patients in the operative clinic at the beginning of the following spring semester (January). In reality most of the students do not begin treating patients in the operative clinics until the middle or end of the spring semester of their second year.

Progression of students in operative dentistry:

First year: Second semester (spring) - Preclinical operative I lecture/lab

Second year: First semester (fall) - Preclinical operative II lecture/ lab
Second semester (spring) - Begin clinical treatment of patients

Third Year Clinical treatment of comprehensive care patients

Fourth Year Clinical treatment of comprehensive care patients

There is some concern about diminishing knowledge or skills between pre-clinic and the first clinical course. The biggest problems that we see involve the loss of some specific details for the use of procedures or materials. By the time our students are experienced enough to place retentive pins, they have often forgotten many of the details of the procedure. We also have students get confused on basic knowledge such as the use of a bitine ring matrix system for Class II Resin composite restorations. We are currently considering redesigning our overall curriculum in an attempt to decrease the lag time between when a procedure or material is introduced to the student in preclinic, and when they can apply that procedure clinically.

TENN: The final preclinical course that our students have is the Esthetic course in the summer of the D3 year. They have already started clinic in the summer, but are working up their patients. By the time most of them begin operative treatment in the clinic, they have finished their esthetics course, so there is little down time between preclinical experience and clinical operative treatment.

D1 year— preclinical operative to include DS, amalgam preps, restorations and limited composite exposure

D2 year— composite resin and complex restorations preclinical courses and intro to clinic, where they begin rubber dam placements and some restorations (D4s do the prepping) on patients in clinic
D3 year— preclinical esthetic course in summer and operative clinic
D4 year— Advanced operative lecture course and operative clinic

UTSA: The time gap between the pre-clinical operative dentistry experience and clinic is about 5 to 6 weeks and there has been discussion to reduce that. Prior to 2004 there was a gap of over 7 months.
The curricular progression is as follows:
Sophomore pre-clinical operative dentistry taught by Operative Dentistry.
Junior clinic: General Dentistry clinic with strong operative dentistry faculty input and supervision. Probably 90% operative dentistry instructors staffing operative procedures and 10% general dentistry instructors.
Senior clinic: General Dentistry clinic with predominate input from the Department of General Dentistry. Probably less than 5% operative dentistry instructors staffing senior operative procedures.

UTH: We have no real time gap in theory, we finish preclinical Operative the fall semester and the students begin in the clinic seeing patients in the spring semester (they also have been through a course where they examine each other in terms of soft tissue examination (including the head and neck), hard tissue examination, charting, treatment planning, and various periodontal examination/diagnosis procedures). Problems arise when various students do not have proper patients or their assigned patients need advanced treatment(s). There is an observed disconnect between preclinical experiences and clinical experiences, perhaps more to do with clinical faculty being unaware of what is being taught preclinically. Also, many second and third year faculty are part-time and the students are somewhat hesitant to work with faculty that they do not recognize. These factors as well as others certainly do not contribute to the ever-elusive seamless transition from preclinic to clinic. Students need to be guided through that transition by engaged faculty who are familiar with and understand the special type of guidance required. Preclinical experiences teach skills and concepts, but regardless of the level of technology, a good transition is faculty-based ... the students are unaware of how to make such a transition. Perhaps, additional focus on this transitional phase would help gain additional continuity of teaching and development.

Regional CODE Agenda

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

LSU: Discussion of the recent FDA statement on dental amalgam.

TENN: How will we revamp our operative courses, preclinic and clinic, if amalgam is banned?

Suggestions for CODE.

1. What can the organization do to improve its effectiveness?
2. Any comments or suggestions to improve the Web site?
<http://www.unmc.edu/code/>

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

3. Other comments/suggestions?

MISS: Possible meet once every two years as university budgets get tighter.

CODE REGIONAL MEETING REPORT FORM

REGION IV Great Lakes

LOCATION AND DATE OF MEETING:

University: University of Pittsburgh

Address: Pittsburgh, PA

Date: October 23 - 24, 2008

CHAIRPERSON:

Name: Dr. Ed Deschepper Phone #: 317-274-5331

University: Indiana University Fax #: 317-274-2419

Address: Indianapolis, IN 46202 E-mail: edeschep@iupui.edu

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

Suggested Agenda Items for Next Year:

No responses noted.

LOCATION AND DATE OF NEXT REGIONAL MEETING:

Name: Dr. Marco Tauil Phone #: 313-494-6780

University: University of Detroit Mercy Fax #: _____

Address: Detroit, MI 48219-0900 E-mail: tauilma@udmercy.edu

Date: TBA

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

Deadline for return: 30 Days post-meeting

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

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

CODE Region IV Attendees Form

NAME	UNIVERSITY	PHONE #	FAX #	E-MAIL ADDRESS
Ed DeSchepper	Indiana	317-274-5331	317-274-2419	edeschep@iupui.edu
Paul Reifeis	Indiana	317-278-1858	317-274-2419	pereifei@iupui.edu
Jim Hoddick	Suny-Buffalo	716-692-4242	716-694-5774	jhoddick@pcom.net
Ken Lee	Suny-Buffalo	716-812-9294		kenleeds@aol.com
Stephen Ferrier	Western Ontario	519-661-2111, ext 82860		stephen.ferrier@schulich.uwo.ca
Greg Jensen	Western Ontario	519-661-2111, ext 88813		gjensen@uwo.ca
Peter Triolo	Pittsburgh	412-383-5294		ptt4@dental.pitt.edu
Mike Bagby	West Virginia	304-293-3370		mbagby@hsc.wvu.edu
Marco Tauil	Detroit Mercy	313-494-6780		tauilma@udmercy.edu

**2008 NATIONAL CODE AGENDA
REGION IV
SUMMARY RESPONSES TO NATIONAL AGENDA**

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

I. Use of Simulation in Teaching and Testing: Now and in the Future.

Most schools are using some type of simulation for the teaching in all of the listed disciplines except Oral Surgery and Periodontics. A couple of schools are using simulation for perio, but none of them are using simulation for oral surgery. (Procedures taught but no performed in clinic) porcelain inlays, onlays, indirect veneers implants, equilibration and one school occlusal amalgams and one school perio surgery. All of the schools are using simulation to teach endo. Simulation ranges from bench top mounted teeth to NERB type of typodonts. Only one school testing the following: - Endo access opening on #3, - Endo fill on #8, - 3 - unit FPD, - Ceramic crown prep; one other school ONLY when a suitable patient can't be found (rare). A couple of schools are using Axium virtual patient records in pre-clinical labs, digital radiography, implant impressions and microscopes for endodontics in the laboratories. Performance in sim lab used as means to identify superior students only to give a pre-clinical lab award and/or to equalize assignment of superior, average and below average students in the various comp care clinics. In general, all of the schools said yes to student performance in sim mirrors their performance in clinic at least initially in the clinics. However, in some cases, the poorer students seem to catch up after a period of time. Some schools said they didn't know if students who perform better in sim lab are more successful in licensing examination. One said, Yes, however, most said they didn't have the data to substantiate this. Regarding the manikin crown procedure as a reliable way to test competency for a licensure candidate, most were not aware of any data that would demonstrate this. Two schools said they felt it was valid test of prosthodontics.

II. Principles of Cavity Preparations - Outline Extension

Schools pretty split on this one (wall extension). Some said all contacts should be broken, some said some of them. All schools said that in practice, all contacts are probably not broken in all cases. Situational. Schools were split on Class I amalgam and Class II composite preparation extensions.. Some said there was a difference, some said no difference. Answers varied from none of the contacts need to be broken to all of them need to be broken and some combination of broken and not broken. Commenting on survey results, most had no comments except noticing the wide variation and that some governing body (Operative Recommendations Committee or Academy of Operative Dentistry) establish some standards. One school asked for recommendations about retention for resins in class V's that repeatedly fall out.

III. Caries - Treatment/Detection

Treatment of deep carious lesions by complete excavation or partial removal - A Critical Review, JADA, Vol 139, 705-712, June 2008

All schools taught some form of this only to avoid exposure (indirect pulp cap). Some recommend reentry after a period of time to remove remaining caries. Others opted for final restoration on top of last bit of remaining caries. All acknowledged it depended upon a variety of factors, such as extent of caries, symptoms, etc. ART is not taught by most schools, One school did didactically but not clinically. Several teach remineralization treatment for such lesions. Most schools teach visual (sharp eyes, dull explorer, use little to no force), and transillumination for caries detection. None of the schools are using Diagnodent of fluorescence in their undergraduate clinics. Only one school uses caries detection dye if a faculty member wants to demonstrate that the student left caries.

IV. Health and Safety Issues Related to Teaching/Practicing Dentistry

Most schools have some type of formal protocol for extracted teeth with amalgam that involves sterilizing/disinfecting and taking precautions to prevent transmission of disease. However, universal protocols did not exist for the member schools. All agreed that amalgam-containing teeth are handled differently and are not heat sterilized. This (air-quality) has been an issue in most schools (particulate and chemical) primarily in pre-clinical lab situations. Most have or are making efforts to address the problem (vents, filters, etc.) None of the schools listed noise as an issue except one during construction within the building. Most schools had an extremely detailed and precise protocol for student accidental needle sticks, etc., that involved testing of involved parties to minimize chances for transfer of disease including anti-viral therapy when indicated. None of the schools had major concerns with the issue of Bisphenol A.

V. Curriculum

All of the schools except one have recently undergone a revision or in the process of a revision. Too early to tell about negative or positive impacts. One school's revision resulted in later entry into clinic and thus less prepared for patient treatment than they used to be. Would like to change that.

The time gap ranges from 1-2 semesters. All would like to see that time shortened. Some are taking steps to shorten this gap. All felt that shortening this gap in time is desirable. With the 2-semester gap, erosion was definitely observed. Others varied in the amount of erosion, if any, occurred.

Regional CODE Agenda

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

1. Does your school teach the placement of auxiliary retention for Class V resin restorations?

Most schools do not unless the filling has a history of falling out.

Suggestions for CODE.

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

Get more involved in ADEA, especially in terms of the teaching of Operative Dentistry skills. Most exposure of C.O.D.E. is at the Operative Academy meeting. In this environment C.O.D.E. is only “preaching to the choir”. However, more involvement in ADEA may make our voices heard at the academic/educational levels. Recent educational trends, PBL, etc. show a definite basic science influence in dental education that has not been totally positive. These trends are originating at ADEA. It appears that current thinking is that surgical skills and the associated thinking and decision-making processes are some lower form of learning. There are various factors influencing this way of thinking, but as restorative educators we have to reemphasize the importance of surgical and restorative skills in the practice of dentistry. There is a trend of thinking that surgical skills and “thinking” skills are mutually exclusive. As operative dentistry educators, we know that nothing could be further from the truth, but somehow the message has been “lost”. Surgical skills (and thinking skills associated with surgery) have taken a hit as a result. I have seen this at our school and am hearing some of the same complaints from other operative educators in our region. Perhaps involvement in the highest levels of dental academia can reverse this kind of thinking.

Provide C.E. credit nationally for attendance at regional C.O.D.E. meetings as an incentive for participation for member schools.

2. Any comments or suggestions to improve the Web site? <http://www.unmc.edu/code/>
NOTE: to locate the web site via a search engine, enter Academy of Operative Dentistry and then use the link CODE and ADEA.

Recommend adding a search engine to the website so that key words could be entered to look for certain topics in the CODE Regional Annual Reports over the years

3. Other comments/suggestions?

Thanks to Larry Haisch for all of his hard work for C.O.D.E.

2008 NATIONAL CODE AGENDA

REGION IV RESPONSES

(Evidence cited where applicable)

Region IV School Abbreviations

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

I. Use of Simulation in Teaching and Testing: Now and in the Future.

Typodonts and simulation have been an accepted protocol for training and measuring competency for dental students prior to performing procedures on patients. In addition, simulation has been used for over ten years as a means to evaluate competency by licensing agencies. Simulation includes not only the standard surgical procedures as crown preparations, but also restorations and endodontic procedures. Simulation is used as a default option in order to provide training for students when there are insufficient patient resources; i.e., porcelain veneer procedures, ceramic inlay/onlays, etc. The ADA, ADEA and other dental organizations have expressed opposition to the use of human subjects for licensing examinations.

It would be appropriate to discuss the use of simulation in Teaching and Testing especially as relates to validity and reliability.

1. What procedures are you currently simulating in the pre-clinical laboratory?

CWRU: No response noted.

UDM:	Yes	No	Comments
Operative	X		
Crown & Bridge	X		
Endodontics	X		
Periodontics		X	
Oral Surgery		X	
Pediatrics	X		
Esthetic Dentistry	X		
Implants	X		

UIC: No response noted.

IUSD:	Yes	No	Comments
Operative	X		“Typodonts on a stick” AND limited Adec/Frasco clinical simulators (we currently only have 25 units for 100 students)
Crown & Bridge	X		same as above
Endodontics	X		Bench top on typodont teth and natural teeth mounted in plaster
Periodontics	X		Pig jaws
Oral Surgery		X	
Pediatrics	X		Space maintainer, chrome steel crowns, amalgam, etc
Esthetic Dentistry	X		Preps only
Implants	X		Prosthodontics does this. Companies participate (donate materials and provide some instruction)

MICH: No response noted.

OSU: No response noted.

PITT:	Yes	No	Comments
Operative	X		
Crown & Bridge	X		
Endodontics	X		
Periodontics	X		
Oral Surgery		X	
Pediatrics	X		
Esthetic Dentistry	X		
Implants	X		

SUNY:	Yes	No	Comments
Operative	X		
Crown & Bridge	X		
Endodontics	X		Difficulty because of cost of technology and poor simulation models for radiography and new technology
Periodontics		X	
Oral Surgery		X	

Pediatrics	X		Basic restorative on pedo typodont
Esthetic Dentistry	X		#6 direct composite resin veneer/ #8 MIFF direct composite
Implants	X		Max premolar - fixed project

WVU: No response noted.

UWO:	Yes	No	Comments
Operative	X		2 full courses
Crown & Bridge	X		Full course
Endodontics	X		Single/multirooted teeth, rotary instrumentation, thermal obturation
Periodontics	X		Scaling/non-surgical only
Oral Surgery	X		One session - unknown content
Pediatrics	X		Pediatric operative techniques
Esthetic Dentistry	X		Veneers - pilot anesthetic course using 3M post-grad teeth
Implants	X		4 sessions - impression techniques

2. Are there any procedures taught in simulation that a majority of your students do NOT perform in the clinic? Please list

CWRU: No response noted..

UDM: - Composite veneer; - Implant Placement; - Occlusal equilibration

UIC: No response noted.

IUSD: Porcelain veneer preps. Porcelain inlay preps. Gold onlay and inlay preps and restorations. Perio surgery on pig jaws. Implant restorative procedures except final placement of prosthesis (crown), e.g., stints, impressions (open and closed), placement of various fixtures, such as healing abutments, restoration abutment, etc.

MICH: No response noted.

OSU: No response noted.

PITT: Porcelain veneers

SUNY: No.

WVU: No response noted.

UWO: Inlays; onlays; direct and indirect veneers (Class I amalgams)

3. Are you utilizing simulation to teach some or all of your PRE-CLINICAL endodontic procedures? Yes/No. If YES, please list.

CWRU: No response noted..

UDM: Yes, access opening and canal obturation.

UIC: No response noted.

IUSD: Yes. Bench top on typodont teeth and natural teeth mounted in plaster.
Planned: Dexter head typodont attached to clinical chair.

MICH: No response noted.

OSU: No response noted.

PITT: We are using the following simulation from the least to the most:

1. Hand-held plastic block teeth with a canal in the clear plastic and a white crown on top of the block (2 maxillary central incisors, 1 maxillary 1st Premolar, 1 maxillary 1st molar, 1 mandibular 1st molar).
2. Hand held extracted teeth, mounted in acrylic.
3. Columbia (NERB) maxillary endodontic dentoform with manikin endodontic teeth #9 and #3.
4. Acidental ModuPRO endodontic dentoform in which the extracted teeth can be mounted in all six sextants.

SUNY: We occasionally use Typodonts, mostly use teeth mounted in blocks. Neither lighting nor appropriate radiography are available for clinical simulation.

WVU: No response noted.

UWO: All endodontic procedures.

4. Are there any required CLINICAL competencies that you test on typodonts rather than patients? Yes/No. If YES please list.

CWRU: No response noted.

UDM: Yes. Endo access opening on #3; Endo fill on #8; 3-unit FPD; Ceramic crown prep.

UIC: No response noted.

IUSD: Not competency, but in preparation for NERB exam (heads mounted to clinical chairs; crown and bridge, endo) Possibly Planned: Dexter head typodont attached to clinic chair.

MICH: No response noted.

OSU: No response noted.

PITT: No.

SUNY: No.

WVU: No response noted.

UWO: As a rule not - however, on rare occasions when a suitable patient cannot be found to test competency, it may be tested on a typodont.

5. Besides the standard uses for typodonts and simulation that most schools are teaching such as cavity preparations, crown preparations, etc. what innovative or new techniques have you incorporated into your simulation laboratories?

CWRU: No response noted.

UDM: Endo brings a microscope into the preclinical lab and projects the image on the student's computer monitors. Digital radiography. Use of Axium. Implant placement in Removable Partial Denture course.

UIC: No response noted.

IUSD: Caries Detection (not that new). Calculus removal (not that new). Prep design (given tooth with artificial caries) (not that new). Diagnosis and treatment planning based on radiographs and pictures (not that new).

MICH: No response noted.

OSU: No response noted.

PITT: axiUm - we simulate patient clinical chief complaint, charting, diagnosis, treatment planning, prognosis, etc.

SUNY: None.

WVU: No response noted.

UWO: Implant impressions; endodontic instrumentation and obturation techniques - endodontic microscope feed to overhead monitors.

6. Do you use performance in the simulation lab as a means to identify superior students? (For example selection into honors programs). Yes/No. If YES please explain:

CWRU: No response noted.

UDM: No.

UIC: No response noted.

IUSD: No, but good students are identified and an award is given at the end of the second year to the “best” performed in preclinical labs.

MICH: No response noted.

OSU: No response noted.

PITT: Not specifically to identify honors, but we do try to mix our practices with all levels of skills based upon performance in the sim clinic.

SUNY: No.

WVU: No response noted.

UWO: It forms part of their overall grade for the year/entire course, but it is not used by itself to identify superior students.

7. Is it your observation that student performance in simulation mirrors their performance in the clinics with similar procedures? Yes/No. Please explain:

CWRU: No response noted.

UDM: Yes. There seems to be some positive correlation but it certainly varies.

UIC: No response noted.

IUSD: Variable. Early on more correlation.

MICH: No response noted.

OSU: No response noted.

PITT: In general, yes. Initial dexterity is observed which tends to mirror clinical skills later.

SUNY: Very variable - good students do well but students that are “late bloomers” may struggle until they catch up on the learning curve.

WVU: No response noted.

UWO: Early on in the clinical environment - yes. Later on, in senior year the other students seem to catch up.

8. Has it been your observation that students who perform better in the simulation laboratory are more successful in licensing examinations? Yes/No Comments.

CWRU: No response noted.

UDM: Possibly, but do not have the data to corroborate this.

UIC: No response noted.

IUSD: Don't know actually. Never have looked at the data. Might be an interesting study. I do know that some of our very best students have failed at least a part of the board on occasion, while the worst have passed. I doubt that is a new observation, however. Probably happens every year to at least one representative of the top and bottom.

MICH: No response noted.

OSU: No response noted.

PITT: Yes.

SUNY: N/A

WVU: No response noted.

UWO: Canadian exams involve a written and OSCE but no practical.

9. The Western Regional Boards is reluctant to adopt a simulation crown preparation as part of their examination even though other testing agencies with results accepted by over forty states have used simulation for over 10 years. Is there any evidence that would demonstrate that the manikin crown procedure is not a valid or reliable way to test competency for a licensure candidate? Please explain and provide references.

CWRU: No response noted.

UDM: Not that we are aware of.

UIC: No response noted.

IUSD: I have no data to offer as evidence.

MICH: No response noted.

OSU: No response noted.

PITT: The NERB appears to accurately test Fixed Prosthodontic skills of the students.

SUNY: What does the Western Board measure or evaluate - patient care, the ability to cut an ideal crown prep, or minimum hand/eye skills? Are they evaluating patient management? If not, manikins are likely to be adequate.

WVU: No response noted.

UWO: Depends on what the Western Regional Board wants to examine. The crown preparation demonstrates sufficient motor skills and understanding of certain basic principles. The scoring criteria and inter/ intra-examiner reproducibility would also have to be good.

II. Principles of Cavity Preparations - Outline Extension

Earlier this year the following questions were asked and the results were posted on the CODE web site (<http://www.unmc.edu/code/>). Schools should again respond and expand on as requested. Answer each questions and provide the rational/evidence for each answer. Are these conceptions taught in the pre-clinics then applied in the clinics? If NO, please comment.

1. Must facial, lingual, and gingival walls be extended to completely break contact with the adjacent tooth if not dictated by varies/penetrable decalcification? Yes/No. Rational/Evidence. Applied?

CWRU: No response noted.

UDM: Amalgam

Sim Lab:	Facial: Yes	Lingual: Yes	Gingival: Yes
Applied:	Facial: Yes	Lingual: Yes	Gingival: Yes

Composite

Sim Lab:	Facial: Yes	Lingual: Yes	Gingival: Yes
Applied:	Facial: Maybe	Lingual: Yes	Gingival: Yes

UIC: No response noted.

IUSD: I would say no. We do not teach that facial or incisal contacts need to be broken with Class III resin matrix composite. Rationale: Tooth preservation. Most caries slightly below contact so gingival contact broken. Adaptability of composite. Translucency of enamel and composite for possible future caries detection. Class II resin matrix composite, same rationale. No research evidence. Anecdotal. Amalgam break all contacts on Class II's. Future caries detection. Margin adaptation checks. Not as adaptable as composite. No research evidence. Anecdotal. Application: Depends on who is overseeing treatment in the clinic at the time. Not everyone knows or buys into the rationale. Without basic clinical research to back up above "opinion", difficulty to argue other than tooth preservation.

MICH: No response noted.

OSU: No response noted.

PITT: Yes for board exams. No, in the real world.

SUNY: Yes - students are taught to completely break contact in order to visually check margins for recurrent caries. Students are "beginning learners" and therefore must be taught differently than what is done in private practice.

WVU: No response noted.

UWO: Class II amalgam - facial, lingual and gingival contact is broken. Rationale is access for finishing margins, cleaning. In some clinical cases the instructor will elect not to break a contact if it is deemed too destructive.

2. Is there a difference in extension criteria between Class II amalgam and Class II composite preparations? Yes/No. Rational/Evidence. Applied?

CWRU: No response noted.

UDM: No, first question. Yes, second.

UIC: No response noted.

IUSD: Yes, see above.

MICH: No response noted.

OSU: No response noted.

PITT: Yes, we follow Summitt's text to prepare composite restorations with minimally invasive dentistry.

SUNY: NO - still need to teach importance of being able to visually check margins for future recurrent caries.

WVU: No response noted.

UWO: Minor differences – the occlusal sections may be more conservative but the prep is essentially the same. Rationale – class II lesion is in the same location, access is by the same route (marginal ridge). From a materials viewpoint – although composite may be bonded to the dentine walls, a flat floor is still advisable as occlusal loading will test the material in compression rather than the dentine bond strength in shear.

3. For the anterior Class III, is it required that proximal contact be broken gingivally? Facially? Incisally? Yes/No. Rational/Evidence. Applied?

CWRU: No response noted.

UDM: Sim Lab: Gingivally: Yes Facially: Yes Incisally: No
Applied: Gingivally: Yes Facially: Maybe Incisally: No

UIC: No response noted.

IUSD: Gingivally only. Caries is usually located in this area. Applied: see question 1

MICH: No response noted.

OSU: No response noted.

PITT: Yes for board exams. NO, in the real world. Yes, usually (but it is case specific). Facially: No. Incisally: No. Rational/Evidence. Applied? Based upon Summitt's text recommendations.

SUNY: Gingivally - YES. Facially - NO. Incisally - NO. In order to prevent the Class III from becoming a Class V.

WVU: No response noted.

UWO: Gingivally only in the sim clinic, on a patient further extension may be required. Dealt with on a case by case basis.

4. What questions/comments do you have based on the survey results? See CODE web site (<http://www.unmc.edu/code/>)

CWRU: No response noted.

UDM: None.

UIC: No response noted.

IUSD: None.

MICH: No response noted.

OSU: No response noted.

PITT: Obviously we have some serious inconsistencies. Perhaps the Operative Recommendations Committee can look at these and make recommendations.

SUNY: N/A

WVU: No response noted.

UWO: Very variable - fits with the impression given by personnel within our institution.

5. Other comments related to Principles of Cavity Preparation other than those outlined.

CWRU: No response noted.

UDM: None.

UIC: No response noted.

IUSD: None.

MICH: No response noted.

OSU: No response noted.

PITT: Perhaps a CODE committee or Operative Academy group to look at recommendations.

SUNY: What are the criteria for placing (or not) retentive features in a Class V resin prep? What if the restoration fails within a “relatively” short period of time?

WVU: No response noted.

UWO: Lack of good research in this direction.

III. Caries - Treatment/Detection

Treatment of deep carious lesions by complete excavation or partial removal - A Critical Review, JADA, Vol 139, 705-712, June 2008

(This is not a repeat of a related agenda question, 1999, 2007)

1. Does your school teach the concept of incomplete caries removal? Yes/No. If YES, for how long? How well accepted and applied by the faculty? If NO, why not? Should it be taught?

CWRU: No response noted.

UDM: Yes, we do teach this concept. We have been teaching this concept for several years now. The concept is well accepted among the faculty members, always taking into account the clinical judgment of the particular case. We do not necessarily go back and reopen the tooth after an indirect pulp capping. We watch for symptoms and if those are not present we perform the final restoration of the tooth.

UIC: No response noted.

IUSD: No, in most cases, unless pulp exposure is imminent. At least 10-15 years. Leaving caries “on purpose” is not well accepted by faculty or applied. Reasons: Concerns over caries progressing if restoration “leaks”. Tradition. Inability of students (and some faculty) in deciding when exposure is imminent. (less than .5 mm from pulp). Should it be taught: Yes, as long as peripheral (away from pulp) decay is totally removed. Anything that would reduce pulp exposure should be taught. It comes down to knowing “when to stop”. That is the subjective part.

MICH: No response noted.

OSU: No response noted.

PITT: Only in the case of an indirect pulp cap. Indirect pulp caps are readily accepted by faculty

SUNY: Our school does not have a consensus on the concept. Although operative will, if asymptomatic, place CaOH and restore with definitive restoration.

WVU: No response noted.

UWO: For indirect pulp capping and occasionally step-wise excavation technique.

2. Other comments related to the meta-analysis on this topic?

CWRU: No response noted.

UDM: No comments.

UIC: No response noted.

IUSD: None.

MICH: No response noted.

OSU: No response noted.

PITT: We have not studied this.

SUNY: None.

WVU: No response noted.

UWO: Lack of good primary research evident.

3. Is Atraumatic Restorative Treatment (ART) taught for root caries? What has been the experience?

CWRU: No response noted.

UDM: No, we do not teach ART.

UIC: No response noted.

IUSD: No.

MICH: No response noted.

OSU: No response noted.

PITT: It has been taught in didactic courses, although we have not used it to any great degree in our clinics. We will shortly begin external rotations at community clinics and it is likely that it will be incorporated into those clinics.

SUNY: Attempts are being made to remineralize incipient root caries with M. I. Paste (RECALDENT - GC PRODUCTS)

WVU: No response noted.

UWO: It is not taught in our institution, although remineralization of such lesions is taught.

4. What methods of caries detection are taught in schools (e.g., Explorer (how used), visual, Diagnodent, transillumination, fluorescence, other?)

CWRU: No response noted.

UDM: As diagnosis methods, UDM teaches visual. explorer and transillumination basically. Students are shown different methods (Diagnodent, Colorants) in their first year of dental school but they do not really practice them all. Only explorer and transillumination are practiced. Students are taught not to use a sharp explorer in detecting carious lesions as well as not to apply excessive force on the suspicious areas due to the possible breakage of the superficial enamel that could be Remineralize on incipient lesions.

UIC: No response noted.

IUSD: Explorer (sharp eyes – dull explorer) visual, transillumination. Diagnodent and fluorescence have been researched at this institution for years, but is still not being used in our clinics. Used primarily as a research tool

MICH: No response noted.

OSU: No response noted.

PITT: We teach all these didactically. We emphasize that the explorer should not be forced into pits and fissures, it should be used with gentle pressure. We do not have Diagnodent units available in the clinic.

SUNY: Explorer, visual, transillumination - studies are to be performed using Diagnodent.

WVU: No response noted.

UWO: Visual - sharp eyes, blunt probe. Radiography. No “advanced” techniques used routinely in the clinic.

5. Does your school use caries detection dye? (Please list product(s). Do students and/or faculty use caries detection dye? What are the criteria?)

CWRU: No response noted.

UDM: No, we do not use it either in the simulation lab or in the clinic Students are made aware of its existence at operative lectures but are not encouraged to use it..

UIC: No response noted.

IUSD: Dye is not used.

MICH: No response noted.

OSU: No response noted.

PITT: Yes, we use SableSeek . No specific criteria – it is used when a faculty member wants to help show the student where they have missed caries.

SUNY: No - too many false positives.

WVU: No response noted.

UWO: Not in operative but in pediatrics. Used to identify caries at operation.

IV. Health and Safety Issues Related to Teaching/Practicing Dentistry

1. How are **extracted teeth** with amalgam handled and stored? How long has the protocol been in place? What is the basis/science behind your school's protocol? Are the protocols different for amalgam-free extracted teeth?

CWRU: No response noted.

UDM: Protocols for extracted teeth are described in the following document from the Clinic Manual. These protocols have been in place for several years, although the exact date of implementation is not certain. The science behind these protocols are from the current principles and microbiology and infection control. Our OSHA Compliance Officer, Dr. John Molinari, is responsible for developing and implementing state-of-the-art industry standards in this area.

Handling of Extracted Teeth

Extracted teeth used for the education of dental health care personnel (DHCP) should be considered infective and classified as clinical specimens because they contain blood. If extracted teeth are to be saved for educational exercises, the teeth first should be cleaned of any gross debris, then immersed in a fresh solution of sodium hypochlorite (household bleach diluted 1:10 with tap water). Extracted teeth must be placed in a well-constructed container with a secure lid to prevent leaking during transport. Care should be taken when collecting the teeth to avoid contamination of the outside of the container. Prior to use in an educational setting, extracted teeth should be heat sterilized. Heat sterilization of extracted teeth containing amalgam restorations could create a potential health hazard due to the risk of mercury exposure, therefore the use of teeth that do not contain amalgam may be preferred because they can be autoclaved. Autoclaving teeth for pre-clinical laboratory exercises does not alter their physical properties sufficiently to compromise the learning experience. Gloves need to be worn when handling extracted teeth that have not been sterilized. Gloves should be disposed of properly and hands washed after completion of work activities. Additional personal protective equipment (e.g., face shield, surgical masks, protective eyewear, gowns) should be worn if mucous membrane contact with debris or spatter is anticipated when the specimen is handled, cleaned, or manipulated. Environmental surfaces should be cleaned and disinfected with an appropriate environmental surface disinfectant after completion of work activities. Because preclinical educational exercises simulate clinical

experiences, students enrolled in dental educational programs should adhere to standard precautions in both preclinical and clinical settings, even if the teeth have undergone heat sterilization. The handling of extracted teeth used in dental educational settings differs from giving patients their own extracted teeth. Michigan allows patients to keep such teeth, because these teeth are not considered to be regulated (pathologic) waste or because the removed body part (tooth) becomes the property of the patient and does not enter the waste system. The handling of spilled chemicals, especially mercury, is also documented in the Clinic Manual “Chemical Spill Protocol”.

UIC: No response noted.

IUSD: Teeth with amalgam are stored in formalin and then bleach. They are never autoclaved (on purpose). If sterilized, they are gas sterilized and thrown away as biological waste. Amalgam free teeth are autoclaved and stored in water. If thrown away they are disposed of as biological waste.

MICH: No response noted.

OSU: No response noted.

PITT: In the past, extracted teeth with amalgam were stored in a 10% formalin solution for two weeks and, according to the “Guidelines for Infection Control in the Dental Health Setting” in the CDC MMWR report, December 19, 2003, Vol 52, No. RR-17, were considered disinfected for use in the educational setting. However, 320 students could not comply with OSHA and the University Safety Committee standard of working with 10% formalin under a “hood” at all times. For the past two years, we did not use extracted teeth with amalgams. We used only extracted teeth without amalgam, according to the above guidelines, sterilized extracted teeth without amalgam for 40 minutes with a slow-venting autoclave. The extracted teeth with amalgam are then disposed of properly. Our endodontic course director saves and stores students extracted teeth with amalgam in 10% Clorox, then places them in 10% Formalin for 2 weeks and then removes the amalgam and uses them for root canal projects in the Sim Clinic.

SUNY: All extracted teeth are kept moist in closed containers, (1:1 Listerine/water), handled as contaminated human tissue. There is no school wide protocol.

WVU: No response noted.

UWO: 10% buffered formalin for all teeth. Students required to wear gloves and masks when handling extracted teeth. Gross debris to be cleaned off before storage. Rules have been in place for at least 10 years.

2. Have there been **air-quality issues** with fumes and/or particulate matter? What is/are the specific issue? How did the issue surface? (Inspector, complaint, etc.) What was the resolution?

CWRU: No response noted.

UDM: This is not specifically addressed in any of our current documentation. However, in the design of our new facilities, into which we moved in January of 2008, current building codes for air quality were required to be implemented throughout the facility. Thus, in our labs, all lathes, student work benches, etc. have working state-of-the-art dust collectors in place. Instructions for the use of those dust collectors are contained in the Clinic Manual. The Clinic Manual also contains specific and lengthy documentation on Medical Waste Management and Written Hazard Communication Program.

UIC: No response noted.

IUSD: Yes there have been issues. We now have 6 portable air filters. Particulate matter as well as chemical concerns prompted the action. Someone with lung problems complained and that is what prompted the action. The machines help, but we still have a lot of air borne particulate. You can “see” it when everyone is prepping typodont teeth. It will be a major factor in the design of a lab renovation which is planned if funds are identified.

MICH: No response noted.

OSU: No response noted.

PITT: Yes, we have had issues with Methyl Methacrylate. Complaints from students, staff and faculty. We built containment “boxes” to isolate the fumes and improved venting with charcoal filters. We also have the University’s Environmental Health and Safety office check air on a regular basis. This includes our Anesthesia suites for Nitrous Oxide.

SUNY: A new roof was placed last year. The University Department. of Environmental Safety oversaw the project. One individual applied for compensation because of Asthma related complications. She was awarded part of her sick time as a settlement.

WVU: No response noted.

UWO: This issue has never arisen.

3. Have there been issues with **noise**? If YES, please respond per the questions asked in the air quality issue.

CWRU: No response noted.

UDM: The issue has not been addressed in any of our documentation. It does not seem to be an issue in any of our clinics, labs, or work areas.

UIC: No response noted.

IUSD: Noise has not been addressed nor has anyone complained about it.

MICH: No response noted.

OSU: No response noted.

PITT: Yes, most related to construction projects both inside and outside of the building. If it gets too disruptive, we have worked with University Engineers to schedule after hours and on weekends.

SUNY: No.

WVU: No response noted.

UWO: No.

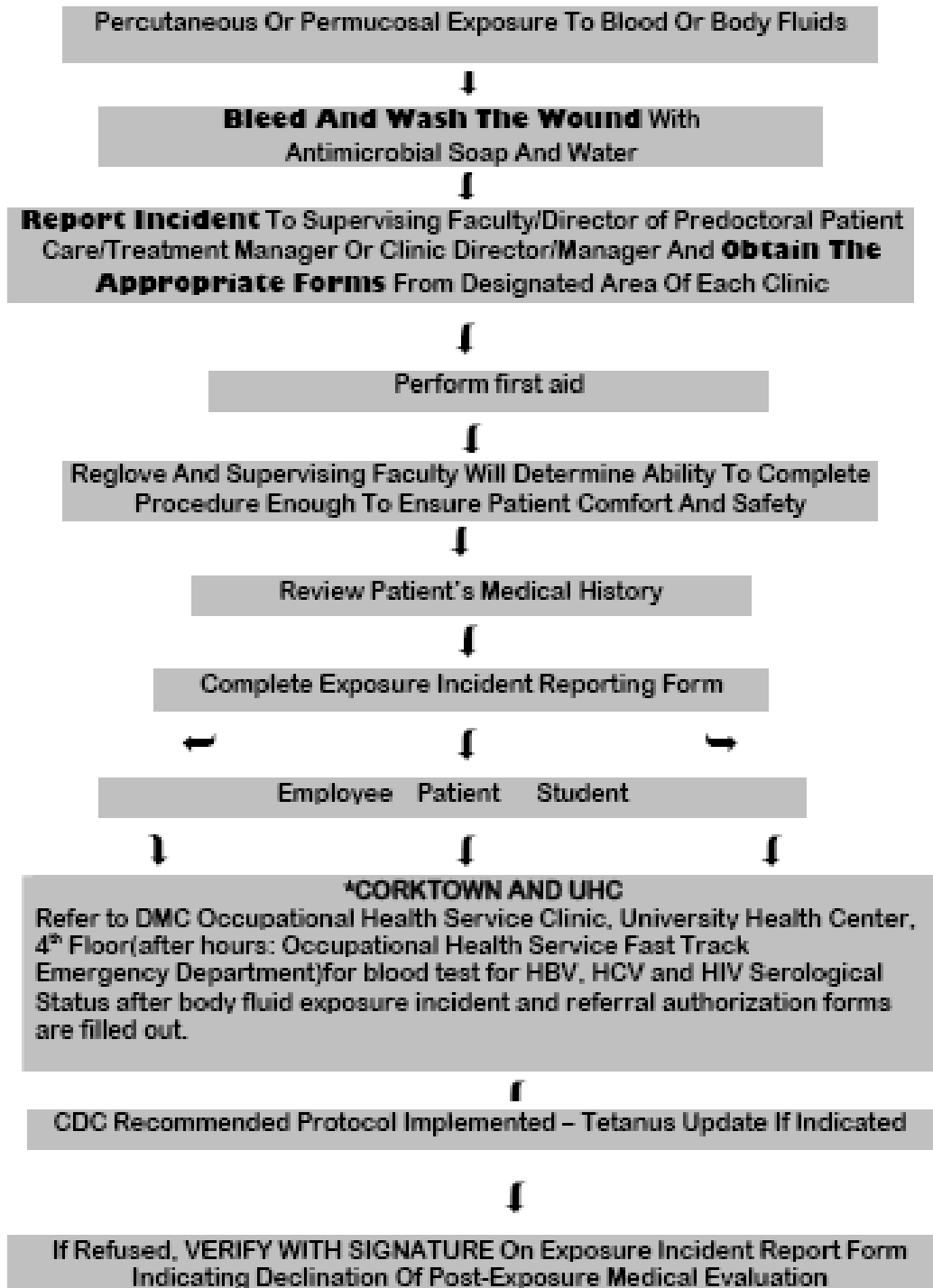
4. What are your school's protocols for dealing with **student** accidental needle sticks, bur punctures, and blade cuts?

CWRU: No response noted.

UDM: Protocols for needle sticks are the same whether the injured party is a student, staff, faculty, or patient. The following documentation is found in the clinical manual: (See following pages)

BODY FLUID EXPOSURE INCIDENT PROTOCOL FLOW CHART

7-08



The following written documentation is also found in the Clinic Manual.

Reporting Protocol

“Potentially Infectious Exposure Incident” defined as any specific eye, mouth, other mucous membrane, non-intact skin, or parental contact with blood or other potentially infectious material.

“Non Infectious Exposure Incident” defined as any specific eye, mouth, or mucous membrane, skin, or parental contact exposure NOT INVOLVING BLOOD OR OTHER POTENTIALLY INFECTIOUS MATERIAL from a third party (not involving a patient or patient care).

Please find guidelines below to provide clarification of an event classified as an “exposure incident” [Student, staff, faculty or patient] and procedure in brief for an occurrence. Note that the examples below may include but are not limited to:

Potentially Infectious	Non-Infectious
Needlestick	Suture needle with no contact with blood or other potentially infectious material
“Sharp” instruments: scaler, explorer, periodontal probe, scalpel	Surgical wire with no contact with blood or other potentially infectious material
Bur	Changing the blade on a bard parker knife handle
Suture needle	“Sharp” instruments: scaler, explorer, periodontal probe, scalpel, with no contact with blood or other potentially infectious material
Surgical wire	Bur with no contact with blood or other potentially infectious material

***ALL IDENTITIES AND TEST RESULTS WILL BE KEPT CONFIDENTIAL**

A. Immediately after an exposure incident.

1. BLEED AND WASH THE WOUND WITH ANTIMICROBIAL SOAP AND WATER.

If emergency care is necessary, it may be obtained at:

Corktown and UHC

Report to DMC Occupational Health Service Clinic, University Health Center, 4th Floor (after hours: Occupational Health Service Fast Track Emergency Department) for blood test for HBV, HCV and HIV Serological Status after body fluid exposure incident and referral authorization forms on both the exposed person and source patient are filled out.

2. REPORT TO THE SUPERVISING FACULTY.

If unavailable, report to the clinic manager or Director of Infection Control and Safety.

3. PERFORM FIRST AID.

4. REGLOVE AND SUPERVISING FACULTY WILL DETERMINE ABILITY TO COMPLETE PROCEDURE ENOUGH TO ENSURE PATIENT COMFORT AND SAFETY.

5. REVIEW PATIENT’S MEDICAL HISTORY.

Do not release the patient at this time, even if they have a negative history and there is no suspicion of disease.

6. COMPLETE THE EXPOSURE INCIDENT REPORTING FORM.

Obtain the appropriate forms from the designated area of each clinic.

Document the route(s) of exposure and the circumstances of the exposure incident. To be signed by the exposed individual, reviewed and signed by the supervising faculty and then forwarded to the Office of Clinic Administration.

B. Source Individual.

1. Identify the source individual, if possible.

2. The supervising faculty will obtain consent and send the source individual to the above stated health care facility for a blood test for HBV, HCV and HIV infectivity.

- If the source individual is already known to be infected with HBV, HCV or HIV, testing need not be repeated.
- If the patient's insurance will not pay for the test, it will be paid for by the University of Detroit Mercy.

3. If consent for a blood test for HBV, HCV and HIV infectivity can not be obtained from the source individual, document it on the Exposure Incident Report Form.

C. Exposed Employee.

1. Refer the exposed employee to the above stated health care facility for a blood test for HBV, HCV, and HIV serological status, any prophylaxis precautions, post-exposure evaluation, counseling and follow-up, preferably within 2 hours of the exposure.

Report to for medical evaluation as soon after the exposure as possible, preferably within 2 hours.

All costs will be paid by the University of Detroit Mercy.

The healthcare facility to provide treatment should receive a copy of the Exposure Incident Report form and a copy of the Bloodborne Pathogens Standard.

2. If the exposed employee consents to blood collection, but does not consent for HIV serological testing, the blood specimen must be kept for 90 days. If, with this time period, the exposed employee consents to HIV serological testing, it will be done as soon as possible.

3. If the exposed employee elects not to have a blood test for HBV, HCV, and HIV serological status, prophylaxis, post-exposure evaluation, counseling and follow-up, have the exposed employee verify this with signature on the Exposure Incident Report Form indicating this declination.

4. If the source individual is HCV or HIV positive, or refuses to be tested, the exposed employee will be give the opportunity to be tested immediately, then at six weeks, twelve weeks, and six months after the exposure incident as long as the test result is negative. Exposed employees and students will be notified of results of all testing and of the need for strict confidentiality with regard to source patient results.

Within 15 days of post-exposure evaluation and testing, a written report will be sent to the Director of Infection Control and Safety at UDMMSD, which contains only:

- Documentation that the employee was informed of evaluation results and the need for any further follow-up
- Whether HBV vaccine was indicated and if it was received

5. Follow-up medical evaluation for illnesses that are reported in the first twelve weeks after the exposure incident will be provided.

D. Exposed Student.

1. Refer the exposed student to above stated health care facility for a blood test for HBV, HCV, and HIV serological status, any prophylaxis precautions, post-exposure evaluation, counseling and follow-up, preferably within 2 hours of exposure.

All costs will be paid by the University of Detroit Mercy.

2. Extent of the prophylaxis, counseling, post-exposure evaluation and follow-up care will be decided between the health care professional and the student involved.

3. If testing/counseling is refused by the student, have the student verify this with signature on the Exposure Incident Report Form indicating this declination.

“Potentially Infectious Exposure Incident” defined as any specific eye, mouth, other mucous membrane, non-intact skin, or parental contact with blood or other potentially infectious material.

“Non Infectious Exposure Incident” defined as any specific eye, mouth, or mucous membrane, skin, or parental contact exposure NOT INVOLVING BLOOD OR OTHER POTENTIALLY INFECTIOUS MATERIAL from a third party (not involving a patient or patient care).

Please find guidelines below to provide clarification of an event classified as an “exposure incident” [Student, staff, faculty or patient] and procedure in brief for an occurrence. Note that the examples below may include but are not limited to:

Potentially Infectious	Non-Infectious
Needlestick	Suture needle with no contact with blood or other potentially infectious material
“Sharp” instruments: scaler, explorer, periodontal probe, scalpel	Surgical wire with no contact with blood or other potentially infectious material
Bur	Changing the blade on a bard parker knife handle
Suture needle	“Sharp” instruments: scaler, explorer, periodontal probe, scalpel, with no contact with blood or other potentially infectious material
Surgical wire	Bur with no contact with blood or other potentially infectious material

UIC: No response noted.

IUSD: Being part of a health science center we have a definite number and form to be called in the event of a needle stick or bur puncture. If the accident occurs during regular hours, and the patient is willing, both the patient and the faculty or student go across the street to the health center to have blood drawn. If the patient is not willing, the student or faculty member still has blood drawn. Depending upon patient history and other factors, the health center decides if prophylactic drugs are to be administered. The person punctured has blood drawn monthly for the next 6 months to test for sero-conversion. The school pays for all testing. If the accident happens after hours, the special phone number is called and the same procedures occur at the University Hospital.

MICH: No response noted.

OSU: No response noted.

PITT: We have a very formalized process/procedure:

(Editor's Note: items have been condensed for printing purposes)

University of Pittsburgh School of Dental Medicine (SDM)

Infection Control Committee, 2008

Protocol for **faculty and staff** who sustain accidental injuries involving transfer (or possible transfer) of blood and/or body fluids or work related injuries.

1. First aid (only) provided by faculty and staff's **supervisor**.
2. Explain the SDM policies requesting a source blood draw in the event of a blood and/or body fluid transfer or possible transfer from the source (patient). In a confidential fashion, review the seven points listed in the first paragraph of the SDM (**blue**) consent form. Following this counseling, obtain the source's signature on the SDM (**blue**) consent form.
3. Following **source counseling** and **signature** on the (**blue**) consent form, the **supervisor** of the involved faculty or staff will notify Anesthesia at 412-648-8606 and make arrangements for the source blood draw.
4. The **supervisor** of the faculty or staff will complete the (**yellow**) **SDM Accident Incident Report** form.
5. Following items 1, 2, 3, and 4 (above), the involved faculty or staff's **supervisor** will call UPMC Employee Health, 412-647-3695, to expect the injured employee and arrange for appropriate care. In the event of a work related injury, the **supervisor** of the faculty or staff will complete the Worker's Compensation form (Employee Report of Occupational Injury or Disease – Multi-page **white** form).
6. The supervisor of the faculty or staff will complete the University of Pittsburgh Department of Environmental Health & Safety "Sharps Injury Report." This form is available at www.ehs.pitt.edu.
7. Please photocopy all forms prior to step #8. The photocopies should be forwarded to the Department of Anesthesiology, Lisa Lehman, G89 Salk Hall.
8. The involved faculty or staff will take the source blood sample, the completed and signed Worker's Compensation Form, and the completed and signed source blue consent form to UPMC Employee Health, 3708 Fifth Avenue, Suite 500.59, Medical Arts Building as soon as possible (preferably within 4 hours of the sustained injury).
9. In the event that the injury occurs after UPMC Employee Health, Oakland hours (7:30 a.m. to 4 p.m., Monday – Friday), the faculty or staff will report to UPMC Presbyterian Emergency Room (with source blood sample and completed paperwork) for appropriate care.
10. In the event the source is unknown or the source refuses counseling, signature, and blood draw, the injured faculty or staff will follow the above protocol without the source blood and the consent form. (This may result in alteration of the normal protocol and treatment provided for the injured graduate)
11. It is necessary that the SDM Accident/Incident Report form be **completed at the treatment site and returned to Anesthesia Department within 24 hours after treatment**.

University of Pittsburgh School of Dental Medicine (SDM)
Infection Control Committee, 2008

Protocol for **residents, first professional, and dental hygiene students**
who sustain accidental injuries involving transfer (or possible transfer)
of blood and/or body fluids.

1. First aid (only) provided by resident's/student's **supervisor**.
2. Explain the SDM policies requesting a source blood draw in the event of a blood and/or body fluid transfer or possible transfer from the source (patients). In a confidential fashion, review the seven points listed in the first paragraph of the SDM blue consent form. Following this counseling, obtain the source's signature on the SDM blue consent form.
3. Following **source counseling** and **signature** on the blue consent form, the involved student's supervisor will notify Anesthesia at 412-648-8609 and make arrangements for the source blood draw.
4. Resident's/student's **supervisor** will complete the SDM Accident Incident Report Form (yellow).
5. Following items 1, 2, 3, and 4 (above), the involved resident's/student's **supervisor** will call UPMC Employee Health, 412-647-3695, to expect the injured student and arrange for appropriate care.
6. The supervisor of the student will complete the University of Pittsburgh's department of Environmental Health & Safety "Sharps Injury Report." This form is available at www.ehs.pitt.edu.
7. Please photocopy all forms prior to step #8. The photocopies should be forwarded to the Department of Anesthesiology, Lisa Lehman, G89 Salk Hall.
8. The involved resident/student will take the source blood sample, the completed signed SDM Accident Incident Report form (yellow), and completed and signed source blue consent form to UPMC Employee Health, 3708 Fifth Avenue, Suite 500.59, Medical Arts Building as soon as possible (preferably within 4 hours of the sustained injury).
9. In the event that the injury occurs after UPMC Employee Health, Oakland hours (7:30 a.m. to 4:00 p.m., Monday – Friday), the resident/student will report to UPMC Presbyterian Emergency Room (with source blood sample and completed paperwork) for appropriate care.
10. In the event the source is unknown or the source refused counseling, signature, and blood draw, the injured resident/student will follow the above protocol without the source blood and the consent form. (This may result in alteration of the normal protocol and treatment provided for the injured student.)
11. It is necessary that the SDM Accident Incident Report form **be completed at the treatment site and returned to Anesthesia Dept. within 24 hours after treatment.**

EXPOSURE INCIDENTS INCLUDING SHARPS INJURY

Rationale: Exposure incidents may occur in the School of Dental Medicine during the course of patient treatment; or handling of dental instruments by faculty, staff, students, or patients. An exposure incident is any event in which the **exposed individual's** mucous membranes come into contact with potentially infectious material (saliva, blood, or other body fluids), or in those instances where there is a puncture wound with an instrument/needle/ or other object containing potentially infectious material from a **“source individual.”** The **“source individual”** is the person whose blood or body fluid contains potentially infectious material. **In such instances, it is critical that the exposed individual immediately seek care and advice.** Below is the specific protocol which must be followed by all exposed individuals.

As mandated by the *Needle Stick Safety and Prevention Act*, OSHA has revised its Blood Borne Pathogens Standard to mandate that employers maintain a log of injuries from contaminated sharps. This Standard became effective April 18, 2001. To insure compliance, The Department of Environmental Health and Safety has developed procedures for evaluating the circumstances of a blood borne pathogens exposure incident. In addition, the University of Pittsburgh and the School of Dental Medicine have additional requirements.

The School of Dental Medicine has determined that the following may be expected to be exposed to potentially infectious material: dental students, dental hygiene students, residents, clinical faculty, and clinical staff. Accordingly, these individuals are provided with initial training in OSHA regulations; and will also be provided with yearly updates on OSHA regulations.

The School of Dental Medicine has also determined that all clinical procedures involving exposure to blood, saliva, secretions, or aerosols are capable of exposing the above specified individuals to potentially infectious material. Therefore, all clinical faculty, staff, and students must understand and practice guided by the dictums of “Standard Precautions.”

Protocol: Any faculty, staff, student, or resident experiencing an exposure incident must notify their supervisor as soon as possible—preferably immediately after the exposure. This will allow counseling of the source patient, as well as obtaining consent for a blood sample. The supervisor will record the details of the exposure, including the route of exposure, the potential infectious agent, how the incident occurred, and how it can be prevented.

* Costs for appropriate tests and treatment will be billed to the injured personnel's health insurance.

Decisions concerning testing and treatment will be provided by UPMC Employee Health, 3708 Fifth Avenue, Suite 500.59, Medical Arts Building, Oakland, PA 15213. Phone – 412-647-3695.

Mandatory Source Patient Counseling

Beginning immediately (as of receipt of this document), mandatory source patient counseling is required prior to source blood draw. This counseling is the responsibility of the SDM person sustaining an injury which results in the transfer or possible transfer of source blood and/or body fluids (BBF) to the SDM health care provider. The counselor may be a faculty or staff member, first professional student, dental hygiene student, or resident. This counseling need only consist of a confidential review of the seven points included in the first paragraph of the blue SDM consent form.

Prior to the source (patient) counseling, the source must be informed that it is the University of Pittsburgh School of Dental Medicine's policy to request a source blood draw whenever any injury, resulting in blood and/or body fluid transfer (or possible transfer) has been sustained by a SDM student, staff, faculty, or resident while providing dental health care. Further, the source should be informed that a qualified member of the Department of Anesthesiology, with the source's permission, will obtain two samples of source blood involving one needle stick. One tube will be used for anti-HIV determination, and the other tube will be used for anti-HCV and HBV surface antigen determinations.

Following a review of the blue consent form with the source, the injured SDM person will obtain the source's signature signifying that the counseling has been provided. Counseling sensitivity training has been, or will be, provided during lectures by faculty to polish counseling skills.

The following steps are to be followed for **all** exposure incidents.

1. First aid (only) provided by resident's/student's/faculty's, or staff's supervisor.
2. Explain the SDM policies requesting a source blood draw in the event of a blood and/or body fluid transfer or possible transfer from the source (patients). In a confidential fashion, review the seven points listed in the first paragraph of the SDM blue consent form. Following this counseling, obtain the source's signature on the SDM blue consent form.
3. Following **source counseling** and **signature** on the blue consent form, the involved student's, resident's, faculty's, or staff's supervisor will notify Anesthesiology at 412-648-8609 and arrange for the source blood draw.
4. The resident's, student's, faculty's, or staff's **supervisor** will complete the SDM Accident/Incident Report Form (yellow).
5. From this point on, different steps are to be followed by the student/resident or faculty/staff.

Exposure Incident Involving Residents, First Professional, and Dental Hygiene Students

- Following items 1, 2, 3, and 4 (above), the involved resident's/student's supervisor will call UPMC Employee Health at 412-647-3695, to expect the injured student and arrange for appropriate care.
- The supervisor of the student will complete the University of Pittsburgh's Department of Environmental Health & Safety "Sharps Injury Report." This form is available at www.ehs.pitt.edu.
- All forms must be photocopied prior to step # 4 below. The photocopies should be forwarded to the Department of Anesthesiology, G89 Salk Hall.
- The involved resident/student will take the source blood sample, the completed signed SDM Accident/Incident Report form (yellow), and the completed and signed source blue consent form to UPMC Employee Health, 3708 Fifth Avenue, Suite 500.59, Medical Arts Building, as soon as possible (preferably within four hours of the sustained injury).
- In the event that the injury occurs after UPMC Employee Health, Oakland hours (7:30 a.m. to 4:00 p.m., Monday – Friday), the resident/student will report to the UPMC Presbyterian/Shadyside Emergency Room (with source blood sample and completed paperwork) for appropriate care.
- In the event the source is unknown or the source refused counseling, signature, and blood draw, the injured resident/student will follow the above protocol without the source blood and the consent form. (This may result in alteration of the normal protocol and treatment provided for the injured student.)

- It is necessary that the SDM Accident/Incident Report form **be completed at the treatment site and returned to the Anesthesiology Department within 24 hours after treatment.**

Exposure Incident Involving a Faculty or Staff Member (University Employees

- Following items 1, 2, 3, and 4 (above), the involved faculty's or staff's **supervisor** will call UPMC Employee Health, 412-647-3695, to expect the injured employee and arrange for appropriate care.
- In the event of a work related injury, the **supervisor** of the faculty or staff will complete the Worker's Compensation form (Employee Report of Occupational Injury or Disease – multi-page **white** form).
- The supervisor of the faculty or staff will complete the University of Pittsburgh Department of Environmental Health & Safety "*Sharps Injury Report.*" This form is available at www.ehs.pitt.edu.
- All forms must be photocopied prior to step #8. The photocopies should be forwarded to the Department of Anesthesiology, G89 Salk Hall.
- The involved faculty or staff will take the source blood sample, the completed and signed *Worker's Compensation* Form, and the completed and signed source blue consent form to UPMC Employee Health, 3708 Fifth Avenue, Suite 500.59, Medical Arts Building, as soon as possible (preferably within 4 hours of the sustained injury).
- In the event that the injury occurs after UPMC Employee Health, Oakland hours (7:30 a.m. to 4 p.m., Monday – Friday), the faculty or staff will report to UPMC Presbyterian Emergency Room (with source blood sample and completed paperwork) for appropriate care.
- In the event the source is unknown or the source refuses counseling, signature, and blood draw, the injured faculty or staff will follow the above protocol without the source blood and the consent form. (This may result in alteration of the normal protocol and treatment provided for the injured graduate.)
- The supervisor will submit the requisite information to Workers Compensation on the appropriate forms available on their Website at www.bc.pitt.edu (click on the "Faculty and Staff" section--then "On-the-Job Injuries") or by calling 412-624-1198.
- If a **sharp's injury** occurs, the supervisor must also complete the "*Sharps Injury Report*" form (call 412-624-9505 for additional paper copies).

The Department of Environmental Health and Safety compiles these "*Sharp's Injury Report*" forms into a "*Sharp's Injury Log*" for the recording of percutaneous injuries from contaminated sharps as required by OSHA. The "*Sharp's Injury Log*" will document the information received from the accident report, and will provide detailed information about exposure incidents.

Please contact EH&S at 412-624-9505 with any questions regarding this program.

The following are examples of forms to be completed in the event of an "exposure incident."
(*Editor's Note: Forms have been condensed for printing purposes*)



University of Pittsburgh
Department of Environmental Health & Safety

SHARPS INJURY REPORT

Please complete all applicable fields. Some fields are required to be completed. These are marked with **.

Employee Last Name **:

Employee First Name **:

Social Security Number or Pitt ID **:

Date of Incident (mm/dd/yy) **:

Occupation:

Department:

Building **: Room Number **:

Type / Brand of Device **:

Please provide a brief description of how the injury occurred, including the task which was being performed as well as any protective equipment worn or utilized **:

Was an animal or human involved? (y/n):

SHARPS INJURY REPORT (continued)

Was immediate treatment sought? If so, where:

Recommendation for preventing recurrence:

Supervisor's Name: Date:

This form can also be submitted online via the Environmental Health & Safety Website:

<http://www.ehs.pitt.edu/biosafety/Form-SharpInjuryRptFrm.htm>

ACCIDENT/INCIDENT REPORT

(to be completed by supervisor and/or department head within 24 hours of accident/incident)
UNIVERSITY OF PITTSBURGH, SCHOOL OF DENTAL MEDICINE
PITTSBURGH, PENNSYLVANIA 15261-1933

EXACT LOCATION OF ACCIDENT DATE OF ACCIDENT () AM () PM

TIME OF ACCIDENT

DR. () NAME OF INJURED PERSON MR. () MS. () (Last Name) (First Name) (Middle Initial) Dept. Room

Home Address Home Phone Age Sex

ACCIDENT INVOLVED: () FACULTY () PATIENT () STAFF () STUDENT () VISITOR () OTHER

What happened? Describe what took place or what caused you to make this investigation. State exactly what was said by person involved or witness if applicable. (Attach sheet if necessary)

If injury, state part of the body injured. If property or equipment damage, describe damage.

Name, address, phone number of witness (as).

What follow-up action was taken following the accident? Take or recommend action to prevent a recurrence of this accident.

Was person involved seen by a physician? Time Scan: () AM () NO () YES () NO Where?

(NOTE: For accidents which involve the transfer of body fluids, STUDENTS, FACULTY, and STAFF must seek medical attention using the protocol established by the School of Dental Medicine. Refusal may result in the loss of clinical privileges). If follow-up medical attention is declined, have person involved sign below. FOLLOW-UP MEDICAL ATTENTION IS DECLINED.

PERSON INVOLVED SIGNATURE:

STATEMENT OF PHYSICIAN

PHYSICIAN'S NAME SIGNATURE OF PHYSICIAN

SIGNATURE OF PERSON PREPARING REPORT/VICTIM SIGNATURE DATE

ORIGINAL: Dean COPIES to: (Dir. Clinical Affairs) (Dept. Head) (Risk Mgmt.) (Safety Committee)

accident form Yellow

Additional Injury Report Information Sheet

This sheet is to be faxed to 412-624-1817 with the *Employer's Report of Occupational Injury or Disease* and a signed *Pennsylvania Workers' Compensation Act Employee Act Acknowledgment*.

• Injured Worker's Information:

Name: _____ Campus phone #: _____

Date of Injury: _____ Date of Hire: _____

Department: _____ (5 digit) Department ID #: _____

WORK SHIFT: Circle days regularly worked: Sun Mon Tue Wed Thur Fri Sat

Hours regularly worked _____ am/pm to _____ am/pm

Hourly Wage: _____ Union Employee: Yes No

• Injury Information:

Location where incident or injury took place:

Address: _____

Building: _____ Floor/Room Number: _____

For needle stick injuries only: List sharps type/brand: _____

• Direct Supervisor's Information:

Name: _____

Title: _____

Campus address: _____ E-mail: _____

Campus phone #: _____ Fax #: _____

• Supervisors or managers please answer the following question:

What has been or will be done to prevent recurrence of the injury or illness?

If you have any questions, please call Michele:

Workers' Compensation
1827 Cathedral of Learning
Pittsburgh, PA 15260
412-624-1198
Fax: 412-624-1817
www.bc.pitt.edu/wc/

For office use only: Code: _____

**CONSENT TO HUMAN IMMUNODEFICIENCY VIRUS (HIV) BLOOD TEST
SCHOOL OF DENTAL MEDICINE
UNIVERSITY OF PITTSBURGH
Pittsburgh, PA 15261**

I, _____, am a patient of Dr. _____
consent to have my blood drawn (or for the use of blood drawn already) for the purpose of checking for the HIV Antibody.
The HIV virus may lead to AIDS.

The following information has been explained to me:

- The procedures involved in a blood test and the benefits and risks of such tests.
- That the results of the test(s) will be included on my dental record and those people involved in my health care will be able to see the results.
- That the results of these tests are not always correct and further testing may be needed.
- That I may ask my dentist or another dentist, my physician or another physician, nurse or SDM worker about the meaning and significance of a positive or negative test. The School of Dental Medicine can arrange to provide face to face counseling services for me, if I choose, at no cost to me, to explain actions I should take based on the results.
- That a positive test result may affect social, emotional, and financial aspects of my life.
- Measures for the prevention of exposure to, and infection of others with the HIV virus.
- That if the test results are positive, I will be given information concerning how I may receive health care services, including mental health, social, and support services.

I understand this information. I have had a chance to ask questions of my dentist and/or other School of Dental Medicine workers. I agree and give my permission to HIV testing by the SDM through its employees, agents, or my dentist. I agree not to sue or hold SDM, staff dentists, employees, or agents, responsible for any problems caused by the results of the test.

Date Signature of Patient

Witness

Patient is unable to consent because: _____

I consent on behalf of the patient: _____

Signature of Authorized Representative: _____

List Relationship with the Patient: _____

I have explained the above information to the patient. _____
Date Signature of Counselor

Patient's test results will be confidentially sent (mailed) to the patient's physician.

Physician's Name, Address, & Telephone Number: _____

PENNSYLVANIA WORKERS COMPENSATION ACT
EMPLOYEE ACKNOWLEDGMENT

I recognize and agree that my employer has posted a list of at least six (6) health care providers, at least four (4) of whom may be a coordinated care organization and no fewer than three (3) of whom are physicians to treat work-related injuries and illnesses during the first 90 days of treatment. I also acknowledge that I have been presented with this written notice setting forth my rights and duties under Section 306 (f.1) (I) (I) of the Pennsylvania Worker's Compensation Act. My rights and duties included the following:

1. I have the duty to obtain treatment for work-related injuries and illnesses from one or more of the designated health care providers for ninety (90) days from the date of first visit to a designated provider,
2. As long as treatment is obtained from a designated provider during ninety (90) day period, all reasonable medical supplies and treatment related to the injury will be paid by my employer,
3. I have the right to switch from one designated health care provider on the list to another during the ninety (90) day period and my employer must pay for this treatment;
4. If I am referred by a designated provider to a non-designated provider, my employer shall pay for the treatment rendered by the referral provider;
5. I have the right to seek emergency medical treatment from any provider, but I understand that subsequent non emergency treatment must be rendered by a designated provider for the remainder of the ninety (90) day period;
6. I have a right during the ninety (90) day period to seek medical treatment from a non-designated provider, but I understand that my employer is not responsible to pay for these services;
7. After the expiration of the ninety (90) day period, I have the right to seek treatment from any health care provider and my employer must pay for such treatment if it is reasonable and necessary;
8. If I treat with a non-designated health care provider after the expiration of the ninety (90) day period, I understand that I must provide my employer with notice within five (5) days of my first treatment with the non designated provider. If I fail to do so, my employer may not be responsible to pay for treatment rendered by the non-designated provider prior to notification.
9. Should invasive surgery be prescribed by a physician or other health care provider so designated by the employer, I shall be permitted to receive an additional opinion from any health care provider of my own choice. If the additional opinion differs from the opinion provided by the physician or health care provider designated by the employer, I shall determine the course of treatment. If I choose to follow the procedures designated in the second opinion, such procedures shall be performed by one of the physicians or health care providers so designated by the employer for a period of ninety (90) days from the date of visit to the physician or health care provider of my own choice. Should I not comply with the foregoing; my employer will be relieved from liability for the payment of services rendered during such applicable period. Subsequent treatment may be provided by any health care provider of my choice.

My employer has informed me of my rights and duties and my signature acknowledges that I have been so informed and understand my rights and duties.

Date

Employee's Printed Name

Witness Signature

Employee's Signature

SUNY: An incident report is filed. The student and patient visit the infirmary - concerns for HIV, Hepatitis, etc.

WVU: No response noted.

UWO: In the simulation clinic – these are treated as uncontaminated injuries. First aid, reporting/ recorded. Clinical injuries – bleed, wash, first aid, record\ report – sent to university student health services for blood testing/ vaccination as appropriate.

5. What are the protocols for **patients** injured during procedures by burs, diamonds, disks, blades?

CWRU: No response noted.

UDM: Protocols for patient injured by sharps is also included in the above document (see 3rd paragraph). Non-sharp injuries are treated as incidents and reported on the following incident Report Form:

University Of Detroit Mercy School of Dentistry
CONFIDENTIAL PATIENT CARE INCIDENT REPORT FORM
 DO NOT COPY DO NOT PLACE IN PATIENT CHART DO NOT MENTION IN PATIENT CHART
 This form is created under MCLA 333.21515 for the purpose of quality assurance and improving the care provided to our patients.
 PLEASE PRINT AND PRESS FIRMLY *7-08

1. Today's date: <input type="text"/> / <input type="text"/> / <input type="text"/>		2. Date of Incident: <input type="text"/> / <input type="text"/> / <input type="text"/>		Indicate Location: CT <input type="checkbox"/> UHC <input type="checkbox"/>	
Patient Information					
3. Patient Last Name: <input type="text"/>		Middle Initial: <input type="text"/>		*The PATIENT is directly involved An unusual outcome resulting from treatment rendered to a PATIENT where the outcome deviates from normal expectations. The results may or may not result in injury to the PATIENT.	
4. Patient First Name: <input type="text"/>					
5. Patient Chart/Registration#: <input type="text"/>					
6. Patient Contact Information: Cell: <input type="text"/> - <input type="text"/> - <input type="text"/>					
Home: <input type="text"/> - <input type="text"/> - <input type="text"/>		Work: <input type="text"/> - <input type="text"/> - <input type="text"/>			
Incident Description					
7. Time of Incident: _____		8. Clinic Where Incident Occurred: Corktown <input type="checkbox"/> UHC <input type="checkbox"/>			
am <input type="checkbox"/> pm <input type="checkbox"/>					
9. UDM Personnel Involved (NAME and check boxes that apply): <input type="checkbox"/> staff/witness					
<input type="checkbox"/> DS2 <input type="checkbox"/> DS3 <input type="checkbox"/> DS4 <input type="checkbox"/> DH1 <input type="checkbox"/> DH2 <input type="checkbox"/> Grad. Program student		Clinic # <input type="text"/>			
<input type="checkbox"/> supervising faculty		Clinic # <input type="text"/>			
10. Specific Location of Incident (WHERE: Bay #, etc.):					
11. Subject of Incident:			<input type="checkbox"/> Extraction (wrong tooth) :excessive pain, bleeding, swelling during or following treatment <input type="checkbox"/> Fracture as a result of treatment (bone or tooth) <input type="checkbox"/> Injury from dental equipment (ex: light, headrest) <input type="checkbox"/> Laceration as a result of treatment <input type="checkbox"/> Lack of informed consent (even with signed consent form) <input type="checkbox"/> Medical complications (occurring during treatment, otherwise is "Accident Report": contact Public Safety) <input type="checkbox"/> Paresthesia <input type="checkbox"/> Perforation (bur, file, instrument) <input type="checkbox"/> Prescriptions (incorrect dosage, incorrect drug) <input type="checkbox"/> Surgical complications <input type="checkbox"/> Treatment (wrong tooth treated) <input type="checkbox"/> Other:		
<input type="checkbox"/> Allergic Reaction (as a result of performance of clinical procedure) <input type="checkbox"/> Anesthesia (wrong quadrant, wrong tooth, hematoma) <input type="checkbox"/> Aspiration or swallowed substances (instruments, restorations, etc.) <input type="checkbox"/> Behavior inappropriate (ex: "irate") <input type="checkbox"/> Broken instrument resulting in injury <input type="checkbox"/> Burns (heat or chemical during as a result of clinical procedure) <input type="checkbox"/> Complaints (dissatisfied patient or parent-require "Patient Complaint" form) <input type="checkbox"/> Damage or loss of patient owned appliance <input type="checkbox"/> Damage to adjacent tooth <input type="checkbox"/> Drug (abuse, allergy, reaction: occurring during treatment)					
12. Describe the incident (PLEASE PRINT, use back of page if necessary):					
13. Emergency treatment required <input type="checkbox"/> Y <input type="checkbox"/> N Emergency treatment given <input type="checkbox"/> Y <input type="checkbox"/> N Patient refused treatment <input type="checkbox"/> Y <input type="checkbox"/> N If yes, please describe what was done (PLEASE PRINT):					
14. Patient counseled as a result of the incident? <input type="checkbox"/> Y <input type="checkbox"/> N If yes, describe nature of counseling:			15. Patient signature if declining confidential medical evaluation, prophylaxis and follow-up treatment: DATE <input type="text"/> / <input type="text"/> / <input type="text"/>		
16. Signature of person completing this form (if other than #23):			20. Author's opinion as to why this incident occurred:		23. Supervising Faculty Signature: ALSO PRINT FACULTY NAME FIRST <input type="text"/> Clinic# <input type="text"/> LAST <input type="text"/>
17. Legal action threatened? <input type="checkbox"/> Y <input type="checkbox"/> N			21. Verify no copy of this document: <input type="checkbox"/> Y <input type="checkbox"/> N 22. If yes to #21, verify it will not be circulated <input type="checkbox"/> will destroy copy ASAP <input type="checkbox"/>		19. Student Signature: ALSO PRINT STUDENT NAME FIRST <input type="text"/> Clinic # <input type="text"/> LAST <input type="text"/>
18. Will the patient suffer any irreversible harm as a result of the incident? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Possible: <input type="checkbox"/> Loss of Tooth? <input type="checkbox"/> Additional Procedure? 19. Patient counseled re: subsequent procedures and/or loss of tooth? <input type="checkbox"/> Y <input type="checkbox"/> N					
THIS SECTION TO BE COMPLETED BY OFFICE OF CLINIC ADMINISTRATION			STATUS: <input type="checkbox"/> Closed <input type="checkbox"/> Referred DATE <input type="text"/> / <input type="text"/> / <input type="text"/> Signature: _____		

<p>24. Infectious substance suspected as a result of the exposure (potentially infectious exposure only):</p> <p><input type="checkbox"/> tuberculosis <input type="checkbox"/> hepatitis B virus (HBV) <input type="checkbox"/> hepatitis C virus (HCV) <input type="checkbox"/> human immunodeficiency virus (HIV)</p> <p><input type="checkbox"/> herpes simplex virus (HSV) <input type="checkbox"/> cytomegalovirus (CMV) <input type="checkbox"/> human papilloma virus (HPV)</p> <p><input type="checkbox"/> don't know <input type="checkbox"/> other (specify): _____</p> <p>COMPLETE ON BACK OF THIS PAGE →→→→→</p>	
<p>25. Describe the EXPOSURE INCIDENT, including area of body that received the exposure (PLEASE PRINT):</p> 	
<p>26. Briefly describe the treatment or recommended course of action (PLEASE PRINT):</p> 	
<p>27. This report was completed by:</p> <p>Last Name: _____</p> <p>First Name: _____</p> <p><input type="checkbox"/> student <input type="checkbox"/> DH1 <input type="checkbox"/> DH2 <input type="checkbox"/> DS2 <input type="checkbox"/> DS3 <input type="checkbox"/> DS4 <input type="checkbox"/> grad. program</p> <p><input type="checkbox"/> employee <input type="checkbox"/> faculty <input type="checkbox"/> staff</p> <p>Clinic # (if faculty/student): <input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></p>	
<p>28. Patient counseled as a result of the incident? <input type="checkbox"/> Y <input type="checkbox"/> N If yes, describe nature of counseling:</p> 	
<p style="text-align: center;">MEDICAL EVALUATION DECLINATION (POTENTIALLY INFECTIOUS EXPOSURE ONLY)</p> <p>The exposure incident described in this form has been explained to me. I have been informed of the importance of seeking a medical evaluation and I understand that this confidential medical evaluation, prophylaxis, and follow-up treatment is offered to me free of charge. I declined confidential medical evaluation prophylaxis and follow-up treatment.</p> <p>Patient/Student/Employee Name PRINT(circle) Witness Signature _____</p> <p>_____</p> <p>Patient/Student/Employee Name SIGNATURE(circle) Employee Job Classification _____</p> <p>_____</p> <p>Patient/Student/Employee Address City, State, Zip Code _____</p>	
<p>29. Signature of person completing this form (if other than #30):</p> 	<p>30. Supervising Faculty Signature: _____</p> <p>ALSO PRINT FACULTY NAME</p> <p>FIRST: _____</p> <p>LAST: _____</p>
<p style="text-align: center;">THIS SECTION TO BE COMPLETED BY OFFICE OF CLINIC ADMINISTRATION</p>	<p>Final Review: <input type="checkbox"/> Appropriate Action Taken</p> <p> <input type="checkbox"/> Referred</p> <p> <input type="checkbox"/> Case Closed</p> <p style="text-align: right;">Date: <input type="checkbox"/><input type="checkbox"/>/<input type="checkbox"/><input type="checkbox"/>/<input type="checkbox"/><input type="checkbox"/></p> <p>Director of Infection Control and Safety</p>

UIC: No response noted.

IUSD: Depending upon severity, first aid and/or medical follow-up is taken care of immediately. Incident forms must be filed as soon as practical after the accident. All follow-up care related to the injury is financed by the school.

MICH: No response noted.

OSU: No response noted.

PITT: See above. Also attached.

SUNY: This depends on the extent of the injury. Oral surgery is contacted if sutures are deemed necessary.

WVU: No response noted.

UWO: Uncontaminated injuries - inform; first aid; record; review
Contaminated injuries - unclear - probably similar to that for contaminated sharps injury for faculty or student.

6. Does your school have concerns with **Bisphenol A** in resin restorations? What is the evidence? If YES, please explain:

CWRU: No response noted.

UDM: Bisphenol A has not been addressed as a potential issue or problem at this time. However, the following documentation is found in the Clinic Manual regarding hazardous dental materials.

There are many potentially hazardous materials used in a laboratory setting. Those that are used here in the Sim Lab and/or Support Labs, along with precautions that must be adhered to, are listed below:

DENTAL AMALGAM: Amalgam is supplied in capsules that contain free mercury and silver alloy. Never open a capsule that has not been triturated – unmixed, the free mercury is a toxin/hazard. Even after it is mixed, precautions must be taken. The leftover scrap amalgam is placed in a container labeled “Amalgam Scrap Only”, which contains enough dental fixative solution to totally keep immersed any scrap that is added to it. The container should be closed immediately after depositing the scrap. The empty capsules are also deposited into a container. This container reads: “Amalgam Capsules Only! Potential Mercury Vapor Release” and so should also be open only as long as it takes to drop the empty, closed capsule into it. The contents of these two containers are periodically emptied and sent to Dental Recycling North America for safe disposal/recycling.

DENATURED ALCOHOL: “Burning” alcohol is used in the Hanau torches and alcohol lamps during certain lab procedures. Obviously, this flammable liquid can be dangerous if not handled with care. Let the torch or lamp cool before refilling. If a part is broken or the unit not working properly, have it looked at and repaired/adjusted. Clean up any spills immediately and know how to operate both properly.

NATURAL GAS: Because Bunsen burners are sometimes needed, all three labs are equipped with gas valves. Never blow out the flame on a Bunsen burner – the gas must be turned off. Be sure that it is completely off! While there are gas sensors/alarms in all of the labs, extreme care must be taken to insure there will be no incidents. If you walk into a lab that smells of gas, leave immediately and call “123” for Public Safety and notify the Building Coordinator, Mary Yim, or any staff member from Facilities Operations.

METHYL METHACRYLATE: It is advised that this liquid be used in a well-ventilated area and that the cap be replaced while not in immediate use. Also avoid getting on skin or mucosal tissues – rinse thoroughly with water if this should occur. While fairly stable after being mixed with the polymer and hardening into a solid, the liquid alone is considered a carcinogen and precautions must be followed.

RADIOGRAPHIC DEVELOPER AND FIXER SOLUTIONS: These two liquids are used only during the Winter Term in the Sim Lab when the Endodontic course is taught. They are handled minimally, and usually only by the one person assigned to clean the x-ray developing units. They can be caustic so avoid any contact with skin and mucosal tissues, flush with lots of water should this occur, and avoid breathing the fumes.

X-RAY UNITS/RADIATION: Obviously, all safety rules apply when using any x-ray machine, whether there is a “live patient” or not. Good exposure and processing techniques will help to avoid the need for retakes. This is important even in a lab setting so that the number of exposures needed is kept to a minimum.

CAVIWIPES: Gloves should be worn when using these hard-surface disinfecting wipes.



Did you remember to turn off
the natural gas??

- UIC:** No response noted.
- IUSD:** It is of interest (not concern) due to recent reports, but we are still waiting for further evidence/studies.
- MICH:** No response noted.
- OSU:** No response noted.
- PITT:** No.
- SUNY:** NO (FDA deemed safe)
- WVU:** No response noted.
- UWO:** Not at present - although legal moves are afoot in Canada to control this substance, it is unlikely to impact heavily on our practices.

V. Curriculum

1. Has your pre-clinical or clinical operative curriculum recently undergone a significant revision? What changes did you make (additions or deletions)? Why did you make the changes and what positive or negative outcomes have you seen?

CWRU: No response noted.

UDM: No, we have not gone through a significant revision recently. Our department is working on a process which will allow the integration of operative and prosthetic disciplines around a streamlined concept of treating disease and management. We have included posterior composites to a greater extent in our Conservative Esthetic Treatment Techniques course. We have recently integrated implant retained restoration and Procera crowns into pre-doctoral simulation lab courses.

UIC: No response noted.

IUSD: Revision has been a slow evolution. In the last 10 years it has changed significantly, but not recently significant. Changes have included more resin matrix composite materials (didactic and laboratory), slightly less indirect restorative lab work (although significantly more than a lot of schools). More clinically relevant simulation lab work (because of addition of simulators). Delayed entry into clinics. Students do not have to do any more of their own castings for clinical cases. Positive outcomes: Less remakes on clinical cases (labs can do the lab work better than neophyte students). Delayed entry into clinics results in being much less prepared for clinical dentistry in their third year and forgetting a lot of material (in operative) they had in their first year of dental school.

MICH: No response noted.

OSU: No response noted.

PITT: It is currently undergoing major revision.

SUNY: We are currently in the midst of significant changes in the Operative pre-clinical curriculum. The two major changes are:

The restorative preclinic courses will now be labeled as “Direct restorative materials” and “Indirect restorative materials”, and will be taught as separate courses. The traditional terms ‘Operative’ and ‘Fixed’ will, apparently, no longer be used. This decision was made by the chair, and was done for organizational purposes. Also, as part of this change, all preclinical courses were to be taught in a new Simulation Clinic which was to be located in our main clinic. However, budgetary constraints have apparently put this project on ‘hold’.

The “Direct restorative materials” course will now begin in the spring semester of the freshman year, and will include rubber dam, dental amalgam, anterior and posterior composites, glass ionomer restoratives, and record keeping, and will continue into the summer. This course will consist of 19 weeks (spring semester of the freshman year) of 1-four hour session per week, and six weeks (summer session) of 2-four hour sessions per week, for a total of 124 hours. This course, formerly called “Operative preclinic”, originally began in the summer following the freshman year, and continued into the fall semester of the sophomore year, and also included intracoronal castings. The intracoronal casting portion of the course was removed and placed into the “Indirect restorative materials” course, which will also include what was traditionally taught in the “Fixed” preclinical course. (We are concerned whether intracoronal castings will continue to be taught at all). These changes will not place the students into the clinic any earlier, but may cause faculty staffing problems, because of a change in the day/s that the “Direct” course will be taught. The faculty scheduling has not as yet been solved. Another problem that we foresee is the fact that in moving the traditional course into the spring semester, a ‘generic’ preclinical was removed, a course where the students learned basic hand piece skills. We feel that a fair amount of time in the new “Direct” course will now have to be devoted to those basic skills. The main impetus for moving the course into the freshman year, which came from the administration, was done so that we could identify weak students early.

A third change includes incorporating dental materials lectures into the above mentioned courses, and deleting the existing “Dental Biomaterials” course from the fall semester of the freshman year. This is a good move, and will be the way it was done in the past, before we lost our materials’ person. A new materials’ person has been hired.

WVU: No response noted.

UWO: Currently underway – ground-up curriculum rewrite. Main aims are: ~~Earlier~~ clinic entry (year 1 or 2). Integration of separate basic science courses into relevant pre-clinical courses. A lot of work – time-tabling and details are very difficult and time-consuming. Content will remain the same, however sequence will be altered. In operative, amalgam and composite will be combined rather than taught in separate courses as they are at present. Outcomes remain to be seen.

2. What is the time gap (in semesters or quarters) between the end of pre-clinical operative dentistry and the start of clinical operative experiences for your students? Describe the curricular progression of your students in operative dentistry (Example- Freshman pre-clinical operative, Sophomore block clinic rotation, Junior-Senior clinics, or Junior clinic, Senior Comprehensive / General Dentistry clinic). Is there any concern with diminishing knowledge or skills between pre-clinic courses and pre-clinical practice? What types of knowledge or skill erosion did you observe and what have you done about it?

CWRU: No response noted.

UDM: We have a reasonable transition from pre-clinic to clinic. There is one winter term that sophomores do not take a hands on operative course but they continue to take their pre-clinical crown and bridge courses where they continue to practice inlays, onlays and crowns. During DS3 summer term we have a sophomore clinic to ease their transition to junior clinic and a Pedodontics simulation course where they continue to do restorative procedures. Prior to junior clinic we also have a clinical orientation week where the entire class perform clinical activities to repeat some techniques and necessary skills. The clinical progression is as follows:

Freshman- Essential Elements of Clinical Practice

Introduction to Operative Dentistry

Amalgam Restorative Treatment Techniques

Sophomore- Conservative Esthetic Treatment Techniques

A number of prosthetic courses (Fixed, Partial and Complete Dentures)

Sophomore Clinic (DS3 Summer)

Junior and Senior-Clinical Removable Prosthodontics

Clinical Fixed Prosthodontics

Clinical Operative

Considering their beginner level, we have not observed a major diminishing knowledge or skills between pre-clinic courses and pre-clinical practice. With adequate faculty supervision in clinical skill, they generally overcome their lack of experience towards DS4 year. We use our daily evaluations, competencies and academic performance committee's input to identify individual students having knowledge and skills difficulties and support them based on their needs.

UIC: No response noted.

IUSD: Two semester time gap between pre-clinical operative and start of clinical restorations. Reason: make time available for Problem Based Learning. Big mistake in my opinion. Students less prepared for clinical dentistry. Summer of sophomore year begin Comp Care in clinics. Again, students not ready for Comp Care at this level. Again, in my opinion they need a year (or until demonstrated competency) with disciplines before being exposed to Comp Care Clinics. As stated above, we have major concerns with diminishing knowledge and delayed entry into clinics. Some don't even remember doing certain types of restorations in pre-clinical labs or the why's. Operative treatment planning has eroded, also. We have expressed concern over this with the curriculum committee. PBL is so ingrained (only with certain faculty and administrators) that most of our concerns have fallen on deaf ears. To take positive steps, three of us (restorative faculty) offer an elective ½ day review course to be taken immediately before students enter the clinic. We had 96% attendance last year (2nd year of offering course) and feedback from students is that it has been very valuable. However, it is still too early to tell if it has had much of an impact on student preparedness in the clinic

MICH: No response noted.

OSU: No response noted.

PITT: First year : Fall: Dental Anatomy
 Spring: Amalgam course (didactic and lab)
 Summer: Composite course (didactic and lab)

Second year: Summer: Amalgam and Composite review course

Third and Fourth year: Comprehensive Care Clinic

We are currently undergoing extensive revision to allow early integration and application of pre-clinical concepts into clinic as early as 2nd year.

SUNY: The “Direct” course will end in December of the sophomore year, and the students will enter the clinic in February of the sophomore year. January is spent on some ‘refresher’ projects, on HIPPA considerations, and other housekeeping matters. When these sophomores enter the clinic, they will have traditional Operative ‘requirements’ for both the sophomore year (60 Clinical Production Units, or CPU) and the junior year (240 CPUs and two practicals – we call these Clinical Practical Exams, or CPE). The senior year is spent in a Comprehensive Clinic format. The problem that we see is not necessarily of diminishing knowledge or skills from the preclinic to the clinic, but one of faculty inconsistency, where the clinical faculty does not always teach what was taught in the preclinic courses. Examples of this would include choice of materials when treatment planning (the selection between amalgam or composite), the use of the rubber dam, and the use of intracoronal castings, which are not treatment planned much at all anymore.

WVU: No response noted.

UWO: Year 1 – amalgam
Year 2 – composite, indirect restorations, crown & bridge
Year 3 – intro to clinic, didactic operative course 1hr per week as well as clinical dentistry
Year 4 – clinical dentistry
Summer holidays between 2nd and 3rd year only. Knowledge and skill erosion still a problem – even greater between 3rd and 4th year. Summer clinics planned to address this

Regional CODE Agenda

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

Does your school teach the placement of auxiliary retention for Class V resin restorations?

Most schools do not unless the filling has a history of falling out.

Suggestions for CODE.

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

IUSD Get more involved in ADEA, especially in terms of the teaching of Operative Dentistry skills. Most exposure of C.O.D.E. is at the Operative Academy meeting. In this environment C.O.D.E. is only “preaching to the choir”. However, more involvement in ADEA may make our voices heard at the academic/educational levels. Recent educational trends, PBL, etc. show a definite basic science influence in dental education that has not been totally positive. These trends are originating at ADEA. It appears that current thinking is that surgical skills and the associated thinking and decision-making processes are some lower form of learning. There are various factors influencing this way of thinking, but as restorative educators we have to reemphasize the importance of surgical and restorative skills in the practice of dentistry. There is a trend of thinking that surgical skills and “thinking” skills are mutually exclusive. As operative dentistry educators, we know that nothing could be further from the truth, but somehow the message has been “lost”. Surgical skills (and thinking skills associated with surgery) have taken a hit as a result. I have seen this at our school and am hearing some of the same complaints from other operative educators in our region. Perhaps involvement in the highest levels of dental academia can reverse this kind of thinking. Provide C.E. credit nationally for attendance at regional C.O.D.E. meetings as an incentive for participation for member schools.

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

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

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

No responses noted

3. Other comments/suggestions?

UDM: Recommend adding a search engine to the website so that key words can be entered to look for certain topics in the CODE Regional Annual Reports over the years.

IUSD I would like to personally thank Larry Haisch for all of his work and dedication to C.O.D.E.

CODE REGIONAL MEETING REPORT FORM

REGION: V - Northeast

LOCATION AND DATE OF MEETING:

New York University, New York, NY

October 2-3, 2008

CHAIRPERSON:

Name: Dr. Richard Lichtenthal

Phone #: 212-305-9898

Address: Columbia University

Fax #: 212-305-8493

603 W 168th Street

E-mail: rml1@columbia.edu

New York, NY 10032

List of Attendees:

Please see reverse of this page for List of Attendees to 2008 Regional Meeting

Suggested Agenda Items for Next Year:

Minimally invasive restoration

Caries Risk Assessment

Caries Nomenclature changes

LOCATION & DATE OF NEXT REGIONAL MEETING:

Name: **TBA**

Phone #:

Address:

Fax #:

E-mail :

Date: **October 29-30 2009**

Please return all completed enclosures to Dr. Larry D. Haisch, National Director,
UNMC College of Dentistry;

40th and Holdrege Streets; Lincoln, NE 68583-0740.

Deadline for return: 30 Days post-meeting

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

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

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

CODE Region _____ V _____ Attendees Form

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2008 NATIONAL CODE AGENDA
Region V
SUMMARY RESPONSES TO NATIONAL AGENDA

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

I. Use of Simulation in Teaching and Testing: Now and in the Future.

1. What procedures are you currently simulating in the pre-clinical laboratory?(n=11)

	Yes	No	Comments
Operative	11		
Crown & Bridge	11		
Endodontics	11		
Periodontics	10	1	
Oral Surgery	2	9	
Pediatrics	10	1	
Esthetic Dentistry	11		
Implants	10	1	

2. Are there any procedures taught in simulation that a majority of your students do NOT perform in the clinic? Please list

Six out of the 11 schools teach procedures in simulation that are not performed by all the students in the clinic. These consist mainly of cast gold restorations and esthetic restorations. These procedures are performed by some students in the clinic but no by the majority.

3. Are you utilizing simulation to teach some or all of your PRE-CLINICAL endodontic procedures? Yes/No. If YES, please list.

Yes. All schools utilize simulation to some extent for access opening, preparation and obturation.

4. Are there any required CLINICAL competencies that you test on typodonts rather than patients? Yes/No. If YES please list.

All except one school have some required clinical competencies on the typodont rather than on a patient, usually a fixed prosthodontics exam, Operative mock board examinations and some esthetic restorations.

5. Besides the standard uses for typodonts and simulation that most schools are teaching such as cavity preparations, crown preparations, etc. what innovative or new techniques have you incorporated into your simulation laboratories?

Several new simulation exercises, i.e. introduction of patient records, implant restorative procedures, endodontic procedures.

6. Do you use performance in the simulation lab as a means to identify superior students? (For example selection into honors programs). Yes/No. If YES please explain:

A significant number of schools use the simulation lab as a means to identify weak or superior students for appropriate assignment, remediation or honors programs.

7. Is it your observation that student performance in simulation mirrors their performance in the clinics with similar procedures? Yes/No. Please explain:

Yes, but variables, such as environment, interpersonal skills and work ethic play a significant role in clinical success in addition to hand skills.

8. Has it been your observation that students who perform better in the simulation laboratory are more successful in licensing examinations? Yes /No Comments:

There appears to be no correlation.

9. The Western Regional Boards is reluctant to adopt a simulation crown preparation as part of their examination even though other testing agencies with results accepted by over forty states have used simulation for over 10 years. Is there any evidence that would demonstrate that the manikin crown procedure is not a valid or reliable way to test competency for a licensure candidate? Please explain and provide references.

There is disagreement among the schools regarding the value of a simulated examination. Most agree that it is preferred to using a live patient.

II. Principles of Cavity Preparations - Outline Extension

Earlier this year the following questions were asked and the results were posted on the CODE web site (<http://www.unmc.edu/code/>,). Schools should again respond and expand on as requested. Answer each questions and provide the rational/evidence for each answer. Are these conceptions taught in the pre-clinics then applied in the clinics? If NO, please comment.

1. Must facial, lingual, and gingival walls be extended to completely break contact with the adjacent tooth if not dictated by varies/penetrable decalcification? Yes/No. Rational/Evidence. Applied?

Schools agree that conservative preparations are desired with facial and lingual walls extended only to accommodate caries removal, etc. for direct restoratives. *Most compromise this concept in deference to NERB licensure examination guidelines.*

2. Is there a difference in extension criteria between Class II amalgam and Class II composite preparations? Yes/No. Rational/Evidence. Applied?

Most schools teach different extension principles between Class II composite and amalgam restorations, This appears to be driven mainly by the material differences.

3. For the anterior Class III, is it required that proximal contact be broken gingivally? Facially? Incisally? Yes/No. Rational/Evidence. Applied?

Most schools agree that the extension is dictated by the extent of caries. Generally the incisal and facial contacts are not broken but the gingival contact is broken.

4. What questions/comments do you have based on the survey results? See CODE web site (<http://www.unmc.edu/code/>)

There is basically no comment.

5. Other comments related to Principles of Cavity Preparation other than those outlined.

None

III. Caries - Treatment/Detection

Treatment of deep carious lesions by complete excavation or partial removal - A Critical Review, JADA, Vol 139, 705-712, June 2008

(This is not a repeat of a related agenda question, 1999, 2007)

1. Does your school teach the concept of incomplete caries removal? Yes/No. If YES, for how long? How well accepted and applied by the faculty? If NO, why not? Should it be taught?

All but one school teach the concept of incomplete caries removal (indirect pulp cap). Most who do have been teaching the concept for several years. Acceptance by faculty is generally good with the occasional difficulty with endodontic faculty.

2. Other comments related to the meta-analysis on this topic?

No summary response noted

3. Is Atraumatic Restorative Treatment (ART) taught for root caries? What has been the experience?

None of the schools teach ART as a general technique for root caries. It is occasionally utilized in special situations.

4. What methods of caries detection are taught in schools (e.g., Explorer (how used), visual, Diagnodent, transillumination, fluorescence, other?)

Most schools teach the traditional methods of caries detection. Visual inspection of clean dry teeth, radiographs, and transillumination. The use of the explorer in the examination process has been greatly modified in most schools and is used gently, without the probing, sticking method recommended in prior generations. Few schools continue to use the explorer in the traditional manner. The newer electronic caries detection apparatus, while utilized in a limited fashion as an adjunct, have yet to come to the forefront of caries diagnosis.

5. Does your school use caries detection dye? (Please list product(s). Do students and/or faculty use caries detection dye? What are the criteria?

Most schools have caries detection dyes available for use by faculty and students. It is, however, not highly recommended method for caries detection with traditional methods generally emphasized. It is used occasionally for demonstration of caries by faculty.

IV. Health and Safety Issues Related to Teaching/Practicing Dentistry

1. How are **extracted teeth** with amalgam handled and stored? How long has the protocol been in place? What is the basis/science behind your school's protocol? Are the protocols different for amalgam-free extracted teeth?

Most schools that use extracted teeth with or without amalgam, dispose of them as hazardous medical waste. One school puts extracted teeth with amalgam in a scrap metal recycling bin.

2. Have there been **air-quality issues** with fumes and/or particulate matter? What is/are the specific issue? How did the issue surface? (Inspector, complaint, etc.) What was the resolution?

Issues of air quality vary from acrylic fumes and heat to no problems at all. Most issues are resolved with improvements in ventilation and air conditioning to changing materials. Many schools report regular inspections of their facilities by Environmental health and Safety to insure safe conditions.

3. Have there been issues with **noise**? If YES, please respond per the questions asked in the air quality issue.

There are generally no issues with noise.

4. What are your school's protocols for dealing with **student** accidental needle sticks, bur punctures, and blade cuts?

Student injury protocols are generally handled in much the same way at all schools. Accident reports, student or occupational health, patient examination, treatment if required.

5. What are the protocols for **patients** injured during procedures by burs, diamonds, disks, blades?

Most schools have protocols similar to that for student injury.

6. Does your school have concerns with **Bisphenol A** in resin restorations? What is the evidence? If YES, please explain:

No

V. Curriculum

1. Has your pre-clinical or clinical operative curriculum recently undergone a significant revision? What changes did you make (additions or deletions)? Why did you make the changes and what positive or negative outcomes have you seen?

Most schools are involved in continuous change and curriculum addition, None have indicated a significant, life altering revision. One school is in the process of planning a significant revision.

2. What is the time gap (in semesters or quarters) between the end of pre-clinical operative dentistry and the start of clinical operative experiences for your students? Describe the curricular progression of your students in operative dentistry (Example- Freshman pre-clinical operative, Sophomore block clinic rotation, Junior-Senior clinics, or Junior clinic, Senior Comprehensive / General Dentistry clinic). Is there any concern with diminishing knowledge or skills between pre-clinic courses and pre-clinical practice? What types of knowledge or skill erosion did you observe and what have you done about it?

There is a three to twelve month gap between preclinical and patient care. Mini-refresher courses are utilized to get back up to speed and prevent loss of skills.

Regional CODE Agenda

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

A three hour meeting regarding national activity in Caries risk assessment and minimally invasive dentistry was held prior to addressing the CODE Agenda. Drs. Wolff and Kaim gave presentations regarding the proceedings of the CAMBRA coalition and caries risk and discussions of alterations in caries terminology. We reviewed the list of suggested caries nomenclature changes that would more closely reflect the current thought about caries identification leading to a related change in the ADA caries diagnostic codes.

A discussion was opened on how aggressively schools should be implementing caries risk assessment techniques and it was agreed that it should be widely implemented. Insurance implications and related standards of practice were some of the questions that were discussed.

If we believe in identifying and medically treating non-cavitated demineralizations, how do we insure that they are properly recorded and monitored. The question of when surgical intervention is appropriate, the use of sealants and the short and long term efficacy of this treatment philosophy were discussed.

This discussion will be continued at future CODE meetings.

Suggestions for CODE.

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

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

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

3. Other comments/suggestions?

2007 NATIONAL CODE AGENDA

REGION V RESPONSES

(Evidence cited where applicable)

Region V School Abbreviations

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

2008 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. Use of Simulation in Teaching and Testing: Now and in the Future.

Typodonts and simulation have been an accepted protocol for training and measuring competency for dental students prior to performing procedures on patients. In addition, simulation has been used for over ten years as a means to evaluate competency by licensing agencies. Simulation includes not only the standard surgical procedures as crown preparations, but also restorations and endodontic procedures. Simulation is used as a default option in order to provide training for students when there are insufficient patient resources; i.e., porcelain veneer procedures, ceramic inlay/onlays, etc. The ADA, ADEA and other dental organizations have expressed opposition to the use of human subjects for licensing examinations.

It would be appropriate to discuss the use of simulation in Teaching and Testing especially as relates to validity and reliability.

1. What procedures are you currently simulating in the pre-clinical laboratory?
(Editor: Individual responses not forwarded. This is a consensus.)

	Yes	No	Comments
Operative	11		
Crown & Bridge	11		
Endodontics	11		
Periodontics	10	1	

Oral Surgery	2	9	
Pediatrics	10	1	
Esthetic Dentistry	11		
Implants	10	1	

2. Are there any procedures taught in simulation that a majority of your students do NOT perform in the clinic? Please list

BU: No.

CLMB: No.

CONN: No.

DAL: No response noted.

HARV: No response noted.

HOW: No.

LAV: No response noted.

UMD: Yes. Stainless steel crowns; porcelain veneers; all porcelain crowns; implant restorations; molar endodontics.

MCG: No response noted.

MTRL: No response noted.

UMNJ: Yes: Gold inlays and onlays, three quarter crowns.

NYU: Yes: Simulation is utilized when necessary to teach procedures that were know from our patient pool some or many students will not get an opportunity to perform then in the clinic. Manikin competencies are substituted where appropriate as a graduation requirement.

Pediatric Dentistry: stainless steel

Operative Dentistry: porcelain veneer preparations

Endodontics: Molar access

PENN: Yes, Orthodontics.

SUNY: Yes: Operative technique - indirect gold onlay restorations, CEREC restorations; esthetic veneers

TEMP: Yes: Cast inlays and onlays; all ceramic crowns; application of porcelain to clinical cases

TORO: Yes. The porcelain veneer and the gold alloy onlay..

TUFT: No response noted.

USN: No response noted.

3. Are you utilizing simulation to teach some or all of your PRE-CLINICAL endodontic procedures? Yes/No. If YES, please list.

4.

BU: Yes: access openings, preparation and obturation.

CLMB: Yes: Access openings, preparation and obturation on plastic and extracted teeth

CONN: Yes: Access openings, preparation and root filling.

DAL: No response noted.

HARV: No response noted.

HOW: Yes.

LAV: No response noted.

UMD: Yes: all preclinical endodontics is taught using typodonts with clear rooted teeth. Endodontic access preparations are taught for both anterior and posterior teeth using typodonts as well. No extracted teeth are used in endodontic preclinical simulation.

MCG: No response noted.

MTRL: No response noted.

UMNJ: Yes: all procedures

NYU: Yes: Access, instrumentation, obturation, practical examinations

PENN: All of the preclinical endodontic procedures are completed on mounted extracted teeth and typodont teeth.

SUNY: Access on upper and lower incisors and multirooted teeth on mounted extracted teeth.

TEMP: Yes.

TORO: Yes: One each of single canal incisor and four canal molar RCT (plastic teeth). RCT also performed on extracted teeth mounted in typodont.

TUFT: No response noted.

USN: No response noted.

4. Are there any required CLINICAL competencies that you test on typodonts rather than patients? Yes/No. If YES please list.

BU: Yes, Endodontic and Fixed prosthodontics Mock NERB Exam

CLMB: Yes. Porcelain veneer preparations, fixed prosthodontic preparation provisional and ceramic crown preparation.

CONN: Yes, Fixed Prosthodontics has a three unit posterior bridge - both preparation and temporary fabrication as a typodont only.

DAL: No response noted.

HARV: No response noted.

HOW: Yes, Fixed prosthodontics: all ceramic crowns , full gold crown preparation and PFM, removal prosthodontics border molding and impression.

LAV: No response noted.

UMD: Yes. Clinical competencies for D3 and D4 fixed prosthodontics are on typodonts. D3 competencies for Class II and Class III using bilayered caries teeth in a typodont.

MCG: No response noted.

MTRL: No response noted.

UMNJ: No.

NYU: Yes, porcelain veneer preparations and restorations

PENN: Yes. The three unit bridge. Crash course at the end of D2 before entering the clinical setting. Simulation is used with bilayered carious teeth to reinforce operative skills learned in the preclinical setting.

SUNY: Yes, year 1 Class II amalgam, Class III composite

TEMP: Yes. Mock Boards/Competency examinations in C/B and Operative; 3 unit bridge preparation and a single ceramic crown. 3 unit provisional restoration, Class II amalgam preparation and Class III composite preparation using caries simulated teeth.

TORO: Yes, but only at the third year (novice)level. Typodont competency tests are conducted for outline form using standardized teeth with “caries”. No, not at fourth year (graduation) level. Two clinical competency tests are conducted in fourth year: 1) Intracoronal direct restorations and prep and restoration and 2) FMC prep, impression, wax-up, fit and finishing, cementation.

TUFT: No response noted.

USN: No response noted.

5. Besides the standard uses for typodonts and simulation that most schools are teaching such as cavity preparations, crown preparations, etc. what innovative or new techniques have you incorporated into your simulation laboratories?

BU: No new exercises

CLMB: Typodont with implant fixtures, fixed impressions and provisionals, implant overdentures and single units

CONN: None

DAL: No response noted.

HARV: No response noted.

HOW: Patient records with clinical forms

LAV: No response noted

UMD: Electronic Patient record in preclinic to record operative simulation exercises

MCG: No response noted

MTRL: No response noted

UMNJ: Yes; Endodontis Ni-Ti files, rotary instrumentation on natural teeth and typodont teeth. Procera crowns.

NYU: We are incorporating the use of a simulated patient/family. This patient has a chart, radiographs, medical history, etc. The student has to select the appropriate treatment and restorative material based on the information presented including a caries risk assessment.

PENN: Advanced simulation - virtual reality based technology training. Initial instruction of operative preparations are carried out in this advanced simulation lab prior to the start of the traditional preclinical operative course. With the use of specialized tracking equipment and computer software, real time preparations are shown to the students and evaluated instantly.

SUNY: DentSim exercises

TEMP: Yes. Implant restoration, healing abutment, provisional; implant overdenture; layered teeth for exams (unreliable for ceramic crown preparation)

TORO: Typodont teeth with simulated caries, extracted teeth in custom dentoform. Typodonts with artificial calculus, suturing exercises on rubber dam. Extractions, flap/bone removal exercises, suturing on dentoforms.

TUFT: No response noted

USN: No response noted

6. Do you use performance in the simulation lab as a means to identify superior students? (For example selection into honors programs). Yes/No. If YES please explain:

BU: Not for honors programs, but very good students and those who have problems are identified for the benefit of clinical faculty, who they will meet in the third year.

CLMB: Yes. Superior students (top 10%) enter the clinic early - March or April of second year and are permitted, with close supervision (1-4) to perform those procedures in which they are competent. They return to preclinic for sessions on things that have not yet been covered.

CONN: No

DAL: No response noted.

HARV: No response noted.

HOW: Yes, Junior restorative and fixed award nominees are selected by their preclinic performance.

LAV: No response noted.

UMD: Yes. The information is used to identify weak students so that they can have additional instruction to improve their performance.

MCG: No response noted.

MTRL: No response noted.

UMNJ: No

NYU: Yes. Fixed Prosthodontics used grades in the second year simulation course as a determining factor in selection into the fourth year elective fixed pros honors program.

PENN: No

SUNY: The student performance in preclinical laboratories certainly demonstrates their skill level and preparedness for clinical situations. There are however some limitations with respect to variable conditions of patient care. At Stonybrook we do not make distinctive differences among students, do not

make categories , but we see that superior students are likely to stay superior in later clinical years. Preclinical laboratories are the place to detect early motor skill deficiencies that may need an early intervention and faculty assistance.

TEMP: No

TORO: No

TUFT: No response noted

USN: No response noted

7. Is it your observation that student performance in simulation mirrors their performance in the clinics with similar procedures? Yes/No. Please explain:

BU: For the most part, yes.

CLMB: Yes - technical performance in preclinic is a predictor of technical performance in clinic. However, it is not always a predictor of patient management skills and work ethic which is sometimes just as important.

CONN: Not always. Some who have struggled in the preclinic have performed at an average level when they start treating patients. However, most of those who really struggle and are just barely getting through usually have a difficult time when they start on live patients. In the end, most of these do improve to acceptable performance before taking the licensure exams and graduate on time.

DAL: No response noted.

HARV: No response noted.

HOW: Yes

LAV: No response noted.

UMD: Yes. Typically faculty have observed clinical skill levels in preclinical simulation initially parallel student performance in clinic. Of note, organizational skills, patient management skills, reliability and professionalism are not necessarily transferred from preclinic. In many cases the interaction of hand skills and interpersonal skills is as important to student performance and clinical success.

MCG: No response noted.

MTRL: No response noted.

UMNJ: Not necessarily. Preparing plastic teeth is not the same as preparing natural teeth and students usually do better when treating patients. This may also

be due to the fact that they have had more experience (preclinic) before treating patients .

NYU: Yes, students who are weak in the simulation laboratory are with rare exception, weak in their clinical performance. Those that excel in the preclinic generally do the same in the clinic unless they have patient management problems. That means that they are emotionally uncomfortable performing procedures on patients, for varying reasons. Once they adjust to the clinical environment, the A student generally demonstrates superior clinical skills.

PENN: Not necessarily. Preclinically some students learn differently and cannot handle the quick pace and pressure of the preclinical courses. They may perform adequately in the preclinic. Then in the clinic they are able to be very successful as they hone their skills in a different environment. However, it is observed that the students deemed “weak” during the preclinical courses are the most likely to continue this trend in the clinic.

SUNY: the student performance in preclinical laboratories certainly demonstrates their skill level and preparedness for clinical situations. There are however, some limitations with respect to variable conditions of patient care. At Stonybrook we do not make distinctive differences among students, do not make categories, but we see that superior students are likely to stay superior in later clinical years. Preclinical laboratories are the place to detect early motor skill deficiencies that may need an early intervention and faculty assistance.

TEMP: In general, the upper ten percent in the preclinic will mirror performance in a clinical setting, similarly for the lower ten percent. Those in the middle can vary from best to worst.

TORO: Yes, there appears to be a strong correlation

TUFT: No response noted.

USN: No response noted.

8. Has it been your observation that students who perform better in the simulation laboratory are more successful in licensing examinations? Yes /No Comments:

BU: There is no evidence to support this. Board success depends on many factors.

CLMB: We have found little or no correlation. The results are so variable that we can reach no conclusion.

CONN: We've had it go both ways. Unfortunately since the licensure examination is just one shot in time and anything can happen during one day of testing, i.e., patient no-show, poor examining crew (and being an examiner myself I can attest to this), we've had some of our best students fail and some I surely would have bet would fail, pass. Licensure exams can be a crap shoot.

DAL: No response noted.

HARV: No response noted.

HOW: Yes.

LAV: No response noted.

UMD: Student performance in simulation has not been a predictor for success with the licensure examination

MCG: No response noted.

MTRL: No response noted.

UMNJ: No

NYU: We have not been able to correlate that but we do find that students who participate in the elective simulation licensing preparation course are more successful in the licensing examinations.

PENN: Not necessarily, under the pressure of the exam and a variety of reasons, sometimes even the best students don't perform well.

SUNY: Not necessarily. There is no tracking of students who in general do better on NERB correlated to their success in preclinical lab. We have not observed the same when compared to the students success in clinical care.

TEMP: Yes. In the licensing exam involving the typodont. However, it is difficult to ascertain and more likely not related to the clinical licensing performance.

TORO: OSCE exam only in Canada, no patient based licensing examinations.

TUFT: No response noted.

USN: No response noted.

9. The Western Regional Boards is reluctant to adopt a simulation crown preparation as part of their examination even though other testing agencies with results accepted by over forty states have used simulation for over 10 years. Is there any evidence that would demonstrate that the manikin crown procedure is not a valid or reliable way to test competency for a licensure candidate? Please explain and provide references.

- BU:** The manikin is accurate a test in Fixed as it is in Operative. The criteria for NERB are not what we teach in clinic.
- CLMB:** The simulated (manikin) examination is preferred to an examination using a patient. There is no evidence that either is valid. We prefer a system of licensure by the combination of a dental degree, National Board Examination, and completion of a one year accredited post doctoral program.
- CONN:** Cannot answer because I do not know the literature in this area. On a personal note, I would accept the results on a manikin to avoid using a live patient exam.
- DAL:** No response noted.
- HARV:** No response noted.
- HOW:** No
- LAV:** No response noted.
- UMD:** A review of the literature on this topic was not definitive in demonstrating a correlation of licensure examination performance with clinical performance with patient treatment. The reliability of licensure examinations is difficult to validate for its usefulness in its current format.
- MCG:** No response noted.
- MTRL:** No response noted.
- UMNJ:** No. This seems to be a good method of evaluation.
- NYU:** We are unable to find documented research to support or reject this hypothesis. What we do have is anecdotal information and our own observations. NERB has shared with us photographs as well as allowing some of our faculty to actually view the completed typodont preparations at the Board office. There is no question that it is easy to differentiate the extremes at either end. What we believe is most effective and should become the only way licensing examinations are offered is that candidates should be required to first pass the manikin portion prior to being allowed to sit for the patient portions of the examinations. Additionally, what favors the NERB protocol is that candidates are required to perform three procedures. That makes it easy to determine if a candidate demonstrates consistency. We believe that the manikin examination could be even better if the examining agencies would not announce prior to the examination which crown or crowns will be performed, but rather on the day of the examination ask that within a full compliment of teeth three of them would be selected. That would prevent candidates from becoming tooth #19 experts. In addition, we do know that students that demonstrate superior hand skills in the first year operative course generally perform at a higher

level in the fixed prosthodontics simulation course. The converse is nearly always true as well.

PENN: No comment

SUNY: Simulation testing provides an objective standard testing environment. This can be practiced before the test in a very reliable way and secure the candidates success as there are no other variable involved. Overall, the testing may be viewed as easier and less challenging for the candidate and therefore perhaps not proving the true measure of the candidates abilities.

TEMP: It is the belief of the restorative faculty that the manikin licensing examination has a high passing rate - close to 100%, which begs the question whether it does test competency. When the provisional restoration was deleted from the NERB, the passing rate was even higher. It may be that the grading is lenient - if the prep looks OK and will work - but does not have to be perfect, then pass.

TORO: It is the best alternative to a patient-based exam but cannot examine the full range of competencies required to perform this clinical procedure.

TUFT: No response noted.

USN: No response noted.

II. Principles of Cavity Preparations - Outline Extension

Earlier this year the following questions were asked and the results were posted on the CODE web site (<http://www.unmc.edu/code/>). Schools should again respond and expand on as requested. Answer each questions and provide the rational/evidence for each answer. Are these conceptions taught in the pre-clinics then applied in the clinics? If NO, please comment.

1. Must facial, lingual, and gingival walls be extended to completely break contact with the adjacent tooth if not dictated by varies/penetrable decalcification? Yes/No. Rational/Evidence. Applied?

BU: It is assumed in preclinic that the “patient” has a high caries risk. Clinically walls are extended only far enough to remove all caries and to allow placement of the restoration.

CLMB: No. No. Yes - facial and lingual margins have to be extended only to the extent of complete caries removal and removal of undermined friable enamel. Gingival is extended to break interproximal contact because caries is usually found just below the contact area. (For amalgam and direct composite)

CONN: Yes and No. WE don't teach this extension for composites and do this for amalgams since ADEX/NERB requires it on their exam. In reality this is up to the individual who is precepting in the clinic. I don't break contact routinely with amalgams unless the caries or unsupported enamel dictates

this. There is no clinical data supporting this in the literature - old GV Black teachings that are no longer practical today.

DAL: No response noted.

HARV: No response noted.

HOW: Yes, for amalgam. To insure adequate access for marginal integrity of the restoration and required due to format of board exam for the amalgam preparation.

LAV: No response noted.

UMD: Facial and lingual extensions do not necessarily need to break proximal contact for direct placement restorative materials. The gingival margin for a Class II and III lesion will usually be apical to the contact due to the caries site initiation being below the proximal contact area.

MCG: No response noted.

MTRL: No response noted.

UMNJ: Yes. Although there has not yet been a definitive clinical study to show that breaking contact produces better restorative results or reduces the amount of recurrent decay as compared to not breaking the contact, we feel that breaking the contact is an important criteria to teach for three reasons: A) the NERB requires it; B) amalgam preparations would be consistently under-extended; C) placing a matrix band would be difficult or impossible in certain situations.

NYU: There is no rationale for breaking contact in any direction except gingival where it is necessary to find caries (usually located just below the contact). While it may be convenient for the operator to remove additional tooth structure unnecessarily, there is no evidence that breaking the contact facially or lingually provides any benefit in terms of improving the functionality or longevity of the restoration. We do, however, teach our students to break contact in all directions preclinically as it is required of them in order to pass the NERB. Hopefully, they understand that this is the only reason we teach it that was and in practice conserving tooth structure is the dominant principle. Faculty standardization is sometimes inconsistent. Many clinical faculty are disciples of GV Black and for Class II amalgam restorations still teach what they were taught. We are making significant progress.

PENN: If caries is completely removed, conservative caries preparation outline design (with adequate resistance, retention and convenience form) can be obtained with pre-wedging - separation of teeth during preparation procedure - and the breakage of contact can be avoided. Matrix band placement is easily accomplished again by pre-wedging the teeth to obtain space for the matrix material. Removal of sound, supported enamel should be discouraged. However, as long as the criteria for the NERB examination

remains such that these walls need to be extended to break the buccal, lingual and gingival contact, students will be trained in this manner.

SUNY: For amalgam preparation Class II, F and L must be broken for the 0.2 mm tip of a cow horn explorer to pass through for convenience and instrumentation. of a resin Class III, the gingival contact must be broken, F and Incisal No (preserved if possible). For a resin Class II, the gingival contact must be broken, F and L no-preserved if possible, although proximal bevels at cavosurface may break contacts. Lingual may be automatically broken due to contact position, anatomy.

TEMP: For amalgam and traditional composite (moderate decay) break control - B/G/L. Clinically, for an amalgam - yes, break contact B/L/G; some exception where only gingival contact is broken. For a composite, it depends on the size of the lesion - small lesions just to the DEJ - conservative, moderate lesions - slightly past the DEJ/break gingival contact/not necessarily B and L - clinical judgement. In moderate to large, conventional cavity perp resembling an amalgam but no necessarily with converging walls. Yes - break contact both BL/G.

TORO: In general operative conservatism is stressed. Teaching is to (just) break contact facially and lingually in most normal contact (small area) clinical situations to permit 1) greater access for cavosurface margin assessment, refinement, finishing, recurrent caries detection, etc. and 2) ease of matrix placement. EXCEPTIONS: 1. All broad facial-lingual contact dimensions which would necessitate excessive tooth loss. The importance of operative conservatism is stressed. Gingival cavosurface margin usually located in gingival embrasure because 1) caries is initiated gingival to the contact area in the gingival embrasure and 2) ease of access to gingival margin to assess integrity.

TUFT: No response noted.

USN: No response noted.

2. Is there a difference in extension criteria between Class II amalgam and Class II composite preparations? Yes/No. Rational/Evidence. Applied?

BU: Yes. Amalgam, very rare not to break contact proximally. Outline includes all non-coalesced grooves. Gingivally, contact is always broken. Proximal walls are 90 degrees to the proximal cavosurface. Composite: proximal walls diverge occlusally and are flared. Otherwise the outlines are similar.

CLMB: Yes and No. The amalgam is driven by requirements for the material (retention, depth, etc) in addition to the extent of caries and unsupported enamel; the composite by the extent of caries and unsupported enamel.

CONN: Same response as previous question.

DAL: No response noted.

- HARV:** No response noted.
- HOW:** Yes, composite preparation is guided by the extent of carious involvement and requirements for retention and stability. Amalgam preparation design is controlled by requirements of the material to allow adequate access, retention and resistance forms.
- LAV:** No response noted.
- UMD:** No. There should be no difference in extension criteria.
- MCG:** No response noted.
- MTRL:** No response noted.
- UMNJ:** Yes: if extension means occlusally (no extension for prevention a la GV Black). If there is only interproximal decay with sound tooth structure occlusally, we teach the slot preparation, which minimally extends onto the occlusal surface just enough to give access to the proximal tooth structure. After placement of the composite, the remaining enamel on the occlusal surface (along with pits and fissures) is etched and sealed. No: if extension means breaking or not breaking contact. No definitive clinical studies show that one method is better than the other but for reasons on b and c above (#1) we teach students to break contact for the Class II composite.
- NYU:** No. Same as with previous question (section 1) with the slight benefit that NERB does not test Class II composite so it is more consistently accepted in the clinics that extension facially and lingually is not necessary for composite. However, WREB still requires extension into all embrasures although they do allow a slot preparation.
- PENN:** Yes. Students are instructed to approach the conservative Class II composite preparation as described above with pre-wedging and only minor breakage of the contact with the wedge in place. If the wedge is removed, the tooth would still be in contact. The sectional matrix is used for the restoration which requires a pre-wedge and therefore the matrix is easily placed.
- SUNY:** Yes. Class II amalgam preparation is driven by principles that allow for the elimination of caries, retention of the material, convenience for instrumentation, resistance of the remaining tooth structure and the amalgam restorative material. Breaking contact is justified mainly for convenience reasons and instrumentation of the proximal walls. Contact in ideal cavity preparations should be broken only minimally – about 0.2 mm. Ideal cavity preparation does not need retention grooves, which are justified only if primary retention is not adequate. Internal line angles as well as internal and external walls should be defined and follow occlusal parallelism and proximal BULL rule. Depth is 0.5 mm into dentin . Occlusal isthmus should be about 1.2 mm and dovetails just slightly larger (0.7mm) than the isthmus. Class II composite preparation principles are strictly driven by the extent of caries. Class II minimal resin preparation

would be prepared as a proximal slot preparation with the gingival contact broken and proximal contacts preserved if possible. Proximal walls would be finished with a 45 degree short bevel for better bonding to enamel rods. Occlusal extension is dependent on caries extent. Class II conventional resin cavity preparation would be similar to the amalgam preparation with exceptions: isthmus would be limited to one third the inter cuspal distance, internal line angles would be rounded, proximal contacts can be preserved, ;proximal walls finished with a short 45 degree bevel, occlusal dovetail nearly eliminated except if caries is present.

TEMP: Yes: in composite due to the adhesive properties, preparation can be developed to take those features into account. Amalgam: mechanical features for retention are required.

TORO: No.

TUFT: No response noted.

USN: No response noted.

3. For the anterior Class III, is it required that proximal contact be broken gingivally? Facially? Incisally? Yes/No. Rational/Evidence. Applied?

BU: Gingival contact is always broken. Facially and incisally, it is only broken when caries removal requires it.

CLMB: Preparation are caries driven. Ideally the gingival contact is broken (origin of caries), the facial and incisal contacts are not.

CONN: No, but ADEX/NERB requires that the gingival contact be broken so we teach them to do this if they are taking this exam. No clinical evidence to support better results with breaking these contacts.

DAL: No response noted.

HARV: No response noted.

HOW: Gingivally, yes because of the board criteria. Facially, no, esthetics. Incisally, no, it would unjustifiably remove healthy tooth structure. Applied, yes.

LAV: No response noted

UMD: For the Class III extension, should be dictated by the carious lesion and demineralization. In many cases the gingival contact will be broken because of the site of caries initiation.

MCG: No response noted

MTRL: No response noted

UMNJ: Yes. Gingivally but not facially and incisally.

NYU: Gingivally Yes. Facially, No. Incisally No. There is no rationale for breaking contact in any direction except gingival where it is necessary to find caries (usually located just beneath the contact). While it may be convenient for the operator to remove additional tooth structure unnecessarily, there is no evidence that breaking contact facially or incisally provides any benefit in terms of improving the functionality or longevity of the restoration. Conserving tooth structure should be the dominant principle.

PENN: Gingivally not unless dictated by caries. Facially not unless dictated by caries. Incisa contact is kept intact unless dictated by caries.

SUNY: The lesion has a caries driven outline. The lesion usually starts below the contact and therefore the gingival contact will be automatically broken.

TEMP: Gingivally, yes. Facially and incisally, no. There is no evidence based information.

TORO: Facially, preparation not extended to facial surface unless necessitated by 1.) caries or 2.) more conservative access to caries form facial with rotated teeth. Gingivally, the gingival margin located in the gingival embrasure since caries is usually initiated in the gingival embrasure. Incisally, outline tends to extend incisally due to caries progression along DEJ but emphasis is placed on optimal preservation of incisal edge and structural integrity.

TUFT: No response noted

USN: No response noted

4. What questions/comments do you have based on the survey results? See CODE web site (<http://www.unmc.edu/code/>)

BU: No comment.

CLMB: No comment.

CONN: No comment.

DAL: No response noted.

HARV: No response noted.

HOW: No comment.

LAV: No response noted

UMD: No comment.

MCG: No response noted

MTRL: No response noted

UMNJ: Could not locate this survey on the website.

NYU: The questions on the web were very consistent and very straight forward as written and seem like they should all have a simple yes or no answer. However, many schools including our own thought that the answers needed to be clarified as to surface extended even when the reason for extension is caries.

PENN: No comment.

SUNY: No comment.

TEMP: No comment.

TORO: No comment.

TUFT: No response noted

USN: No response noted

5. Other comments related to Principles of Cavity Preparation other than those outlined.

BU: With both amalgam and composite the minimal removal of tooth structure is stressed. Remove the problem, create a form that is appropriate for the chosen material and then restore it.

CLMB: None

CONN: For amalgam, it's the depth that counts. Minimal 1.5 mm of bulk – not whether the pulpal floor is in enamel or dentin. Unfortunately ADEX/NERB require that all enamel must be removed from the pulpal floor regardless if it is already 1.5 mm.

DAL: No response noted.

HARV: No response noted.

HOW: No comment.

LAV: No response noted.

UMD: For composite resin restoration, anterior and posterior, should the shape and orientation of the margin design be directly related to occlusion and stress bearing areas.

MCG: No response noted

MTRL: No response noted

UMNJ: No response noted

NYU: Conserving tooth structure should be the dominant principle. All restorations have a limited lifespan and result in more tooth structure being lost when the restorations are replaced. This cycle of replacement is the most frequent cause of eventual full coverage, loss of vitality or eventual tooth loss

PENN: No comment.

SUNY: The need for retention is solely based on the size of the cavity prep for the amalgam and whether the restoration is bonded.

TEMP: No comment.

TORO: No comment.

TUFT: No response noted

USN: No response noted

III. Caries - Treatment/Detection

Treatment of deep carious lesions by complete excavation or partial removal - A Critical Review, JADA, Vol 139, 705-712, June 2008

(This is not a repeat of a related agenda question, 1999, 2007)

1. Does your school teach the concept of incomplete caries removal? Yes/No.
If YES, for how long? How well accepted and applied by the faculty?
If NO, why not? Should it be taught?

BU: If the lesion is relatively shallow, it may be instrumented thoroughly. If it is close to the pulp, material that is easily removed by hand instruments is removed and a Vitrebond liner is placed prior to the final restoration.

CLMB: We have been teaching this principle for about ten years (all caries removed except for that immediately adjacent to the pulp) The concept gets a mixed reaction: positive from the operative faculty, negative from endodontics. Indirect pulp capping is recommended for teeth that are not treatment planned as fixed or removable abutments. The tooth must be vital, with no evidence, clinically or radiographically, of pathology and eligible for an intracoronal restoration.

CONN: Yes, we teach the concept. We have been teaching it for over 12 years. Most faculty accept the principle.

DAL: No response noted.

HARV: No response noted.

- HOW:** Yes, but only in a sense of an indirect pulp cap. It is accepted departmental philosophy and should be taught.
- LAV:** No response noted
- UMD:** Yes, the concept of indirect pulp capping for vital teeth is taught for deep carious lesions. Complete caries removal is taught for all walls of the cavity preparation not adjacent to the pulp.
- MCG:** No response noted
- MTRL:** No response noted
- UMNJ:** Yes. We have been teaching this for as long as the school has existed (~50 years). It is accepted by all faculty in the restorative department. This procedure should only be performed if a carious exposure is imminent and the tooth was vital and symptom free before treatment, with no radiographic or clinical evidence of periapical involvement. Not withstanding the above if the tooth is to be used as an abutment for a fixed or removable prosthesis, caries should never be left in the preparation and root canal therapy should be initiated if a carious exposure occurs.
- NYU:** Yes. We have been teaching this concept for over five years. It is poorly accepted by faculty. We have been unable to get the endo department to accept the principle at all. All too many general faculty request an endo consult whenever a pulp cap (direct or indirect) is being considered. This has the predictable result of endo being treatment planned in almost all cases. With the publication of this review we should be able to get better acceptance of the principle and empower the general faculty to have the confidence and the evidence necessary to prescribe these indirect pulp capping procedures more consistently.
- PENN:** No, not in the clinical courses. Complete caries removal is the current acceptable practice at UPenn SDM.
- SUNY:** We teach direct and indirect pulp capping in the form of a lecture during the year 1 operative technique. In clinic in general the following is accepted: All infected dentin is removed followed by endodontic therapy if the pulp is exposed. In mechanical non caries exposures direct pulp cap is applied. The indirect pulp cap procedure on a tooth with reversible symptomatology (vital pulp, without history of spontaneous pain) is accepted. That is pertinent only if ideal isolation conditions are followed. Placed calcium hydroxide, glass ionomer and restoration. Tooth is either temporized with IRM or restored, depending on the situation. Followed up, 8 – 10 weeks. Tooth is tested for vitality, radiographic evidence of remineralization, followed by direct clinical examination and after removal of any remaining carious dentin without exposure the tooth is restored with permanent cement.

TEMP: Yes, we do each the concept of incomplete caries removal both in the preclinical setting (lecture and exercise on extracted teeth). It is well accepted by the faculty . WE have been teaching it for more than 20 years.

TORO: Yes. Indirect pulp capping (leaving affected dentin in the vicinity of the pulp) taught since 1970's and well accepted. Two stage caries removal (stepwise excavation) in last 4-5 years. Initial skepticism but now is well accepted.

TUFT: No response noted

USN: No response noted

2. Other comments related to the meta-analysis on this topic?

BU: No comment

CLMB: It seems that we have been talking about this for a very long time. Perhaps this is the beginning of an evidence-based standard.

CONN: No comment

DAL: No response noted.

HARV: No response noted.

HOW: No comment

LAV: No response noted

UMD: No comment

MCG: No response noted

MTRL: No response noted

UMNJ: What is meta-analysis?

NYU: No comment

PENN: No comment

SUNY: No comment

TEMP: No comment

TORO: No response noted

TUFT: No response noted

USN: No response noted

3. Is Atraumatic Restorative Treatment (ART) taught for root caries? What has been the experience?

BU: Students are taught to remove the infected tooth material, isolate the area and restore the tooth, usually with composite. No macroretentive areas are created.

CLMB: Only rarely, in medically or physically compromised special needs patients, if necessary.

CONN: No, but yes at times when applicable to a situation, but not by this name. The term ART is a repacking phenomena.

DAL: No response noted.

HARV: No response noted.

HOW: No, conventional restorative methods are implemented in our clinics.

LAV: No response noted

UMD: ART is not taught for root caries.

MCG: No response noted

MTRL: No response noted

UMNJ: No.

NYU: No.

PENN: No, ART has been addressed in pediatric applications in lectures only.

SUNY: No. Atraumatic restorative treatment (ART) was developed to suit the needs of the developing countries. ART includes both prevention and treatment of dental caries. This procedure is based on excavating and removing caries using hand instruments only and restoring with an adhesive filling material such as glass ionomer.

TEMP: No.

TORO: No.

TUFT: No response noted

USN: No response noted

4. What methods of caries detection are taught in schools (e.g., Explorer (how used), visual, Diagnodent, transillumination, fluorescence, other?)

- BU:** Radiological evidence, visual examination and the explorer are used regularly to discover caries. The explorer is used gently. Transillumination is used for anterior teeth.
- CLMB:** For the initial examination we use radiographs visual clinical examination on a dry, clean tooth, color change, very gentle explorer over surface (tactile) not “tug back “ or “sticking”, and transillumination for anterior interproximals. We have used the Diagnodent and DiFOTI instruments with little consistent success. We rely on the traditional methods with the exception of the traditional use of the explorer tip.
- CONN:** We use visual, tactile, radiographic and transillumination.
- DAL:** No response noted.
- HARV:** No response noted.
- HOW:** Tactile, visual, lectures on diagnodent (not currently used clinically), transillumination, radiographs, light and sir.
- LAV:** No response noted
- UMD:** Caries detection is taught as a multifactor decision making process. The evidence of visual and limited tactile (no probing into fissures and pits and to root surfaces to penetrate and observe a stick) examination of a dry tooth. Transillumination is used for anterior teeth and on a limited basis for posterior teeth, digital radiographs processed with imaging software, and on a limited basis the use of a diagnodent.
- MCG:** No response noted
- MTRL:** No response noted
- UMNJ:** Before preparations : explorer with a light touch, visual examination, radiographic evidence, transillumination. During and after preparation: explorer with a light touch, spoon excavator, caries detection dye (occasionally), visual (color).
- NYU:** We are assuming that the question is referring to enamel caries. WE emphasize visual detection on a clean, dry tooth. An explorer is only used to gently remove plaque and stain on enamel surfaces by using it in a scraping motion. Pressure is never applied as a “stick” or trying for that”catch”. The evidence does show that explorers may actually create cavitation. Diagnodent and transilluminators are available in all the comprehensive care clinics and bite wing radiographs are periodically prescribed (frequency based on risk assessment) for all patients with posterior teeth. Transillumination is emphasized for anterior interproximal caries detection. Diagnodent is used with caution as false positives are not that uncommon and with the new ADA recommendations published in JADA this year, all non cavitated lesions are sealed anyway.

- PENN:** Explorer use judiciously, visual, transillumination, radiographs.
- SUNY:** Explorer, visual and radiographic. Explorer should not be used on smooth surfaces in order to avoid surface penetration and cavitation. Smooth surfaces are examined visually and radiographically.
- TEMP:** Visual with a radiograph, transillumination, Diagnodent (not frequently – two units in treatment planning and one in the operative clinic), explorer-resistance “tug”.
- TORO:** Students are exposed in lecture to all current available caries diagnostic techniques/devices but emphasis is placed on visual inspection after thorough drying, magnification, careful, non-forceful use of explorers (only tactile) and bitewing radiographs. Visual methods of occlusal caries detection are used (Eckstrand et al).

TUFT: No response noted

USN: No response noted

5. Does your school use caries detection dye? (Please list product(s). Do students and/or faculty use caries detection dye? What are the criteria?

BU: Caries detection dye is often used, mostly by students. Most of the faculty are wary of relying on it, believing that the dye will stain secondary dentin, making students over cut the tooth. They need to learn how to feel the difference between sound and infected dentin.

CLMB: Caries detection dye is available for demonstration purposes and is not used on a routine basis. Occasionally it is used to demonstrate caries left behind after a student excavation. We use SableSeek by Ultradent. Traditional caries detection methods are emphasized.

CONN: Not taught as a routine method, but students are exposed to this concept and if they want to use it are allowed to try it. Ultradent products are used.

DAL: No response noted.

HARV: No response noted.

HOW: Yes, Ultradent SableSeek. It is available in the clinic, faculty uses dye to demonstrate caries for students.. All visible caries is removed, dye applied, rinsed and any additional stained caries is removed until tactile hardness is achieved.

LAV: No response noted

UMD: Caries detection dye is available (Kuraray caries detection dye) but is not used on a routine basis. The use of caries detection dye is as a teaching aid to demonstrate remaining caries typically at the DEJ.

MCG: No response noted

MTRL: No response noted

UMNJ: No.

NYU: Yes, SableSeek by Ultradent. Students do not use it very often. Faculty have very limited faith in its accuracy although it can be a teaching tool especially when there is obvious visible caries that the student has failed to recognize. Mention should be made that the identification of dentin caries does rely on tactile evaluation using an explorer and/or a spoon excavator. The probe is used in a compressive force to determine if there is a 'stick' or softness in the dentin.

PENN: Caries detection dyes are available on the clinic floor.

SUNY: No.

TEMP: Yes, it is available, but students are not encouraged to depend on it. We use Caries Finder G, Danville Materials and Centrix Expose caries indicator.

TORO: No, Concerns about spilled dye. Also we would rather teach careful, tactile approach. Also there is evidence that dyes stain demineralized but non-infected dentin – i.e. stains, normal a-d dentin and normal circumferential dentin.

TUFT: No response noted

USN: No response noted

IV. Health and Safety Issues Related to Teaching/Practicing Dentistry

1. How are **extracted teeth** with amalgam handled and stored? How long has the protocol been in place? What is the basis/science behind your school's protocol? Are the protocols different for amalgam-free extracted teeth?

BU: Not applicable.

CLMB: All extracted/amalgam/amalgam free teeth are disposed of as medical waste in hazardous waste containers. Extracted teeth w/o amalgam to be used in preclinical exercises are stored in a bleach/sterilizing solution until used, and then disposed of as medical waste.

CONN: We do not do this.

DAL: No response noted.

HARV: No response noted.

HOW: They are disposed of as infectious waster, with or without amalgam.

- LAV:** No response noted
- UMD:** Extracted teeth are not used in any procedures at the school.
- MCG:** No response noted
- MTRL:** No response noted
- UMNJ:** All extracted teeth, with or without amalgam, are disposed of as medical waste. If these teeth are to be used for teaching and research purposes, they are soaked in a sterilizing solution until used.
- NYU:** At NYU extracted teeth with amalgam are handles in accordance with NY State regulations concerning the standards for management of elemental mercury and dental amalgam waste. Each clinical supply dispensary is equipped with containers labeled as “Scrap Metal Recycling” – Contact dental amalgam (in bleach solution), where extracted teeth with amalgam are stored. Protocols have been in place since August 2000. Amalgam free teeth are disposed of in sharps containers located in each dental operatory.
- PENN:** Extracted teeth are used only in preclinical endodontic courses. No teeth with amalgam are accepted. Teeth follow protocol for sterilization . They are stored in sodium hypochlorite for at least 24 hours, followed by autoclave sterilization.
- SUNY:** Al extracted teeth are handled the same way with or without amalgam restorations. They are collected in designated hazardous waste materials containers.
- TEMP:** There are extensive explicit instructions distributed.
- TORO:** Currently, the faculty disposes in conventional manner with other biologic waste.
- TUFT:** No response noted
- USN:** No response noted

2. Have there been **air-quality issues** with fumes and/or particulate matter? What is/are the specific issue? How did the issue surface? (Inspector, complaint, etc.) What was the resolution?

- BU:** No.
- CLMB:** There is an occasional problem in the preclinical lab. It is usually resolved when students turn on their ventilation units and /or filters are changed. The lab is inspected periodically by environmental health and safety without problem.
- CONN:** Air quality has been perceived as a problem in the preclinical lab at times.

- DAL:** No response noted.
- HARV:** No response noted.
- HOW:** No.
- LAV:** No response noted
- UMD:** There have been no complaints or investigations into particulate matter as it relates to air quality issues at our school.
- MCG:** No response noted
- MTRL:** No response noted
- UMNJ:** No. Units in the preclinic have individual vacuum systems and the ventilation system is adequate.
- NYU:** There have been no reported air quality issues either with fumes or particulate matter. Industrial hygiene monitoring for hazardous substances is conducted periodically by the office of environment health and safety.
- PENN:** Issues of fumes from acrylic provisional fabrication, as well as heat from Bunsen burners have been addressed. Air quality was inspected by facilities and found to be safe and within acceptable limits. Bench vents at each unit have been added to aid with the problem. Temperature control has been addressed with the addition of air conditioners.
- SUNY:** Currently (we) have no adequate ventilation system in the preclinical lab to handle fumes and particulate matter. We have reported the problem to our administration. – Dean of Clinic management operations and that resulted in addressing the ventilation issues for this year. We are in the process of negotiating a new simulation lab renovation in October 2009
- TEMP:** Yes, air quality. Report to the Clinic Director, Inspection by Sr. Health Physicist and Industrial Hygienist for the University Environmental Health and Radiation, written report and correction of the issue at hand. Pre clinical labs have sufficient ventilation and are checked periodically.
- TORO:** No, standard protocol for placement/finishing of direct restorative materials and removal of existing restorations to be performed under rubber dam whenever possible to minimize patient exposure to particulate matter and aerosols. Water spray is used in both pre-clinical labs and clinics. The recommended material for provisional restorations is a Bis-GMA composite resin which has no odor. The use of MMA resins (jet) is generally reserved for indirect provisionals. Standard protocol is to mix MMA and perform required procedure under a fume hood then reline in clinic with the standard Bis-GMA material.
- TUFT:** No response noted

USN: No response noted

3. Have there been issues with **noise**? If YES, please respond per the questions asked in the air quality issue.

BU: No.

CLMB: No.

CONN: Noise is perceived as a problem at times when many students are running the evacuation fan at their bench in the preclinical lab.

DAL: No response noted.

HARV: No response noted.

HOW: No.

LAV: No response noted

UMD: There have been no issues concerning noise and decibel levels in the teaching areas.

MCG: No response noted

MTRL: No response noted

UMNJ: No.

NYU: No.

PENN: No.

SUNY: No.

TEMP: No specific issues raised but some older faculty complain about handpieces and suction noise.

TORO: No.

TUFT: No response noted

USN: No response noted

4. What are your school's protocols for dealing with **student** accidental needle sticks, bur punctures, and blade cuts?

BU: There is a protocol on an ID card that students always have. After notifying faculty and director of clinics, they go to occupational health to receive medical attention.

- CLMB:** An incident report is completed by the student and clinical faculty. The student and the patient are taken to occupational health for work up and treatment if required.
- CONN:** They report the incident to the team leader and they fill out an accident report and they and the patient are required to both have blood drawn for analysis. This is tracked and managed by occupational safety at the health center.
- DAL:** No response noted.
- HARV:** No response noted.
- HOW:** Student must complete accident form and present it to clinical dentistry. They are directed to the hospital to employee health for evaluation and treatment. Faculty are required to supervise reporting the incident.
- LAV:** No response noted
- UMD:** Student, staff or faculty sharps sticks within the clinic during patient procedures are managed with a notification of the school nurse and filling out an accident report. If the sharps stick was with an infected sharps, the individual has blood drawn in the oral surgery area and it is tested. The patient is invited to have blood drawn and tested as well.
- MCG:** No response noted
- MTRL:** No response noted
- UMNJ:** An incident report is written, and the student goes to the student health service for treatment accompanied by a clinical affairs administrator.
- NYU:** The college has designated occupational exposure counselors who are available during all clinic sessions to respond to all students and /or personnel who experience accidental needle sticks or occupational exposures. Occupational exposure protocols are posted in each clinical and preclinical area. When an incident occurs, the injured party immediately performs the necessary first aid measure, advises the attending faculty member of the incident, and seeks the designated OE counselor. Depending on the nature and extent of the injury, the injured party may be sent to student health services for further treatment and or assignment. Individuals who sustain an injury from an accidental needle stick during non clinic hours are instructed to contact public safety who are available and on premises 24 hours per day. If necessary and if additional treatment is required the injured party is escorted to the emergency room of the medical center.
- PENN:** SDM has specific protocols for students/patients to be followed if student accidental needle stick occur. A;; students, faculty, and clinical staff are familiar with the protocol.

SUNY: Any injured student or health care provider should be reported to the supervising faculty member and to the associate dean of clinical affairs to complete a post exposure incident report. The injured then needs to be examined by a physician which can be done in occupational medicine or if not available they report to the university hospital emergency room. The injured should then submit the results of the findings in a confidential report to the associate dean of clinical affairs and the risk management officer. All reports are maintained for 30 years.

TEMP: Both clinician and source patient report immediately to occupational health at Temple University Hospital, or the emergency room after hours. Appropriate blood work and examination are done on both. Results are delivered to the student and patient and the student is given advice re: treatment Student monitors follow-up.

TORO: Step 1- If exposure occurs during a clinical session, the student stops the procedure, uses a percutaneous injury kit to apply first aid and reports to the instructor/clinic coordinator, clinic team leader, or a first aid provider.
Step 2- The instructor/clinical coordinator, Team leader or first aid provider assess the injury and complete checklist A, if possible with the patient, if one is involved.
Step 3 – The instructor/clinical coordinator, team leader or first aid provider completes the “personal injury incident report” form.
Step 4 – The student, instructor/clinical coordinator, team leader or first aid provider report, with the patient involved, to the office of the assistant dean/clinics.
Step 5 – The assistant dean, or his designate, will decide, in consultation with the student and whatever other professional advice is deemed necessary, whether it is advisable to attend a nearby hospital, either with or without the patient. If it is deemed advisable to obtain blood from the patient for baseline viral testing, the hospital will be advised.
Step 6 – The student either with or without the patient, goes to the hospital emergency department. Once there the student informs the emergency room receptionist that this is a percutaneous injury from the faculty.
Step 7 – If the student has further concerns following attendance at the hospital, the clinic office will contact the cross appointed virologist at the hospital for an appointment.

TUFT: No response noted

USN: No response noted

5. What are the protocols for **patients** injured during procedures by burs, diamonds, disks, blades?

BU: The protocol is the same as for students, The patient and the student go to occupational health.

CLMB: Faculty member is summoned, patient is triaged, injuries that can be treated chairside, are, incident report is completed and filed with clinical Dean. More serious injuries are referred to OMFS or ER. Patient is accompanied by student and faculty, forms completed, Student will follow up.

- CONN:** They are notified and an incident report is filed regarding the incident.
- DAL:** No response noted.
- HARV:** No response noted.
- HOW:** Patient injuries are handled chairside in our clinics or are referred to the appropriate Service for definitive care.
- LAV:** No response noted
- UMD:** An incident report is filed and the injury is treated according to severity. If the injury occurs from an infected instrument, the protocol for a sharps stick is followed.
- MCG:** No response noted
- MTRL:** No response noted
- UMNJ:** An incident report is written and depending on the severity of the injury, the patient is treated immediately on the clinic floor, given antibiotics if necessary, or referred to the Oral Surgery department if sutures or more extensive treatment is necessary.
- NYU:** In the event of an injury sustained by a patient the attending faculty member is immediately notified by the provider and where indicated immediate first aid is administered. In the event of a more serious injury or swallowing of a foreign body, the emergency medical response team is summoned, the patient is assessed, additional first aid is administered and/or the patient may be escorted to the nearest hospital emergency room.
- PENN:** SDM has specific protocol for students/patients to be followed if accidental sticks occur. All students, faculty and clinical staff are familiar with the protocol.
- SUNY:** Patient will be informed and sent to the University hospital for treatment.
- TEMP:** Depending on the severity the patient is either referred to the oral surgery department or the hospital emergency room if sutures are required. Patient is seen by a physician and placed on appropriate antibiotic if needed. Small lacerations are recorded and treated with pain medication and/or antibiotics if needed.
- TORO:** The percutaneous injury protocol, as above, is followed for extra oral injuries. For intra oral injuries, the student advises the clinical instructor/clinical coordinator undertakes/supervises appropriate management as indicated by nature and extent of injury.
- TUFT:** No response noted
- USN:** No response noted

6. Does your school have concerns with **Bisphenol A** in resin restorations? What is the evidence? If YES, please explain:

BU: No.

CLMB: No.

CONN: No.

DAL: No response noted.

HARV: No response noted.

HOW: No.

LAV: No response noted

UMD: No. Currently the composites and sealants used in our clinics are Bis-GMA based. The concerns of Bisphenol A are with Bis-DMA resins.

MCG: No response noted

MTRL: No response noted

UMNJ: No, there is no evidence of biological effects to humans.

NYU: The college does not have a significant concern at this point. Our primary bonding agent is not a Bisphenol A material. We will watch for future developments.

PENN: Materials containing Bisphenol A are not available in the clinic.

SUNY: We have introduced a new sealant which does not contain Bisphenol A. This was not done because of concerns.

TEMP: No, our composite materials do not contain Bisphenol A.

TORO: Cautionary no, however students are taught to follow the following protocols: Initial adjustment/finishing procedures are completed under rubber dam to minimize patient exposure to resin debris. A cotton pellet is rubbed over the surface of the completed fissure sealant resins to remove any superficial air inhibited resin layer. Patient is asked to rinse thoroughly after placement.

TUFT: No response noted

USN: No response noted

V. Curriculum

1. Has your pre-clinical or clinical operative curriculum recently undergone a significant revision? What changes did you make (additions or deletions)? Why did you make the changes and what positive or negative outcomes have you seen?

BU: Each year programs are upgraded as more applicable knowledge becomes available.

CLMB: Major changes in the curriculum are in the planning stages to take effect in the spring semester of 2010.

CONN: Yes. More exposure to glass ionomer cements and a section on direct veneers.

DAL: No response noted.

HARV: No response noted.

HOW: Preclinical addition: tooth colored only prep, peg lateral and diastema closure restoration. Patient record implant laboratory. These enhance esthetic curriculum, and improve transition to clinical record.

LAV: No response noted

UMD: No significant revisions.

MCG: No response noted

MTRL: No response noted

UMNJ: Yes, we are now using power point step by step demonstrations of all preclinic exercises in operative dentistry. Each student is given a CD containing all power point demonstrations at the beginning of the freshman and sophomore courses, and they view these on their own laptops during preclinical sessions and at other time when no faculty is present. We have seen a faster learning curve for most students and it helps to standardize our criteria and calibrate the faculty.

NYU: No comment.

PENN: Yes. Expanded occlusion component, expanded composite segments, more anterior procedures, hands-on exercise in composite shade manipulation, more posterior composite procedures, included root caries procedures with compomers, posterior composite core build up procedures, porcelain inlay, onlay procedures.

SUNY: In the year II operative clinic typodont exercises were removed. There are two typodont competencies: Class II and Class III required before starting patient care. Patient care is introduced earlier in year II.

TEMP: Our curriculum is ever changing. Our major addition is a senior advanced dentistry course. In our second and third year we implemented more in the area of implants.

TORO: Minor changes in composite resin teaching so there is now an approximate 50:50 ration for composite resin and amalgam teaching preclinical/exercises.

TUFT: No response noted

USN: No response noted

2. What is the time gap (in semesters or quarters) between the end of pre-clinical operative dentistry and the start of clinical operative experiences for your students? Describe the curricular progression of your students in operative dentistry (Example- Freshman pre-clinical operative, Sophomore block clinic rotation, Junior-Senior clinics, or Junior clinic, Senior Comprehensive / General Dentistry clinic). Is there any concern with diminishing knowledge or skills between pre-clinic courses and pre-clinical practice? What types of knowledge or skill erosion did you observe and what have you done about it?

BU: Preclinic ends in June of the second year. Clinic practice begins in August, the start of the third year. First and second year students take preclinical operative and do two six week rotations in private dental practices. The third year is in clinic with a didactic Operative III course. The fourth year is in clinic, with a ten week externship in a clinic.

CLMB: There is presently a one semester gap between preclinical operative and clinical activity. A two to three week review session takes place just prior to the first patient operative experience (chair mounted manikin exercises) to counteract any skill erosion. Operative preclinic is taught, 7 hours per week, in the second semester of first year and in the first semester of second year.

CONN: Time gap is usually about 6 – 7 months. End of first year-10 sessions of preclinical operative, Middle of the second year 20 sessions of preclinical operative. Start seeing operative patients in September of third year. Have Operative exposures from that point until graduation.

DAL: No response noted.

HARV: No response noted.

HOW: Operative lab-six months between manikin and patient exposure for operative procedures.
Freshman: Dental Materials, Dental Anatomy, Occlusion and Restorative Dentistry
Sophomore: Operative and Fixed Lab and lecture, Service rotations to Operative/Fixed Clinic and Caries Management Clinic.
Junior: Operative/Fixed clinic, D3 Restorative Dentistry, Implantology lab and lecture, Caries Management Clinic.

Seniors: Operative/Fixed Clinics, Honors program for advanced case management (by application).

LAV: No response noted

UMD: The gap between preclinical simulation training and the start of clinic is twelve months. To address the concerns for loss of skills and knowledge the students have six projects using a typodont and bilayered teeth to help the student orient to the clinical environment and to review the principles of cavity preparation and restoration.

MCG: No response noted

MTRL: No response noted

UMNJ: Freshman preclinic begins in January of each year and goes thru June (two trimesters) meeting 3 hours per week. Students are taught preps and restorations including Class I and Class II amalgam, Class II, III, IV and V composites. The sophomore clinic begins in September and goes through early June (3 trimesters) meeting 3 hours per week. Students review the exercises of the freshman year and are taught the complex amalgam, gold inlay/onlay preparations, restorations, provisionals, advanced composite preparations and restorations (such as facial approach Class III and slot preparations for Class II). Students enter the clinic for patient treatment in July following the completion of the sophomore preclinic. Hence there is minimal down time between the end of preclinic and the start of clinic. During junior and senior years each student has a three hour session each month in a small group of 8 students to review and perform manikin procedures previously learned in the preclinic. This allows nearly one on one instruction with each student by the faculty in order to correct any misconceptions or problems that students are having with basic procedures.

NYU: No comment.

PENN: The operative course ends in June of the D1 year. Clinical experiences do not begin until June of the D2 year. No operative training occurs after June of D1 year. There is a condensed 2 week refresher course prior to the students beginning their clinical experience. A remedial course is offered to those that show skill/knowledge erosion.

SUNY: Time gap is about 4 months.
Freshman: Preclinical Operative
Sophomore: Clinic rotation first 2 months followed by operative clinic
Junior: Operative Clinic
Senior: Comprehensive/General Dentistry Clinic

TEMP: Students finish their sophomore year in April. During the first summer session (until July1) they are involved in Introduction to clinical dentistry. They are assigned patients in June at the end of the course. They start treating patients in June. During their introduction to clinical dentistry they shadow seniors through our operative clinic and other restorative divisions.

We believe our students have a gradual progression from their freshman year to their senior year with respect to the foundation knowledge both didactically and clinically.

TORO: Three month gap between the second and third years. First and second years are preclinical while third and fourth years are devoted to patient treatment in the comprehensive care clinical program. There is a slight drop off in knowledge and skills over the three month time gap.

TUFT: No response noted

USN: No response noted

Regional CODE Agenda

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

A three hour meeting regarding national activity in Caries risk assessment and minimally invasive dentistry was held prior to addressing the CODE Agenda. Drs. Wolff and Kaim gave presentations regarding the proceedings of the CAMBRA coalition and caries risk and discussions of alterations in caries terminology. We reviewed the list of suggested caries nomenclature changes that would more closely reflect the current thought about caries identification leading to a related change in the ADA caries diagnostic codes.

A discussion was opened on how aggressively schools should be implementing caries risk assessment techniques and it was agreed that it should be widely implemented. Insurance implications and related standards of practice were some of the questions that were discussed.

If we believe in identifying and medically treating non-cavitated demineralizations, how do we insure that they are properly recorded and monitored. The question of when surgical intervention is appropriate, the use of sealants and the short and long term efficacy of this treatment philosophy were discussed.

This discussion will be continued at future CODE meetings.

Suggestions for CODE.

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

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

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

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

3. Other comments/suggestions?

CODE REGIONAL MEETING REPORT FORM

REGION: VI (Southeast)

LOCATION AND DATE OF MEETING:

Medical College of Georgia School of Dentistry

Augusta, GA

October 22-24, 2008

CHAIRPERSON:

Name: Dr. R. Gary Holmes

Phone #: 706-721-2881

Address: MCG

Fax #: 706-721-8349

Augusta, GA

E-mail: rholmse@mcg.edu

List of Attendees:

Please see reverse of this page for List of Attendees to 2008 Regional Meeting

Suggested Agenda Items for Next Year:

LOCATION & DATE OF NEXT REGIONAL MEETING:

Name: Virginia Commonwealth University

Phone #: 804-828-7927

Address: 520 N 12th Street

Fax #: 706-721-8349

Box 980566

E-mail :

Richmond, VA 23298-0566

Date: TBA

Please return all completed enclosures to Dr. Larry D. Haisch, National Director, UNMC College of Dentistry;

40th and Holdrege Streets; Lincoln, NE 68583-0740.

Deadline for return: 30 Days post-meeting

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

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

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

CODE Region VI Attendees Form

NAME	UNIVERSITY	PHONE #	FAX #	E-MAIL ADDRESS
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**2008 NATIONAL CODE AGENDA
REGION VI
SUMMARY RESPONSES TO NATIONAL AGENDA**

(Editor note: Questions condensed for printing purposes)

I. Use of Simulation in Teaching and Testing: Now and in the Future.

Every school is using simulation of procedures in Operative, Fixed Prosthodontics and Endodontics. Each school has seen simulation performance mirror clinical performance. examination. Most agree that it is preferred to using a live patient.

II. Principles of Cavity Preparations - Outline Extension

Most schools break contact slightly for resin restorations.

III. Caries - Treatment/Detection

Most schools are teaching (on a case-by-case basis) incomplete caries removal. Atraumatic Restorative Treatment (ART) is not being taught clinically. There was consensus regarding caries detection, Schools are relying more on tactile caries detection than technical methods (e.g. Diagnodent). Caries detecting die is available, but it is used as an adjunct rather than a substitute for other methods.

IV. Health and Safety Issues Related to Teaching/Practicing Dentistry

Most schools are using extracted teeth and have protocols for handling them. The majority of schools have not had air quality or noise issues. All schools have protocols for student and patient injuries with burs and blades.

V. Curriculum

Schools experience a gap of 3 - 12 months between the end of pre-clinical Operative classes and beginning of clinical Operative experiences. Schools with the longer gaps have implemented review courses for students to reinforce operative techniques.

Regional CODE Agenda

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

Consortium of Operative Dentistry Educators Region VI 2008 Regional CODE Agenda SUMMARY

- 1. List or Describe 5 areas related to Operative Dentistry Treatment that should be researched with clinical trials.**

The most frequently listed research topics: Longevity studies, Adhesive / bonding studies, Alternative tooth preparation designs, Prevention including remineralization and glass ionomers, Caries diagnosis and management, and Hazards in the operatory.

- 2. Is Caries Risk Assessment a routine procedure for ALL patients at your institution? If not, is it used routinely for patients of: STUDENTS, RESIDENTS, FACULTY? Has this policy remained consistent over the past 5 years; or has it increased or decreased? In your opinion, does the CRA significantly influence treatment plans and outcomes? If you are not doing CRA routinely at this time, why not?**

Caries Risk Assessment is routine for patients in half of our schools, policies for its use have not changed in most schools, and when used it does influence treatment plans.

- 3. Has the use of Glass Ionomer Restoratives increased, decreased, or remained the same over the past 5 years in your clinics? Explain this trend; or lack of change. What product(s) do you use and for what applications?**

In all but one school Glass Ionomer use is increasing or has stayed the same. Common uses include Class V Restoratives, luting agents, bases and as caries control provisional restorations. Frequently used products include Fuji and Ketac materials.

- 4 Is there a SUBJECTIVE (non-technical) portion to your clinical grading? Are professionalism, preparation, attitude, time management, and other non-technical behaviors graded and if so, what percentage of the total grade do they account for? Do you calibrate faculty for this evaluation or do you leave it up to their discretion?**

All schools describe a subjective portion to their clinical grading with a variable contributions described; as high as 25% in one school. Faculty calibration is not performed in a consistent fashion.

- 5. What does your operative clinical program do BEST, WORST, and has shown the MOST IMPROVEMENT in over the past five years?**

Best- curriculum updates, prep for board exams, offer a wide range of experiences
Worst- Patient pool, new equipment, reinforcing pre-clinical curriculum clinically
Most improved- incorporating electronic health records, more community experiences

2008 NATIONAL CODE AGENDA

REGION VI RESPONSES

(Evidence cited where applicable)

Region VI School Abbreviations

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

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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)

Use of Simulation in Teaching and Testing: Now and in the Future.

1. What procedures are you currently simulating in the pre-clinical laboratory?

UAB: No response noted.

UFL:	Yes	No	Comments
Operative	X		Composite and alloy restorations
Crown & Bridge	X		PFM crowns and bridges
Endodontics	X		Access and fill of single canals
Periodontics	X		Scaling
Oral Surgery		X	
Pediatrics	X		Pulpotomy. Stainless steel crowns
Esthetic Dentistry	X		Veneers, diastema closure, CEREC, onlays
Implants	X		Surgical template design and fabrication

MCG:	Yes	No	Comments
Operative	X		Class I-V resin, Class I, II, V amalgam
Crown & Bridge	X		Crown & FPD preps, Provisional restorations (multiple techniques) Impressions for indirect restorations, restorations of RCT teeth
Endodontics	X		See response to #3 below

Periodontics	X		Periodontal surgery, suturing techniques on pig mandibles
Oral Surgery		X	
Pediatrics	X		Class II amalgam preps on primary teeth; slot preps on permanent molars; pulpotomies on primary teeth; stainless steel crowns (preps and restorations) on primary teeth
Esthetic Dentistry	X		Veneers (preps and provisionalization); All-ceramic/Procera crown preps
Implants		X	

UKY:	Yes	No	Comments
Operative	X		Kilgore simulated teeth
Crown & Bridge	X		Dentoform for full gold preps, PFM's, and FPD's
Endodontics	X		Teeth mounted in acrylic blocks
Periodontics	X		Teeth for scraping off calculus
Oral Surgery		X	
Pediatrics	X		Dentoform for tooth preps, space maintainer, stainless steel crowns
Esthetic Dentistry	X		Dentoform for porcelain veneers, CEREC CAD/CAM crowns/inlays/onlays, heat processed composite (indirect)
Implants	X		Straumann provides typodonts and hardware for the ITI implant system

ULVL:

Ortho: Simulate a molar upright procedure in the Colombia typodont. In addition, fabrication of a Quadhelix expansion, Hawley retainer and Lingual Holding arch appliances. Competency exam: Fabrication of a lingual arch and a space maintainer.
RPD: rest preps, framework design

	Yes	No	Comments
Operative	X		Operative restorative procedures. Course grade is based on 5 practical exams (paired preparation and restoration)
Crown & Bridge	X		Inlay, full crown, FPD. Part of course grade is based on practical exams.
Endodontics	X		Students do several plastic blocks with simulated root caries. They also do extracted teeth, including one anterior, one bicuspid, a maxillary molar and mandibular molar, and mandibular molar.
Periodontics	X		Suturing, artificial calculus removal
Oral Surgery		X	

Pediatrics	X		Operative restorative procedures, SSC. Part of course grade is based on practical exams.
Esthetic Dentistry			
Implants	X		Simulating placing and impressing the Nobel and Straumann prefabricated abutments in the preclinical course. Also, we are simulating placing and impressing closed-tray and open-tray impression copings.

MMC:	Yes	No	Comments
Operative	X		
Crown & Bridge	X		
Endodontics	X		
Periodontics	X		
Oral Surgery	X		
Pediatrics	X		
Esthetic Dentistry	X		
Implants	X		

UNC:	Yes	No	Comments
Operative	X		
Crown & Bridge	X		
Endodontics	X		
Periodontics	X		Graduate level only
Oral Surgery		X	
Pediatrics	X		
Esthetic Dentistry	X		
Implants	X		

NOVA:	Yes	No	Comments
Operative	X		Jan-July D1 year
Crown & Bridge	X		D2 year
Endodontics	X		
Periodontics		X	
Oral Surgery		X	
Pediatrics		X	

Esthetic Dentistry	X		1 st semester D3 year
Implants		X	

UPR: No response noted.

MUSC:	Yes	No	Comments
Operative	X		
Crown & Bridge	X		
Endodontics	X		
Periodontics	X		Use the lab space but not the simulators
Oral Surgery		X	
Pediatrics	X		
Esthetic Dentistry	X		
Implants	X		Implant restoration

VCU:	Yes	No	Comments
Operative	X		
Crown & Bridge	X		
Endodontics	X		
Periodontics	X		
Oral Surgery		X	
Pediatrics	X		
Esthetic Dentistry	X		
Implants		X	

2. Are there any procedures taught in simulation that a majority of your students do NOT perform in the clinic? Please list

UAB: No response noted.

UFL: Indirect veneers, SS crowns, Pedo pulpotomy, Implant restoration.

MCG: No.

UKY: Porcelain veneers, heat processed composite inlays/onlays/crowns, complex pin amalgam buildups, cast post and cores, CEREC inlays/onlays/crowns.

ULVL: No.

MMC: Implant, inlays, 2nd molar endodontics.

UNC: Implant placement, students have limited exposure to implant restoration. Students have very limited exposure to CAD/CAM technology.

NOVA: No.

UPR: No response noted.

MUSC: Indirect composite inlay. Could be done in the clinic, but isn't commonly done.

VCU: No.

3. Are you utilizing simulation to teach some or all of your PRE-CLINICAL endodontic procedures? Yes/No. If YES, please list.

UAB: No response noted.

UFL: Single canal access and obturation.

MCG: Yes, some procedures. However, students still have clinical expectations. Exercises simulated in Endodontic pre clinical courses:

Endo 5001 (laboratory course for sophomores):

- a. All cases completed at bench top on extracted teeth except for #1.
- b. All cases require completed non surgical root canal therapy (NSRCT)
 1. Maxillary central incisor on a plastic tooth
 2. Maxillary central incisor
 3. Maxillary premolar
 4. Mandibular central incisor
 5. Maxillary molar
 6. Mandibular molar
 7. Maxillary central incisor (Practical exam)
 8. Maxillary premolar (Practical exam)

Endo 5901 (simulation clinic course for juniors):

- a. All cases completed on extracted tooth mounted in dentoform mounted on the dental chair except for # 4, which is mounted in stone and completed at bench top
- b. All cases completed following same protocol for patient (i.e., universal precautions)
 1. Non-molar NSRCT
 2. Molar NSRCT
 3. Maxillary central incisor NSRCT (Practical exam)
 4. Molar access
 5. Maxillary molar access (Practical exam)

UKY: Yes, teeth mounted in acrylic blocks for accessing, cleaning, obturating, and filling.

ULVL: Students do several plastic blocks with simulated root canals. They also do extracted teeth, including one anterior, one bicuspid, a maxillary molar, and mandibular molar.

- MMC:** Yes - students perform root canals on both mounted teeth and the dentoform.
- UNC:** Yes, extracted tooth incorporated into manikin, plastic teeth for developing techniques of instrumentation and obturation.
- NOVA:** Yes – Anteriors – 8 Unmounted access only; 4 Mounted complete RCT
Pre- Molar – 4 Unmounted access only; 4 Mounted complete RCT
Molars – 4 Unmounted access only; 4 Mounted complete RCT
- UPR:** No response noted.
- MUSC:** Yes.
- VCU:** Endo access #5 and #8 - later used for P&C by Pros dept (plastic teeth); access, instrumentation and obturation - anteriors, premolars and molars (natural teeth).

4. Are there any required CLINICAL competencies that you test on typodonts rather than patients? Yes/No. If YES please list.

- UAB:** No response noted.
- UFL:** Crown preparation competency as a prerequisite for clinical entry. Pediatric pulpotomy and SS crown when patient is not available.
- MCG:** No.
- UKY:** Yes. Endodontic (See questions #1) along with board review preparations (Class II) for operative dentistry.
- ULVL:** Ortho: fabrication of a lingual arch and space maintainer.
- MMC:** Yes. Operative and Prosthodontics and Endodontics.
- UNC:** No. All operative clinical competencies are on live patients.
- NOVA:** Yes. Class II preparations and restorations in the D3 and D4 years. These lesions are often difficult to find in patients.
- UPR:** No response noted.
- MUSC:** Yes. We conduct a Clinical Competency Exam in the simulation lab at the end of the Junior year and a “Technical Assessment” also in the simulation lab in the middle of the Senior year. These tests include clinical competencies in Operative, Fixed Pros, Removable Pros, and Endodontics.
- VCU:** Juniors must pass all competencies on typodonts before challenging the competencies on patients (operative dentistry requirement.) Juniors must pass a competency for a single unit PFM (#8?#9) and for a posterior FPD

(#18/#20) including impression and fabrication of interim coverage on the typodont, before attempting same on patients (Prosthodontic requirement).

5. Besides the standard uses for typodonts and simulation that most schools are teaching such as cavity preparations, crown preparations, etc. what innovative or new techniques have you incorporated into your simulation laboratories?

UAB: No response noted.

UFL:

1. "Build-a-Tooth" using a tooth form mold to teach esthetic composite layering.
2. CEREC exercise on typodont.
3. Fitting and cementation of resin inlay on typodont.

MCG: Mounting extracted teeth in the operative dentoform with VPS for simulated operative procedures. The grading model is based on a clinical competency examination.

UKY: Use of the Lumens Digital Visualizer to demonstrate Class IV composite preparations, demonstration and use of the CEREC CAD/CAM machine.

ULVL: None.

MMC: Veneers, CAD/CAM through hospital dentistry

UNC: No additional techniques.

NOVA: We have a cosmetics course in the fall semester of the D3 year where we have a lecture first and then meet in the simulation lab to teach the following techniques:

1. Color management and communication with the lab technician.
2. Intraoral photography.
3. Bleaching.
4. Direct composite veneers.
5. Porcelain inlays, onlays, and crowns.
6. Resin cements
7. Porcelain repair

UPR: No response noted.

MUSC: We have the students mount sterilized extracted natural teeth in the typodont using an injectable silicone die material. Also, our first and second year students are using electric handpieces exclusively.

VCU: Virtual reality simulation (20 units).

6. Do you use performance in the simulation lab as a means to identify superior students? (For example selection into honors programs). Yes/No. If YES please explain:

UAB: No response noted..

UFL: No.

MCG: No.

UKY: No.

ULVL: No.

MMC: No.

UNC: Preclinical lab and didactic performance is incorporated into overall assessment of class rank.

NOVA: We do use performance in the sim lab to select honors students for Prosthodontics. We also use it to assist in selection of teaching assistants and for selection of peer tutors in both Operative and Prosthodontics. We also have a contest in the Cosmetics Course for “Best Case Presentation”, all students are encouraged to work up and present a cosmetics case at the end of the course.

UPR: No response noted.

MUSC: No.

VCU: No, but there is a correlation (anecdotal, no supporting data).

7. Is it your observation that student performance in simulation mirrors their performance in the clinics with similar procedures? Yes/No. Please explain:

UAB: No response noted.

UFL: Students make the transition from preclinic simulation to clinic relatively seamlessly. Student’s that perform better in preclinic seem to adapt faster and perform better in clinic.

MCG: Yes. Those who are better able to utilize indirect vision in lab are more likely to use it appropriately in clinic.

UKY: Yes, students who demonstrate attention to detail and organization tend to reflect this in their clinical performance on patients.

ULVL: Yes. In Dental Anatomy (simulation not used but in carving anatomy) and in preclinic operative, those that have trouble generally experience difficulties in clinic.

MMC: Yes - in the preclinic Operative Course. The student that demonstrates the best performance can usually carry the same performance to the clinics, especially while eliminating the “fatal errors of cavity preparation” and restoring proper anatomy.

UNC: Students that demonstrate excellent control of instruments and restorative materials preclinically usually demonstrate the same clinically. This does not apply to management of the clinical operating field, anesthesia, patient fatigue, etc.

NOVA: We do find that the performance in the Sim lab usually mirrors performance in the clinic. We feel that on both extremes of the spectrum this could be seen as an indicator. In other words both the top students and those that struggle seem to maintain their sim levels in the clinic. The thing it doesn't mirror is interacting with patients directly, such as aggressively appointing patients and getting a lot of treatment accomplished. We typically see there are some students who become gun shy with real patients when they have performed very, very well in the Sim Lab. They still do the work well, but they may not get as many procedures done as some other students that don't have the same hand skills but shine in efficiency. Of course you know that the more procedures that are done the better you become.

UPR: No response noted..

MUSC: Generally speaking, this seems to be true, but no more correlation than seen with their preclinical performance on non-simulator teaching models. Decidedly weak students can usually be identified rather early with both methods.

VCU: Yes, we believe (no data) that it follows the classical bell curve distribution.

8. Has it been your observation that students who perform better in the simulation laboratory are more successful in licensing examinations? Yes /No Comments:

UAB: No response noted..

UFL: Generally yes, but some of our better students have done poorly on licensing examinations due to poor patient selection, lesions not being acceptable to the examiners.

MCG: Possibly. Our students are very successful on licensing exams. Preclinical simulation allows us to identify students with difficulties earlier than previously.

UKY: No, this has not been looked at closely.

ULVL: Generally, yes. However, occasionally a student who has performed well in pre-clinic and clinic has failed a regional exam and a student who has not performed well has done well on a regional exam. (Although not mentioning simulation, the following is insightful)
A Comparison of Dental School Experiences Between Passing and Failing NERB Candidates, 2001. J Dent Ed, Volume 67, Number 3, 2003.
The purpose of this report is to compare outcomes on the North East Regional Board of Dental Examiners (NERB) clinical examination to

selected measures of academic performance in one U.S. dental school. The data came from results of the spring 2001 NERB examination at that school. Five measures of academic performance—number of Class II amalgam restorations completed, number of Class III/IV composite restorations completed, fixed prosthodontic units performed, fourth-year class rank, and GPA—were compared between those who passed and those who failed NERB’s restorative exercise (RESTOR) and provisional fixed partial denture exercise (SIM). Analyses could not confirm a positive relationship between the school performance measures and the NERB outcome of passing RESTOR on the first attempt. On the other hand, those who passed SIM on the first attempt had, on the average, performed more amalgams, composites, and fixed prosthodontic units as students than those who failed; they also had, on average, better class rank and higher GPA. Therefore, only performance on SIM related to performance in school. However, both RESTOR and SIM had a similar number of failures from the top as well as the bottom portions of the class. These preliminary data from one dental school class raise questions about the validity of the NERB clinical examination for licensure decisions.

MMC: No - the relation to simulation and licensure performance has not been observed.

UNC: We do not currently have that information, however, current revision plans include tracking of performance from preclinical through licensure.

NOVA: Our success rate has been very high so I would not be able to answer this accurately.

UPR: No response noted..

MUSC: Not necessarily. We still see some excellent students who have performed well in the simulation laboratory and in the clinics have trouble on the licensure examinations as well as poor students who have no problem at all with the licensure exam.

VCU: If the answer to #7 is correct, then it would follow that some students would have better results on the licensing exams. However, we have in the recent past, been extremely successful on the licensing examinations. So, at best, trying to make a valid correlation would be guess work.

9. The Western Regional Boards is reluctant to adopt a simulation crown preparation as part of their examination even though other testing agencies with results accepted by over forty states have used simulation for over 10 years. Is there any evidence that would demonstrate that the manikin crown procedure is not a valid or reliable way to test competency for a licensure candidate? Please explain and provide references.

UAB: No response noted.

UFL: No.

MCG: No.

- UKY:** We have not come across any evidence. What about variability of tooth position and patient factors such as behavioral management, medically compromised patients, and biological factors (i.e., xerostomia, etc.)?
- ULVL:** Literature search did not produce results.
- MMC:** No - none.
- UNC:** No, but is there any evidence that it **IS** valid or reliable either? With the amount of crown and bridge work done in the US annually, I feel strongly that some form of examination **SHOULD** be on these state/regional exams related to C&B. We've used manikin exercises for decades as a "gateway" from 2nd to 3rd year here at UNC, and it appears to translate reasonably well to clinical performance. That being said, manikin exercises always use "ideal" or "virgin" initial tooth forms, which we rarely (if ever) see clinically. A better method of assessment (which we used in DENT 204 this year for the first time) was to take a broken down dentin/enamel tooth (missing at least 2 cusps), have the student do a foundation on it (we did a pin amalgam on a molar and a pin / conventional retention comp core on a premolar), THEN have the students prep these for a crown, and make a provisional. The results were interesting, but enlightened the students as to the necessity for good core foundations, appropriate retention mechanisms for them, and what can happen to the crown preps if the foundation is inadequate. A better clinical simulation? Perhaps better than simply prepping a "virgin" tooth for a crown. While we should teach to an ideal level, the use of "virgin" manikin teeth may not be the best way to do so, since it is so remote from anything you'll find clinically. However, given the "virgin" tooth scenario for regional boards, if someone cannot prep an un-restored tooth to an ideal form, I seriously doubt their abilities to prep a compromised tooth either. What's currently used should be about as easy as it gets."
- David A. Felton, DDS, MS, FACP
Professor, UNC School of Dentistry
Editor-in-Chief, Journal of Prosthodontics
Diplomate, the American Board of Prosthodontics
Past-president, the American College of Prosthodontists
- NOVA:** The location of finish lines would not reflect the clinical situations due to the limitations of gingival retraction procedure in the typodont . Additionally, the restrictions of typodonts to simulate the border movements may limit occlusal table evaluations in manikins. These may lead the students to have a different mind set about what a finished preparation and the interocclusal clearance should resemble.
- UPR:** No response noted.
- MUSC:** We're not aware of any evidence against manikin testing for crown preparations. Objections to this testing modality appear to be anecdotal.
- VCU:** Not to my knowledge. Recently, one of our faculty members, along with faculty from other WREB participating schools, was charged with

evaluating this very topic. He informs me that they were unable to find any evidence supporting this contention.

II. Principles of Cavity Preparations - Outline Extension

Earlier this year the following questions were asked and the results were posted on the CODE web site (<http://www.unmc.edu/code/>). Schools should again respond and expand on as requested. Answer each questions and provide the rational/evidence for each answer. Are these conceptions taught in the pre-clinics then applied in the clinics? If NO, please comment.

1. Must facial, lingual, and gingival walls be extended to completely break contact with the adjacent tooth if not dictated by varies/penetrable decalcification? Yes/No. Rational/Evidence. Applied?

UAB: No response noted.

UFL: Yes.

MCG: Class II Amalgam more likely to break contact with adjacent teeth
Class II Resin less likely to break contact
Class III Resin only break contact when necessary
Rationale-to conserve tooth structure

UKY: Yes. Amalgam preparations need to be extended so that the dentist can properly finish (carve) and polish the amalgam.

ULVL: Yes, minimally in all extensions. There are exceptions (e.g. if malposition of the tooth would cause excessive removal of tooth structure to break an otherwise sound contact). Sturdevant's Art and Science of Operative Dentistry advocates clearing the adjacent tooth by only .2 to .3mm (page 740) but this is based on a reference dated 1972!
Applied: yes
Extension for prevention: is it relevant today? Osborne JW, Summitt JB. Am J Dent. 1998 Aug;11(4):189-96. Placing proximal margins in sound tooth structure that just clears an adjacent tooth is also strongly advocated. Sound enamel margins in certain areas may occasionally be left in contact with adjacent teeth for amalgam preparations. For Class II preparations for composite resin, facial or lingual proximal bevels will usually suffice to separate the margins from the adjacent tooth to allow finishing and polishing at the margins. Preventing unnecessary extension and allowing sounder tooth structure to remain is one important aspect of helping patients to maintain their teeth for their lifetimes.

MMC: Yes - the rational has to do with the pattern of decay on Class III and Class II lesions and the fact that SERTA Examination expects the candidate to break the proximal contacts.

UNC: For posterior restorations: when using amalgam contact should be broken in order to assess condensation and marginal adaptation. When using

composite contact need to be broken because material approximation at cavosurface margin is assumed. This is applied in the clinic.

NOVA: In the pre-clinic we teach that contact must be broken facial, lingual and especially gingival for both amalgam and composite Class II restorations. If contact is not broken gingivally the students have a very difficult time with the matrix bands and clinically will many times not extend into the decay since the decay is gingival to the contact. We require that you can see “light” all the way around although 0.2-0.3 mm is ideal. With a Class III we do not require that contact be broken incisally but be barely broken facially and gingivally. In the clinic we try and follow the principles taught in the pre-clinic courses although there are times when the tooth dictates a variation in the preparation.

UPR: No response noted.

MUSC: Yes for amalgam; not necessarily for composite. Rationale for composite is to conserve tooth structure. It isn't necessary to arbitrarily break all contact for resin composite restorations because the material manipulation characteristics are different from those of amalgam. We apply these concepts in the clinics.

VCU: Yes. Minimally, for access to finish cavosurface margin. However, we are rethinking this position and clinically some instructors are basing it on a case by case approach.

2. Is there a difference in extension criteria between Class II amalgam and Class II composite preparations? Yes/No. Rational/Evidence. Applied?

UAB: No response noted.

UFL: Students use minimally invasive slot-type preps for Class II when appropriate and directed by faculty.

MCG: Yes. If one or more cavity walls is left in contact with an adjacent tooth, this could decrease proximal wear possibly.

UKY: Yes. There is no need to break contact with composites since a sanding strip can be used to finish and polish this area.

ULVL: Yes. For composite, a minimal amount of facial contact may remain if the tooth structure is solid. Rational: Wear of composite at the contact area may cause drifting of tooth. Maintaining tooth-to-tooth contact will help avoid this movement. Sturdevant on composite: The extent of the carious lesion and the amount of old restorative material are two factors that dictate the facial, lingual, and gingival extension of the proximal box of the preparation. Although it is not required to extend the proximal box beyond contact with the adjacent tooth, it may simplify the preparation, matrix, composite insertion, and contouring procedures. If all of the fault can be removed without extending the proximal preparation beyond the contact,

however, the restoration of the proximal contact with the composite (a major difficulty) is simplified. Applied: yes.

MMC: Yes - for composites if the extent does not go past the cervical contact area, the lesion can be restored without breaking the contact because we ask the students to pre-wedge for separation of the teeth and to aid in reestablishing proper contact. For the amalgam, breaking the contact allows for the matrix, adaptation and proper carving and contour of the cervical margins.

UNC: Yes, see previous answer to #1.

NOVA: Yes. In preclinic we use the same criteria so as to standardize the preparation and have the students practice their preparation skills. In the clinical situation the composite preparation follows the criteria of “minimally invasive dentistry”.

UPR: No response noted.

MUSC: Yes. See previous answer to #1.

VCU: Yes. Very minimally using a 7901 or hatchet to achieve a smooth edge for better bonding.

3. For the anterior Class III, is it required that proximal contact be broken gingivally? Facially? Incisally? Yes/No. Rational/Evidence. Applied?

UAB: No response noted.

UFL: Contact is broken lingually and gingivally, but not facially or incisally.

MCG: Clearance and margin location is primarily dictated by the location of the lesion.

UKY: Gingivally? No. Facially? No. Incisally? No. You don't want to break contact facially since you're trying to preserve the esthetics.

ULVL: Gingivally – yes. Facially – yes, minimally. Incisally – no. Rationale: Maintain incisal contact in order to limit movement of the tooth due to wear of composite contact. Sturdevant: The external walls are extended to sound tooth structure during preparation of the outline form, but only to the initial limited prescribed depth. This extension should be as minimal as possible, dictated by the extent of caries or old restorative material. Unless absolutely necessary, one does not (1) include the proximal contact area, (2) extend onto the facial surface, or (3) extend subgingivally. Applied: yes.

MMC: No - because the extent of the decay determines the outline form and pre-wedging will allow for placement of the matrix system and proper contacts. We follow the SERTA Guidelines for licensure exams.

UNC: Contact is broken facially, and gingivally but no incisally. The approach to the decay and the vertical dimensions of the anterior contact allow removal of caries (usually just below the contact) without removal of entire contact area. This is applied in the clinic.

NOVA: Again in the preclinic we have criteria for the student to follow for practice which includes barely breaking contact facially and gingivally but not incisally. In the clinic, we follow the principles of “minimally invasive dentistry” and modify the preparation to remove decay while involving the least amount of tooth structure.

UPR: No response noted.

MUSC: Gingival: yes. Facial and incisal: no. In most Class III preps, by the time convenience form is attained, the gingival contact is broken. The facial and incisal contacts are preserved if possible to conserve tooth structure and for esthetics.

VCU: No. We try to maintain facial and incisal contacts.

4. What questions/comments do you have based on the survey results? See CODE web site (<http://www.unmc.edu/code/>)

UAB: No response noted.

UFL: There seems to be little consensus. If this is due to a lack of adequate evidence in the literature, than it is indicative that clinical research is needed.

MCG: Unfortunately, there was a limited consensus. We agree with the general sentiment of the survey results.

UKY: No response.

ULVL: No response.

MMC: The comments basically mirror what we attempt to teach in our preclinical and clinical settings.

UNC: Why is there no consensus?

NOVA: Looks like the trend is to break gingival contact only since that is where the decay usually is and leave the buccal and incisal walls intact. We have nor problem with this except our boards still demand that contact is broken all around.

UPR: No response noted.

MUSC: After seeing the variations in teaching philosophy, how can a licensure board formulate standardized criteria for a Class II resin composite preparation for their examination?

VCU: Why are we all over the spectrum on these points?

5. Other comments related to Principles of Cavity Preparation other than those outlined.

UAB: No response noted.

UFL: Suggested survey questions:

1. Are retentive features such as gingival groove used in Class V composite preps?
2. Are proximal box retentive grooves used in Class II alloy preps?

MCG: Is there any evidence regarding depth requirements for Composite? Margin design (butt versus bevel) for non-esthetic areas?

UKY: No response.

ULVL: No response.

MMC: No response.

UNC: Preservation of healthy tooth structure should be the primary objective with margin placement and design with restorative material limitations in mind.

NOVA: No response.

UPR: No response noted.

MUSC: No response.

VCU: No response.

III. Caries - Treatment/Detection

Treatment of deep carious lesions by complete excavation or partial removal - A Critical Review, JADA, Vol 139, 705-712, June 2008

(This is not a repeat of a related agenda question, 1999, 2007)

1. Does your school teach the concept of incomplete caries removal? Yes/No. If YES, for how long? How well accepted and applied by the faculty? If NO, why not? Should it be taught?

UAB: No response noted.

UFL: For five years a protocol for Indirect Pulp Capping which details procedures for leaving affected dentin when restoring deep carious lesions

has been taught and practiced in Operative Clinics. This protocol has been agreed upon by Operative, Endodontic, and Pedodontic Departments. This technique is generally accepted and practiced by faculty, though some members of the Prosthodontic and Endodontic departments are holdouts.

- MCG:** Yes. Usually this is on a case-by-case basis depending on the faculty covering. Normally all decay is removed except the decay directly over the pulp. The tooth is provisionally restored with RMGI (Fuji II LC). When the Sedative restoration code is entered in Axium, a series of intermediate procedures is added (e.g. restorability, pulpal health, etc.). There will normally be a twelve week wait until a definitive restoration is placed.
- UKY:** Yes, being known as indirect pulp therapy. It has been taught for approximately 30 years. Most of the faculty is briefed, but there may be some variation as to when to use temporary or permanent restoration afterwards. Yes, it should be taught.
- ULVL:** No, we do not teach incomplete caries removal unless an indirect pulp cap is indicated. Then we will re-enter at a later time to remove residual carious material. Although the critical review says that leaving caries is acceptable, it does not address the impact of this procedure on bonding. ***Effects of de- and remineralization of dentin on bond strengths yielded by one-, three-, and four-step adhesives. J Adhes Dent. 2008 Feb;10(2):119-26.*** PURPOSE: To assess the effect of different peri- and intertubular dentin mineralization conditions and etching on shear bond strength in vitro. Sixty specimens were subjected to a demineralizing solution (DS) and another 60 teeth to a bacterial-based laboratory caries model (*S. mutans*, SM). Thirty specimens of each demineralization protocol (DS and SM) were randomly selected and Remineralize (-R). SM samples showed the lowest bond strength of all adhesive systems (range 1.1 to 1.5 MPa, $p > 0.05$). CONCLUSION: The degree of mineralization of the dentin is important for adhesion. Additional etching with phosphoric acid reduced bond strength of a three-step adhesive. ***Bond strength of two total-etching bonding systems on caries-affected and sound primary teeth dentin. Int J Paediatr Dent. 2008 Jan;18(1):62-9.*** AIM: As bond strength of currently available adhesive systems in caries-affected teeth dentin on primary tooth dentin was not well known, the bond strength of two bonding systems (PQI and OptiBond Solo Plus) was evaluated on caries-affected and sound primary molar tooth dentin and observed the micromorphology of the adhesive-dentin interfaces. CONCLUSION: Both the adhesives showed significantly different bond strengths in caries-affected dentin but showed similar bond strengths in sound dentin. ***Histomorphologic characterization and bond strength evaluation of caries-affected dentin/resin interfaces: effects of long-term water exposure. Dent Mater. 2008 Jun;24(6):786-98. Epub 2007 Nov 19.*** OBJECTIVES: To evaluate the longevity of sound (SD) and caries-affected dentin (CAD) bonds made with etch-and-rinse and self-etching adhesives after a 6-month water-storage period, using bond strength and morphological evaluations. RESULTS: microTBS to SD was significantly

higher than that to CAD for all bonding agents. Bonds made with AdheSE were weaker than the other adhesives (Adper Scotchbond 1 & Clearfil Protect Bond) after 6-months storage regardless of the dentin substrate. CAD bonded interfaces are more prone to hydrolytic degradation than SD bonds. Additionally, as compared to SD, there were remarkable differences in depth of demineralization, adhesive infiltration and interfacial bond strength with CAD.

- MMC:** No - there is no evidence from the licensure board that they accept the notion of “infected and affected” dentin. SERTA is very strict on candidates removing carious tooth structure.
- UNC:** UNC uses the notion of indirect pulp capping with deep caries in asymptomatic teeth. UNC teaches removal of all carious tooth structure in most cases. This is based on the opinion of full professors with multiple decades of experience. It would be appropriate to re-visit this long standing policy taking into consideration more recent studies.
- NOVA:** We teach the “indirect pulp cap” in the Operative pre- clinic course. We also teach that in an institutional teaching facility it is very difficult to monitor these patients and many may not understand the procedure and consequences. Many times it is difficult to get buy in from the Endodontics department who are worried that without careful monitoring the canals may become calcified.
- UPR:** No response noted.
- MUSC:** Yes. Forever. Indirect pulp caps are preferable to pulp exposure under the right clinical conditions. “Permanent” or interim restorations are placed depending on the clinical case presented. More and more “permanent” restorations are being placed than in years past. Well accepted by the faculty and it should be taught.
- VCU:** Taught one on one (case by case) in the clinic depending on individual faculty. There are numerous variables to consider in each case including: pulpal proximity, patient age, financial, restorability, longevity, etc.

2. Other comments related to the meta-analysis on this topic?

- UAB:** No response noted.
- UFL:** No response.
- MCG:** No.
- UKY:** I agree with the conclusion of this article and we teach the “partial caries removal” concept. I emphasize restoring the tooth with a permanent restoration to prevent a second traumatic procedure “re-entering” the lesion, but we also teach the two-step method and temporization.
- ULVL:** No response.

MMC: Our students are taught to identify infected versus affected dentin and to be able to identify the difference between the two. However, they are also taught to remove all carious tooth structure when taking licensure exams (mainly because certain boards do not accept the practice of not removing affected dentin).

UNC: What are the dimensions of the “remaining caries” and is the restoration seated on firm tooth structure?

NOVA: Even though the results of the studies are worth considering, the sample size of the mentioned clinical studies in the review article is not big enough to implement this new concept into the predoctoral clinic. The clinical cases have so many variables that it makes it difficult to advocate leaving some carious tissue based on the present literature, especially in a school environment. The constant turnover of graduating students may lead to frequent patient transfers, which add additional challenges to the patient monitoring phase.

UPR: No response noted.

MUSC: No response.

VCU: No.

3. Is Atraumatic Restorative Treatment (ART) taught for root caries? What has been the experience?

UAB: No response noted.

UFL: ART is introduced in the curriculum as a treatment to be utilized when treating coronal caries in primitive facilities and by mid-level providers. It is not taught as a specific root caries treatment, though in many cases minimal preparation and GI restoration is recommended for root caries.

MCG: No.

UKY: No. The technique for removing caries with a spoon excavator (no handpieces) and placing glass ionomers is not emphasized. Sufficient tactile sensation and visual identification using a slow speed is taught. The ART technique should be designed more for 3rd world countries with inadequate dental resources.

ULVL: If ART is defined as excavating and removing caries using hand instruments only and then restoring the tooth with an adhesive filling material (glass ionomer)...no, we don't teach that technique for root caries. We use slow speed handpiece and hand instrumentation. Minimal or no retentive grooves are placed and we restore with resin-modified glass ionomers in most cases.

Surface antibacterial properties of glass ionomer cements used in atraumatic restorative treatment. J Am Dent Assoc. 2007

Oct;138(10):1347-52. BACKGROUND: Atraumatic restorative treatment

(ART) is recommended for use worldwide, not only in developing countries where resources are not readily available, but also in more industrialized countries. The antibacterial properties of restorative dental materials may improve the restorative treatment outcome. Glass ionomer cement (GIC) has been advocated as the preferred restoration material for ART. CONCLUSIONS: Conventional GICs used in ART showed antibacterial surface properties against cariogenic bacteria for at least one week. Further study on the long-term antimicrobial effects of GICs is needed. CLINICAL IMPLICATIONS: The antimicrobial properties of freshly prepared restorative materials and aged restorative materials used in ART have a potent effect against cariogenic bacteria. These properties have crucial importance in preventing secondary caries.

Three-year survival of single- and two-surface ART restorations in a high-caries child population. *Clin Oral Investig.* 2007 Dec;11(4):337-43. Epub 2007 Aug 21. The aim of this study was to evaluate the survival of single- and two-surface atraumatic restorative treatment (ART) restorations in the primary and permanent dentitions of children from a high-caries population, in a field setting. Three-year cumulative survival for single-surface ART restorations in the permanent dentition was 29.6%. Main failure characteristics were secondary caries and gross marginal defects. An operator effect was found only for two-surface restorations. The results show extremely low survival rates for single- and two-surface ART restorations in the primary and permanent dentitions.

ART for treating root caries in older people. *J Dent Res.* 2006 Oct;85(10):929-32. INTERVENTION: Root caries lesions were prepared either using the atraumatic restorative technique (ART), using only hand instruments then restoration with a high-strength chemically cured glass-ionomer material (Ketac Molar; 3M Espe, Seefeld, Germany), or conventionally, using dental burs and restoration with a resin-modified glass-ionomer material. (Fuji II LC, GC Corporation, Tokyo, Japan). There were no statistical differences between the two types of restorations for each of the USPHS criteria or for 12 month cumulative survival rates (ART, 87.0%; conventional treatment, 91.7%). CONCLUSIONS: In elderly people living in care homes, the 12-month survival rate of glass-ionomer restorations placed on root surfaces using the ART was high and comparable with conventional restorations.

The atraumatic restorative treatment (ART) approach for managing dental caries: a meta-analysis. *Int Dent J.* 2006 Dec;56(6):345-51. The number of publications reporting on the survival of ART sealants and ART restorations has increased considerably in recent years. A systematic investigation of their longevity is therefore warranted. Based on three exclusion criteria, a literature search in the electronic libraries Pubmed and Medline revealed 28 eligible publications for inclusion in a meta-analysis. High mean survival rates for single-surface ART restorations using high-viscosity glass-ionomer in primary dentitions over 3 years were found (95% after 1 year to 86% after 3 years). These rates were statistically significantly higher than for those of multiple-surface ART restorations in primary dentitions ($p < 0.0001$). High mean survival rates for single-surface ART restorations using high-viscosity glass-ionomer in permanent dentitions over 6 years were found (97% after 1 year to 72% after 6 years). The mean annual failure rates for single-surface ART restorations using

high-viscosity glass-ionomer in primary and permanent dentitions and for multiple-surface ART restorations in primary dentitions are 4.7%, 4.7% and 17%, respectively. The number of studies reporting on the retention and caries preventive effect of ART sealants was low. It is concluded that single-surface ART restorations using high-viscosity glass-ionomer in both primary and permanent dentitions show high survival rates. Medium-viscosity glass-ionomer should not be used for ART restorations.

MMC: No, the technique is not used.

UNC: No.

NOVA: No – It is mentioned briefly in didactic courses but there is not a lab simulation or clinical application in the curriculum due to the fact that the students will not be using that technique in a routine manner.

UPR: No response noted.

MUSC: No, except for removal of carious shallow lesions with scaling procedures.

VCU: No.

4. What methods of caries detection are taught in schools (e.g., Explorer (how used), visual, Diagnodent, transillumination, fluorescence, other?)

UAB: No response noted.

UFL: Explorer use for pit and fissure exploration is discouraged in pre-clinical courses, however is still practiced by many clinical faculty. Diagnodent use is taught in pre-clinic, but not practiced extensively in clinics. Visual inspection is encouraged and practiced in clinics. Transillumination is used sparingly.

MCG: Explorer is used in grooves and on enamel (not on dentin). Visual, transillumination. Diagnodent has been available in clinic for some time, but is not used often.

UKY: Methods taught include explorer (lightly probed over a demineralized area), visual, transillumination, and caries indicating dyes. There is a Diagnodent available, but rarely used. We do not have the computer software for fluorescence.

ULVL: Explorer (light touch), radiography, visual, transillumination, caries detection dye.

MMC: Explorer - must not penetrate dentin. Spoon excavator - used to remove all carious dentin.

UNC: Visual assessment of demineralization (translucency/opacity) is first. Aggressive explorer use is discouraged. Light pressure with a sharp

explorer tine is encouraged. Transillumination is encouraged especially for anteriors. Diagnodent is not utilized because of its high false positive rate.

NOVA: We teach the students not to rely on any one method but to use several in order to evaluate the tooth for caries. The explorer is used judiciously along with the Diagnodent and magnification.(loops).

UPR: No response noted.

MUSC: Visual, explore (slightly dull, don't "stab" non-cavitated decalcifications or "white spot" lesions), radiographs, transillumination.

VCU: Explorer, visual and transillumination.

5. Does your school use caries detection dye? (Please list product(s). Do students and/or faculty use caries detection dye? What are the criteria?

UAB: No response noted.

UFL: Caries detection dye is not used due to its poor specificity in staining affected and mantle dentin.

MCG: SableSeek is available in all clinics. Students are taught about it in the freshman operative preclinical course on extracted teeth.

UKY: SableSeek (green) and Seek (red). Both students and faculty can use these dyes. Criteria is individual preference in determining complete caries removal.

ULVL: Yes. Ultradent. Students mostly. Criteria: Dye is an adjunct in the identification and removal of decay. They are not specific for infected dentin. Over-preparation is a possibility. We indicate that the dentin that is heavily stained by the dye should be removed but lightly stained dentin may be sound.

Evaluation of a new caries detecting dye for primary and permanent carious dentin. Journal of Dentistry, Volume 35, Issue 2, February 2007, Pages 137-143. When dentin stained with Caries Check was completely removed, the DIAGNOdent readings were higher than those recorded when palely-stained pink dentin was retained with the Caries Detector, with significant difference observed for the permanent teeth. Caries Check may be used clinically to avoid excessive removal of caries-affected or sound dentin in permanent teeth but not in primary teeth. Primary dentin was more porous, especially for the dentin close to pulp. Thus, deeper penetration of dye in the caries-affected dentin and excessive dentin removal may occur.

MMC: Expose Caries Indicator (fine, red, micro applicator) - wet applicator, apply on dentin in questions, remove carious dentin.

- UNC:** Caries dyes are not utilized because of non-specific protein binding. The dyes have low sensitivity (lead to many false positives) for caries detection.
- NOVA:** The caries detection dye is dispensed to the students upon a request from their faculty. It is not a routine or a mandatory method of caries detection. The brand that is used is Henry Schein. Caries detection dye differentiates mineralized dentin from demineralized (or less mineralized) dentin. It is an extra aid in diagnosis but the students are taught that it may stain all porous surfaces (including the non-carious deep dentin). They should watch out for false positives. Sometimes the student tends to remove all the staining without consulting the faculty. Therefore they are advised to call the faculty over to check frequently. Especially if every other finding other than the persistent staining by the dye shows that the caries is removed, they are advised to stop and consult.
- UPR:** No response noted.
- MUSC:** Yes, but not routinely in student clinic. Products: Ultradent SableSeek , Schein Caries Indicator, Basic Fuchsin Red. Criteria: When in question, use it. To be used as a guide rather than an accurate diagnosis of caries.
- VCU:** Caulk caries finder is available in faculty practice, (virtually no one uses it). Caries Finder G (Danville Materials) is used in undergraduate clinics. We don't have a specific protocol for usage. Once again, this is a case by case determination.

IV. Health and Safety Issues Related to Teaching/Practicing Dentistry

1. How are **extracted teeth** with amalgam handled and stored? How long has the protocol been in place? What is the basis/science behind your school's protocol? Are the protocols different for amalgam-free extracted teeth?

- UAB:** No response noted.
- UFL:** Extracted teeth with and without amalgam are red-bagged and incinerated.
- MCG:** Extracted teeth with amalgams are segregated at cleanup and returned to a central collection point where they are picked up by a waste handler that does not incinerate the waste. They are stored in sealed labeled containers. Amalgam-free teeth are handled in the medically regulated waste stream (incinerated) according to EPA regulations. All teeth used in educational settings are disinfected using 10% buffered formalin per CDC recommendations.
- UKY:** We do not handle extracted teeth.
- ULVL:** Pre-clinic Operative: We do not use extracted teeth. Endo: Extracted teeth are stored in approx. 10% Bleach and water. While doing the exercises the teeth are stored in Zip Lok bags. While students are doing their exercises

all Personal Protective Devices are to be used. Students are encouraged to use teeth without restorations. However if they must, teeth with restorations including amalgam are permitted. At this time there is no special protocol for amalgam restorations.

MMC: We use very few extracted teeth. The ones we use must be stored in a 10:0 solution of water and Clorox. The amalgam free teeth are treated in the same manner. The students are required to wear gloves , eye protection and masks.

UNC: Silver reclamation and lead disposal both fall under EPA jurisdiction since both lead and silver are "hazardous wastes" when "discarded". The EPA regulation that deals with identification of hazardous waste of this type is 40 CFR 261. It is included in the EPA Hazardous Waste regulations in a group of 41 such materials referred to as TCLP (Toxic Characteristic Leachate Procedure) wastes. The threshold concentrations for solutions and solids containing silver or lead are 5mg/liter or .0005%. Therefore, very little solution is necessary to produce a hazardous waste. Both lead and silver have a hazardous waste exemption for reclamation. If the materials are reclaimed they are subject to a less stringent regulation by the EPA. Used amalgam is placed in a plastic container and brought to Radiology where University Health and Safety will pick up. This has been in place since at least 2006. Extracted teeth are considered biomedical waste and sharps and are discarded in sharps boxes.

NOVA: They are stored in a solution of one part bleach and 9 parts water. The protocols are the same for amalgam-free and teeth with amalgam restorations.

UPR: No response noted.

MUSC: Sterilized in a double bagged glass jar (top off) in an autoclave and stored in water with disinfectant added. This protocol has bene used for many years. The protocol is no different for amalgam-free extracted teeth.

VCU: We only use teeth free of restorations. They are stores in a 10% solution of sodium hypochlorite and subsequently autoclaved before use. The protocol follows OSHA recommendations.

2. Have there been **air-quality issues** with fumes and/or particulate matter? What is/are the specific issue? How did the issue surface? (Inspector, complaint, etc.) What was the resolution?

UAB: No response noted.

UFL: No.

MCG: All labs and preclinical labs are monitored buy the Environmental Health Division on campus. No issues noted.

UKY: Yes. At one time, the students use of polymethylmethacrylate liquid produced fumes which traveled down the hallway eliciting complaints from the medical personnel (they felt it was a carcinogen). The dental school switched to light-cured TRIAD materials for making trays, etc.

ULVL: We have currently admitted a pregnant first year student who has requested special filtering respirator mask for use during gross anatomy lab. The school is purchasing this for her. Our Dept. of Environmental Health & Safety responded to this issue by saying that since the use of the respirator was "a request by a non-employee student for voluntary use of a respirator, this exempts the university from the requirements of the OSHA Respiratory Protection Standard. This means that the School is not required to have a written program, medical evaluation, hazard assessment, or training. Though not required, the Dept. highly recommended fit testing for all respirator use and also highly recommended that the student discuss this situation with her obstetrician." We have also had a student who was sensitive to methyl methacrylate. During her clinic years, she was placed in a separate clinical research cubicle where she would not be exposed. Pre-clinically, we have limited the use of MM. On occasion, the faculty have taken their class outside during the construction of trays or bite guards.

MMC: When using "Formatray" or resins, windows and doors are opened for more circulation, TRIAD has eliminated the necessity of the above.

UNC: No.

NOVA: No.

UPR: No response noted.

MUSC: No.

VCU: No.

3. Have there been issues with **noise**? If YES, please respond per the questions asked in the air quality issue.

UAB: No response noted.

UFL: No.

MCG: No. Ear protection is advocated for model trimmers.

UKY: No. Students who are concerned over noise hazards in clinic are encouraged to wear ear plugs.

ULVL: Not yet, but we start renovation next year (hopefully).

MMC: No.

UNC: No.

NOVA: No.

UPR: No response noted.

MUSC: No.

VCU: No.

4. What are your school's protocols for dealing with **student** accidental needle sticks, bur punctures, and blade cuts?

UAB: No response noted.

UFL: The student is referred to a multi-disciplinary team where a protocol is executed that includes history documentation, testing, counseling, and medication for student and patient.

MCG: Our injury protocol is available for viewing at www.mcg.edu/sod/patientservices/infection (Appendix B).

UKY: Follow the Bloodborne Pathogen Occupational Exposure Protocol (Appendix C)

ULVL: Follow the Bloodborne Pathogen Exposure Incident Report (Appendix D)

MMC: The students are required to report the incident to Clinical Instructors, then to Associate Dean of Clinical Affairs and fill out an incident report. This student may be referred to student medical clinic (See student manual)

UNC: For all injuries/emergencies occurring in the Dental School Complex, an Incident Report must be generated. For dental school patients, the health care provider completes this report. For non-dental school patients, the first School of Dentistry employee/health care provider on the scene of the emergency completes the report with the assistance of the School of Dentistry Risk Manager if needed. When no provider/employee/witness to an emergency or injury is apparent, the Risk Manager completes the Incident Report. All Incident Reports are completed and filed with the Risk Manager within 48 hours.

NOVA: See attached "Needle Stick Policy Update". (Appendix A)

UPR: No response noted.

MUSC: Incident report completed, blood samples drawn on patient to rule out HIV, hepatitis, etc. Student counseled by Student Health and blood sample drawn if indicated. Follow-up on case done by Student Health.

VCU: We have a protocol for "Incident Report for Occupational Exposures".

5. What are the protocols for **patients** injured during procedures by burs, diamonds, disks, blades?

UAB: No response noted.

UFL: The incident is documented and appropriate treatment provided.

MCG: Our injury protocol is available for viewing at www.mcg.edu/sod/patientservices/infection (Appendix B).

UKY: Follow the Bloodborne Pathogen Occupational Exposure Protocol (Appendix C, page 4)

ULVL: No written protocols.

MMC:

1. Patient is informed of the incident.
2. Any treatment that is necessary is given (sutures, hemorrhage control, pain control)
3. Incident is recorded in patient's chart.

UNC: Call University Employee Health and report source patient's name, DOB, medical record number and possible HIV risk factors. Make appointment for you post-exposure blood testing and counseling. Report exposure and return completed "Blood/Body Fluids Exposure Report" to the Office of Clinical Affairs. All source patients must be taken to the UNC Hospitals blood drawing lab.

NOVA: See attached "Needle Stick Policy Update". (Appendix A)

UPR: No response noted.

MUSC: Incident report completed. Appropriate care and clinical follow-up at school's expense. Varies somewhat with the nature of the injury. Follow-up done by Clinical Affairs.

VCU: It is part of our protocol for "Incident Report for Occupational Exposures".

6. Does your school have concerns with **Bisphenol A** in resin restorations? What is the evidence? If YES, please explain:

UAB: No response noted.

UFL: We are aware of this issue and have included the current evidence in our curriculum. Studies show a few hours of minute quantities of Bisphenol A appearing in saliva after placement of resin sealants that clears with none appearing in blood. As for resin restorations, no Bisphenol A was noted in saliva or blood during or after placement.

MCG: No.

- UKY:** No. We are aware of the Bisphenol-A being interrelated to estrogen; however, students wear gloves when handling composite materials as part of their PPE.
- ULVL:** Not that I know about.
- MMC:** No - most of the information concerns plastic bottles and the type of plastic being used. Dan Fisher of Ultradent spoke of his concerns from a product point of view in April 2008.
- UNC:** UNC currently is aware that Bisphenol A is toxic, however we are unaware of any clinical concerns with the use of BisGMA containing resin polymers. Composite resins have proven to be safe and effective.
- NOVA:** No response.
- UPR:** No response noted.
- MUSC:** No. No evidence that Bisphenol-A is present in significant concentrations in resin composite to warrant concern. No concern noted as yet by the FDA
- VCU:** We follow the ADA policy. (May 27, 2008)

V. Curriculum

1. Has your pre-clinical or clinical operative curriculum recently undergone a significant revision? What changes did you make (additions or deletions)? Why did you make the changes and what positive or negative outcomes have you seen?

- UAB:** No response noted.
- UFL:** This quarter we restructured our clinical program from discipline based clinics to a multidisciplinary model. There has not been time for evaluation.
- MCG:** No significant revisions, Small changes are made each year.
- UKY:** No.
- ULVL:** No.
- MMC:** Yes - eliminated Inlays and Onlays and moved Preclinic Dentistry to first year students.
- UNC:** UNC is currently in the process of a new curriculum revision.
- NOVA:** No - not in the last year.
- UPR:** No response noted.

MUSC: Eliminated individual clinical competencies on patients. Replaced by a clinical competency examination in the simulation laboratory. In addition, determine competency in various areas of clinical practice by faculty consensus. Must be deemed competent in all these areas by at least two faculty members to graduate. Treatment goals now based on comprehensive care for the assigned patients without having individual procedural requirements. Students patient load is monitored for variety of clinical experiences and for timely patient care.

VCU: We have undergone quite significant changes. The operative curriculum was shortened from three semesters to two semesters. The Clinical Skills course was moved from the second semester of the second year to the first semester second year. This was done at the direction of the administration so as to move the sophomores into the clinic sooner. It is too soon to assess outcomes.

2. What is the time gap (in semesters or quarters) between the end of pre-clinical operative dentistry and the start of clinical operative experiences for your students? Describe the curricular progression of your students in operative dentistry (Example- Freshman pre-clinical operative, Sophomore block clinic rotation, Junior-Senior clinics, or Junior clinic, Senior Comprehensive / General Dentistry clinic). Is there any concern with diminishing knowledge or skills between pre-clinic courses and pre-clinical practice? What types of knowledge or skill erosion did you observe and what have you done about it?

UAB: No response noted.

UFL: Our students receive virtually no clinical experiences in the first two years other than observation in clinics and examination of each other. The students are assigned patients in the summer prior to their junior year, however there has been a several month lag until they were able to perform restorative procedures. In our previous discipline based clinic model the majority of students were unable to schedule significant prosthodontic procedures until the later part of their junior year. In order to mitigate previously observed deterioration of skills between pre-clinic and clinic, we have recently migrated to the multidisciplinary clinic model (Operative, Prosthodontics, Periodontics) and have not had sufficient time to evaluate student performance.

MCG: Freshman pre-clinical operative course ends in May.
Sophomore Block begins the following September. Sophomores are paired with Seniors or classmates during the Block.
Junior Operative Clinic
Senior General Dentistry/Comprehensive Care

UKY: Students complete their amalgam and composites courses in May and June of their first year. Patients are assigned to them by September of their second year. The only concern with diminishing skills is the lack of sufficient procedures in order to be proficient. Competency exercises begin in the 2nd year and continue through the 3rd and 4th years. In

addition, more competency exercises are administered during the 4th year as part of the board review course.

- ULVL:** Time gap: 2 semesters +
Curricular progression: Freshman fall semester (October start for pre-clinic) thru spring semester; Sophomore Introduction to Clinical Dentistry – spring semester (dentoform exercises); Junior/senior comprehensive care clinics. Concern with diminishing knowledge or skills – Yes. In the Sophomore Introduction to Clinical Dentistry – spring semester, dentoform exercises in operative were started a couple of years ago. What types of knowledge or skill erosion did you observe – If it can be forgotten, it will be forgotten.
- MMC:** 1.) 3 months-between pre-clinical and clinical procedures
2.) First year-start operative in spring semester
3.) Second year-operative throughout the entire year
4.) Third year-operative in fall semester
5.) Sr. year seminar-First semester of Sr. year
Yes, most have not prepared a cavity for at least 3 months. We offer remediation courses where they return to the manikin to upgrade their restorative skills.
- UNC:** Time Gap = 3-6 months
Freshman – preclinical labs, Dental Anatomy, Conservative Operative Dentistry
Sophomore – local anesthesia, prophys and exams on patients, clinical operative dentistry
Junior- Clinical operative dentistry, advanced operative dentistry lab, Block rotations,
Senior- Group general dentistry practice, studies perform any and all procedures that a general dentist would.
- NOVA:** D1 year - Jan – July Pre- Clinical Operative (Mon and Wed 1– 5 P.M.)
D2 year - May – D2 Review Pre- Clinic (one week 9-5 with a full day of competencies)
D3 year - clinic comprehensive care, Cosmetics course pre-clinic
D4 year - clinic comprehensive care, rotations in satellite clinics
Since students have a full year between the end of the operative course and the beginning of the clinic experience we have established the D2 review course that must be passed in order for the students to be eligible to perform operative procedures on their patients. The course has both a clinical and didactic component.
- UPR:** No response noted.
- MUSC:** Approximately one month between the end of pre-clinical operative and the start of Operative Clinic.
Curricular progression:
Freshman – Dental Morphology
Sophomore – Operative I (Fall); Operative II (Spring)
Junior – Senior Clinics

No significant concerns about the transition from pre-clinical to clinical

VCU: Freshman preclinical-operative. Sophomores take Clinical Skills and begin to see patients at the same time. We are now configured into seven practice groups. At present each group consists of 13 sophomores, juniors and seniors. They are under the direction of a dedicated group of faculty. We have a general feeling that skills are diminishing but it is too early to make a sound judgment.

Regional CODE Agenda

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

Consortium of Operative Dentistry Educators Region VI 2008 Regional CODE Agenda Responses

1. List or Describe 5 areas related to Operative Dentistry Treatment that should be researched with clinical trials.

UAB: No response noted.

UFL:

1. Efficacy of indirect and direct pulp capping techniques
2. Longevity of composite and amalgam restorations
3. Accuracy of caries detection technology, e.e., QLF, DIFOTI, Diagnodent
4. Efficacy of remineralization materials and techniques
5. Efficacy of desensitization materials and techniques

MCG:

1. Longevity of composite resin restorations and clinical factors associated with success/failure (location, prep design, insertion technique, depth of cure, finishing techniques)
2. Longevity of glass ionomer restorations
3. Vital pulp therapy techniques
4. Long-term results of using a medical model for caries treatment (caries risk assess)
5. Long-term effects of environmental hazards in the operator

UKY:

1. Longevity studies of the dental materials we use
2. How much fluoride is released/recharged using glass ionomers
3. Evidence-based studies (i.e., amalgam versus composite)

ULVL:

1. Longevity of posterior composite in molars. With the ongoing concern about amalgam/mercury, proponents for posterior composites are working toward the elimination of amalgam.
2. Slot preps - longevity versus "conventional" preps/restorations

MMC:

1. Bisphenol-A the detrimental effects, how to control them
2. Ways to decrease amalgam sensitivity
3. Long-term effects of adding Indium to amalgam alloys

- UNC:**
1. Durability of posterior composites versus amalgam
 2. Performance of simplified adhesives
 3. Durability of ceramic restorations, e.g. CAD/CAM inlays/onlays and all-ceramic crowns
 4. Effects of glass ionomers on recurrent caries
 5. Efficacy of pit and fissure sealants
 6. Long term studies of complete removal of decay versus leaving some axially/pulpally (permanent, no going back in) for deep lesions
 7. Treatment of enamel fissure caries with and without “minimally invasive procedures” (i.e., “routing out the grooves”) - need long-term study, 10 year outcomes

- NOVA:**
1. Use of self-etching adhesives
 2. Composite shrinkage
 3. Amalgam bonding
 4. C-factor as related to composite placement
 5. Composite sealing (rebonding)

UPR: No response noted.

- MUSC:**
1. Pulp therapy using genetic engineering,, etc.
 2. Posterior composite prep design for maximum longevity and standardization
 3. Effects on caries incidence by genetically modifying oral bacteria, saliva, etc.
 4. Techniques to achieve long-term seal when restoring root caries
 5. Clinical techniques to strengthen and preserve the hybrid layer/dentin bond

- VCU:**
1. Clinical trial (longitudinal) comparing Class II preps breaking proximal contact versus not breaking proximal contact
 2. Are retentive grooves necessary in Class II resin preps? Class II amalgam preps?
 3. In a Class II slot prep, how deep axially must the prep go into dentin? Is there an arbitrary standard?
 4. Do bonded amalgams demonstrate greater longevity in vivo?
 5. Do posterior composite resins placed using maximum isolation techniques have greater longevity than those placed without proper isolation?

2. Is Caries Risk Assessment a routine procedure for ALL patients at your institution? If not, is it used routinely for patients of: STUDENTS, RESIDENTS, FACULTY? Has this policy remained consistent over the past 5 years; or has it increased or decreased? In your opinion, does the CRA significantly influence treatment plans and outcomes? If you are not doing CRA routinely at this time, why not?

UAB: No response noted.

UFL: A Caries Risk Screen is a routine procedure for ALL dentate patients on initial screening/examination at UFCD. All AT RISK PATIENTS are followed up with an in-depth CRA we term Initial Caries Evaluation (ICE) along with a customized Caries Management Treatment Plan. After Phase I treatment (Disease Control Treatment Plan) is completed a Post-Treatment Assessment is made and Caries Risk is re-evaluated for change. Our CRA program also includes Student Competency Evaluations in

Junior and Senior years. A CRA program has been in place at UFCD for 10 years but has been increased in depth and implementation over the past three years with the addition of trained cariologists to our faculty, support from faculty and administration, and support in our new multi-disciplinary examination and treatment clinics.

- MCG:** No, rarely done. Consistent. Unknown effects on outcomes. No leadership in this area.
- UKY:** No, the focus has been on individual provider input. Our dental school is now in the process of incorporating the software program, *Previser*, into our initial screening process as part of the Caries Risk Assessment. This program includes periodontal risk and assessment, caries/fracture/root surface risk, and oral cancer risk. We are particularly impressed in the manner in which a patient can be followed and monitored, and the fact that immediate feedback in the form of a hard copy can be given to the patient at the time of their appointment. Attachment #1 is a copy of the *Previser* report.
- ULVL:** No. It is routinely used for all comprehensive care patients in the pre-doctoral program. It was implemented in 2007 and has increased significantly this year (an axiUm form). It primarily influences the treatment plans in prevention planning. It is routine in the pre-doc program although consistency with compliance across all 6 clinical groups is an ongoing concern.
- MMC:** Yes, but it's overseen by the ODS and Periodontics departments. Yes, a high caries assessment will eliminate certain restorative procedures (such as veneers or implants).
- UNC:** UNC School of Dentistry is increasing its teaching and clinical use of tools to assess caries risk. All students are required to assess caries risk at the diagnosis and treatment planning phase. This has resulted in increased use of 0.12% Chlorhexidine Gluconate to change the microbial flora followed by 5000ppm fluoride toothpaste, fluoride varnish, dietary counseling, OHI and control phase treatment plans. Glass ionomer restorations may be used in control phase plans as temporary restorations and in definitive plans as permanent restorations. CRA alters treatment approaches and increases student awareness of caries as an infection. There is much increased conversation about use of xylitol lozenges & gum. See example for CRA below:

NOVA: Yes. At the present time we use axiUm and the Caries Risk Assessment as well as a preventive treatment plan is part of the initial exam and data collection. The students then go to "forms" and fill out the Caries Risk Assessment and Preventive Treatment Plan (PTP). Any recommendations from the PTP are then incorporated into the treatment plan in the Treatment Plan Module. We have been doing Caries Risk Assessment since 2005 and have continued with this procedure during our change into EHR systems. We believe that Caries Risk Assessment influences both initial treatment and outcomes. Patients are treatment planned with knowledge that will be important in the success of their case. Very High Risk patients are given a "Treatment Plan to Health" before any definitive treatment is performed. All patients are presented with a Preventive Treatment Plan before beginning any definitive treatment.

UPR: No response noted.

MUSC: No. No. Remained consistent. No (does not significantly influence outcomes). High cost, time demands, low patient compliance rate. Informal CRA, which involves caries history, medical history, current caries activity, patient's hygiene, and diet, is done and used in treatment decisions daily.

VCU: CRA is routinely used in all clinics. The policy has been consistent over the last five years, with minor adjustments. Theoretically, it is supposed to impact treatment planning and outcome. High caries risk patients undergo significantly different treatment staging than low caries risk patients.

3. Has the use of Glass Ionomer Restoratives increased, decreased, or remained the same over the past 5 years in your clinics? Explain this trend; or lack of change. What product(s) do you use and for what applications?

UAB: No response noted.

- UFL:** Since our Clinical Data System does not differentiate between GI and Composite restorations, it is difficult to get hard data on GI usage. Our data does indicate a 70/30 ratio of posterior non-alloy to alloy restorations - the majority being composite. We stock Fuji II LC and Ketac Fill in our clinics. Anecdotally GI is little used and its use has remained the same or decreased over the past five years. Composites are predominantly used in anterior restorations because of their superior esthetics, strength and wear characteristics. Posterior GI restorations are confined to Class V areas of difficult moisture control or in High Caries Risk patients where alloy is a more common choice. Because of more difficult handling characteristics and poor esthetics GI is not a highly used restorative material. Some faculty recognize their resistance to secondary caries due to fluoride release, but the lack of strong support for this attribute in the literature discourages its use by others. When indicated, GI is used in the Sandwich Technique with composite restorations. GI has recently shown an increase in use as a superior temporary restorative, endodontic access temporary seal, and in caries control treatment of rampant caries cases.
- MCG:** Glass ionomer use has remained about the same over the past 5 years with the exception of using RMGI as medium-term provisional restorations (pulp caps). Current used include Class V restoration, cavity base, luting agent, and provisional.
- UKY:** Remained the same. We teach resin-modified glass ionomers and compomers, but have incorporated them into clinical patient use on a limited basis. Ketac-fil/Ketac-Silver is used for temporary restorations and for permanent use in cervical high-risk caries areas with no stress-bearing loads.
- ULVL:** Increased. Increased incidence in root caries and it is used as a temporary (e.g., with fiber-posts). Fuji II LC.
- MMC:** About the same - mainly used as a cement in the fixed clinic and as a base in the operative clinic. Cost is a major factor.
- UNC:** UNC operative has not seen any change over the last 5 years. The conversation of “recharging” these with fluoride has increased and as such the use of 5000ppm fluoride has increased, especially with its use 3X/day for high caries risk patients. Most faculty prefer the use of glass ionomer restoratives for Class V areas with active caries in moderate to high risk patients. UNC uses Fuji IX and Ketac Nano as direct restorative materials. Adult Class II/III & VI restorations with this material are considered temporary. Resin modified glass ionomers (Vitrebond) are used as liners/bases and occasionally in a “sandwich technique” with composite.
- NOVA:** The use of glass ionomer restoratives has increased with the advent of Triage. Triage is used in the clinic as a transitional restorative in all departments. Glass ionomer material is not used very often for permanent restorations due to wear and esthetic considerations.
- UPR:** No response noted.

MUSC: Increased somewhat in our clinics. We've used Vitrebond as a base/liner where indicated for years. Several of the Fiji GI products are used as restoratives for root caries and in some pediatric applications. Presently using Triage as a provisional restorative in some operative cases and in the Endodontic Clinic following obturation.

VCU: The use of GI restoratives has decreased at our institution. Conventional GI is used infrequently as a temporary fill in cases of rampant decay when maximum fluoride exposure is wanted. RMGI cements are used more frequently; root caries being an indication for their use.

4. Is there a SUBJECTIVE (non-technical) portion to your clinical grading? Are professionalism, preparation, attitude, time management, and other non-technical behaviors graded and if so, what percentage of the total grade do they account for? Do you calibrate faculty for this evaluation or do you leave it up to their discretion?

UAB: No response noted.

UFL: Students are graded during every procedure and clinical competency on Professionalism, Patient Management, Clinical Judgment, and Time Management. Positive or neutral grades have little bearing on total grade; however a failure in these areas will incur a failure in the total daily grade or competency. In order to achieve calibration among faculty, our grading form has explicit criteria for grading: clinical knowledge and judgment, interpersonal skills, pain and anxiety management, and Universal Precautions/Infection Control compliance.

MCG: Yes, subjective evaluations count 20% of clinical course grades. All of the above criteria are used with an emphasis on attitude and preparation. Faculty are given criteria but ultimately they use their own discretion concerning how the criteria are applied.

UKY: Yes. Attachment #2 is the evaluation form we use in student clinic. Attachment #3 shows previously, we devoted 25% of the evaluation grading to clinical preparedness and professional judgement. Since the beginning of this academic year, we have decreased this to 10%. The school feels more emphasis should be placed on grading technical procedures. Faculty are calibrated and expectations outlined.

ULVL: Yes. Evaluation is in the daily grading on the computer. Calibration is informal and at the discretion of the evaluator. Evaluation is also incorporated into the grades of most of the clinical competencies. Calibration here is more formal/ with calibration of other aspects of the competency grading.

MMC: Yes, patient management is a part of our grade sheet. Student attitude is also a criterion.

UNC: UNC uses clinical competencies during 2nd & 3rd year DDS procedures. These simply evaluate clinical skill and the only calibration comes from

faculty involvement in preclinical operative courses. UNC recently has begun to host a yearly appreciation day for adjunct faculty during which current concepts of preparation & restoration design are reviewed. The purpose is to limit variation in instruction by adjunct faculty. The competencies are graded A, B, C, D, E. Grade inflation has made actual student performance assessment difficult. 4th year DDS students enter one of four “group practices” which utilize a clinical assessment module incorporated into the UNC electronic patient record. Each semester is Pass/Fail. The faculty are directed to evaluate the students in each area identifying if the performance surpassed expectations (S), met expectations (M) or did not meet expectations (X). Calibration occurs via discussion of what reasonable expectations should be. If S or X is given in any category then an associated explanation must be identified in the exception list and recorded. Analysis of individual, group and overall class performance is possible. Student and Curriculum strengths and weaknesses can be identified. See examples of clinical assessment and exception lists below:

New Clinical Assessment

Patient: 0001-0100 JUNREG PATIENT SPACE HOLDER Created Date: 10/6/2008 11:27:00 AM
 Student: 700-505 BOUSHELL, LEE Service Area: Operative DFP
 Instructor: _____

Procedures Evaluated:

Seq #	Proc. Code	Procedure Description	Tooth #	Surfaces	Step	Treatment Date	Tx Plan #	Grade	Test Proc.

Student Self-Assessment

Category	S	M	X	Instructor Assessment	Exceptions
Professionalism / Ethics (P)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Clinical Skills & Patient Care (C)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Clinical Judgment & Critical Thinking (J)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Practice Management & Informatics (R)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patient Management & Interpersonal Skills (M)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Self Evaluation / Independence (E)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Delete Assessment Save Student Assessment Edit Instructor Assessment Instructor Not Completed Show Exception Lists Cancel

Exception Lists

S	X
Professionalism / Ethics	
Great Attitude	Disrespectful Attitude
Outstanding Professional Demeanor	Unacceptable Professional Demeanor
Outstanding Ethical Awareness/Behavior	Unethical Behavior
Clinical Skills & Patient Care	
Ideal Access	Unacceptable Anatomy
Ideal Anatomy	Unacceptable Finishing/ polishing
Ideal Contours	Unacceptable Impression(s)
Ideal Finishing/Polishing	Unacceptable Margins
Ideal Impression(s)	Unacceptable Field Isolation
Ideal Margin(s)	Unacceptable Calculus/Plaque/Stain Removal
Ideal Field Isolation	Unacceptable Proximal Contact
Ideal Prep/Cavity Design/Flap Design	Inadequate Treatment or Anesthesia Provided
Outstanding Prophylaxis /Scaling	Inadequate Occlusion
Ideal Proximal Contact	Unrecognized/Avoidable Pulp Exposure
Ideal Temporaries	Inadequate Retention/Resistance
Ideal Occlusion	Poorly Managed Soft Tissue
	Undiagnosed/Left Caries
	Iatrogenic Damage Done
	Insufficient Prevention or Patient Instructions
Clinical Judgment & Critical Thinking	
Ideal Treatment Recommendation(s)	Inappropriate Material or Anesthesia Choice
Optimal Material(s) Selection	Inappropriate/Incomplete Diagnostic Tests
Outstanding Judgment	Did Not Address/Recognize Pertinent Medical Issue
Complete, Thorough and Accurate Diagnosis	Inappropriate Treatment Plan
	Incorrect/Incomplete Diagnosis
Practice Management & Informatics	
Fully Prepared For Procedure and All Contingencies	Inadequate Medical Work-up
Thoroughly Organized/Extremely Neat Work Area(s)	Inadequate Preparation For Procedure

Close

S	X
Ideal Temporaries	Inadequate Retention/Resistance
Ideal Occlusion	Poorly Managed Soft Tissue
	Undiagnosed/Left Caries
	Iatrogenic Damage Done
	Insufficient Prevention or Patient Instructions
Clinical Judgment & Critical Thinking	
Ideal Treatment Recommendation(s)	Inappropriate Material or Anesthesia Choice
Optimal Material(s) Selection	Inappropriate/Incomplete Diagnostic Tests
Outstanding Judgment	Did Not Address/Recognize Pertinent Medical Issue
Complete, Thorough and Accurate Diagnosis	Inappropriate Treatment Plan
	Incorrect/Incomplete Diagnosis
Practice Management & Informatics	
Fully Prepared For Procedure and All Contingencies	Inadequate Medical Workup
Thoroughly Organized/Extremely Neat Work Area(s)	Inadequate Preparation For Procedure
Extensive/Highly Detailed Medical Workup	Poorly Organized/Cluttered Work Area(s)
	Inadequate/Undiagnostic Radiographs
	Inadequate Records Management/Documentation
Patient Management & Interpersonal Skills	
Superior Interpersonal Skills	Did Not Display Compassion or Cultural Awareness
Highly Efficient Time Utilization	Violated HIPAA
Highly Attentive to Patient Desires/Needs	Unacceptable Safety/Infection Control
	Inefficient Time Utilization
	Did Not Identify/Consider Patient Desires/Chief Complaint
	Inappropriate Treatment Sequencing
Self Evaluation / Independence	
Completely and Appropriately Independent	Inappropriate Dependence on Faculty
Proactively Accepts Instruction	Did Not Exhibit Willingness to Learn
	Over/Under Confident
	Did Not Accurately Self Assess

NOVA: Yes we do have a subjective portion. It is titled “Professionalism/Patient Management”. This portion is 20% of the total grade. We try to standardize the faculty when they first start in the clinic.

UPR: No response noted.

MUSC: Yes. They are taken into consideration when assigning the overall grade for the clinical procedure or session. Left up to their discretion after detailed discussions of grading philosophy and criteria. When new faculty begin in the clinic, an effort is made to discuss the grading process to try to have everyone “on the same page”.

VCU: Our clinical system has recently evolved into GPGs (General Practice Groups). The same sophomores, juniors and seniors work with a dedicated faculty throughout their clinical experience. The faculty, in each of these groups, under the direction of the group leader, assesses the students subjectively. At present, 10% of their total grade is based on subjective evaluation. Subjective evaluations, not necessarily contributing to the grade, are conducted four times a year. Students can be prevented from advancing or graduating if they are found unsatisfactory in two successive evaluations.

5. What does your operative clinical program do BEST, WORST, and has shown the MOST IMPROVEMENT in over the past five years?

UAB: No response noted.

UFL: BEST: Periodic evaluation, assessment, and improvement of pre-clinic and clinical curriculum as to: contemporary content, current educational technology and instructional theory, scientific evidence, and relevance to real-world practice. Examples would include: Realignment of our pre-

clinical subject sequence, emphasis on minimally invasive and esthetic procedures, and incorporation of new technologies such as CEREC.

WORST: Make its case to administration as to its importance and relevance to the education of dentists as compared to other disciplines when competing for resources.

MOST IMPROVEMENT: Moving from the strict Surgical Model to inclusion of the Medical Model for the assessment, prevention, and treatment of caries.

MCG: BEST: Prepare students for the licensing board
WORST: Consistently reinforce preclinical principles and techniques in daily clinics
MOST IMPROVEMENT: Clinical efficiency relative to the use of Axium

UKY: Best – increased in-depth aspects in teaching amalgams, composites, glass ionomers (liners), and IRM (bases). We have also increased aspects of teaching in all-porcelain restorations/cements, and CEREC CAD/CAM applications.
Worst –not having enough patients in performing various procedures, along with actual physical space requirements.
Most Improved – changes in clinical protocol including students being responsible for scheduling their own patients, and the screening and increased delegation of patients. The turnover from paper dental records to a paperless computerized system using AXIUM is progressing every day. Hiring of more team leaders to coordinate student-patient care has improved patient management issues

ULVL: BEST: Test for competency in an anonymous/board setting
WORST: Consistency in daily teaching/grading across all 6 clinics. Also, helping the students to understand the “why” in operative. There are so many faculty in all the clinics and most have not been through the preclinic course.

MMC: BEST: We accept a percentage of students that may have difficulty in other schools and work with them so that they graduate as competent professionals. We also have increased the Part II National Board scores to beyond average. We do everything well - we are a “super” dental school and department!

UNC: Best: Not sure. We are currently waiting for results from focus groups of 3rd & 4th year students we are interviewing basically asking the same questions. Recent board examination pass rates have been discouraging and dentists in private practice, that are hiring our graduates, are expressing concern relative to the level of skill, professionalism and maturity. Operative dentistry surely is partly responsible for this trend.
Worst: Poor equipment maintenance. Poor DA use and motivation. Poor consistency on topics, techniques, and evaluation. Inflated grades. Not much independent grading with time as a factor. Failure to include sectional matrices used in COD into the clinic. We don't do a good job with caries, its prevention and its management. Students don't really know anything about it when they enter the 2nd year clinical curriculum, and

we're not always teaching the latest information. Our diagnosis and treatment planning areas are weak.

Most improvement: Most faculty who have been at UNC over the long term report no improvement. Some faculty report greater emphasis on preparation and restoration techniques at the preclinical level has resulted in improved clinical performance. Currently, curriculum revision has begun which will be implemented Fall 2010. This revision is attempting to foster positive change.

NOVA: At this point what we have been very successful with the documentation of data in the axiUm EHR system. The students are making clear notes for their procedures and progressing with all aspects of the EHR. I believe we are also standardized in what we teach in preclinical courses and the clinic. Both of these have been greatly improved over the last 5 years. The problem area is the implementation of the Preventive Treatment Plan. Although the students are required to perform a CRA and write a PTP many times the implementation of the procedures is lacking. We have now incorporated phase locks into the treatment planning module which would prohibit a student from moving on if they have not completed procedures treatment planned in the previous phase e.g. fluoride treatments, fluoride varnish, antimicrobial rinses.

UPR: No response noted.

MUSC: Best: Based on student and postgraduate program director surveys, we provide an effective education program in Operative Dentistry. Our graduates seem to have a sufficient clinical experience and guidance in Operative Dentistry to allow them to perform at a high level.
Worst: We do not have modern, efficient equipment and instruments in our clinic.
Most Improvement: We've made some staff changes that make the Operative clinic a more hospitable place for students to work.

VCU: Best - Students are offered a broad spectrum of experiences, techniques and materials.
Worst - Patient pool, finances and reliability.
Most Improved - Exposure to community based dentistry through externships and preceptorships.

Suggestions for CODE.

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

UFL: Institute more timely collaboration and consulting between members utilizing e-mail, teleconference and web blogging rather than simply depend on yearly meetings which tend to limit participation.

MUSC: Continue interaction with licensure boards

MMC: Invite SERTA members and faculty from other disciplines to meetings.

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

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

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

No comments/suggestions

3. Other comments/suggestions?

MMC: We need better clarification on what type of Class 3 composite preparation is acceptable on the SERTA dental examination. As an example, they ask for a uniform axial wall on the Class 3 composite preparation and no bevel of the cavosurface margins. This may be in direct conflict on what we are teaching in the preclinical and clinical years of dental school.

2008 Region VI Responses to National Agenda
Appendices

Appendix A: Nova Southeastern University Needlestick Policy

Appendix B: Medical College of Georgia Patient Services/Infection

Appendix C: University of Kentucky PreViser Report

Appendix D: University of Louisville Bloodborne Exposure Incident Report

Appendix A

Nova Southeastern Needlestick Policy

Original Date: 01/13/00

Effective Date: 01/13/00

Revision Date: 07-01/08

PURPOSE: The purpose of this policy and procedure is to delineate individual responsibilities in the event of a significant exposure to blood and/or body fluids to a Nova Southeastern University (NSU) employee or non-NSU employee (see definitions).

POLICY: It is the policy of NSU to monitor all blood and/or body fluid exposures for proper medical treatment and follow-up, to take appropriate corrective actions to prevent recurrences, and to maintain documentation for compliance with Federal, State and local laws.

PROCEDURE:

I. DEFINITIONS

A. Significant Exposure:

1. Exposure to blood and/or body fluids through needle stick, instruments, or sharps
2. Exposure of mucous membranes to visible blood or body fluids, to which Universal Precautions apply according to the Centers for Disease Control and Prevention, including but not limited to the following body fluids:
 - a. Blood
 - b. Semen
 - c. Vaginal secretions
 - d. Cerebro-spinal fluid (CSF)
 - e. Synovial fluid
 - f. Pleural fluid
 - g. Peritoneal fluid
 - h. Pericardial fluid
 - I. Amniotic fluid
 - j. Laboratory specimens that contain HIV
3. Exposure of skin to visible blood or body fluids, especially when the exposed skin is chapped, abraded, or afflicted with dermatitis or the contact is prolonged or involving an extensive area.

B. Source:

The person of origin for the blood and/or body fluid as outlined in I .A. above.

C. Employee:

An individual who has been assigned a NSU employee number and receives a University payroll check.

D. Non-NSU Employee:

This individual may be a student, agency employee, contract worker, North Broward Hospital District medical resident, or Palmetto General Hospital medical resident. This person does not have a NSU employee number and does not receive a payroll check from the University. Non-employees also include (but are not limited to) patients / visitors.

II. RESPONSIBILITIES

A. Employees

1. Report incident immediately to the supervisor for the department in which the exposure occurred.

2. Complete the **First Report of Injury or Illness -Workers Compensation Form (Exhibit 1) and the Employee Exposure Incident Form (Exhibit 2)** with the assistance of the supervisor and sign as directed to verify accuracy of information.
3. The supervisor shall verbally notify the Infection Control Coordinator's Office Ext.7353 and this office will forward a copy of the First Report of Inquiry to HR via fax to ext. 6860 or 6859. Human Resources will then fax a copy of the First Report of Injury Form to the Infection Control Officer .
4. The employee **shall immediately report** to the Infection Control Coordinators Office and complete the **First Report of Injury Form and the Employee Exposure Incident Report**. The Infection Control Coordinators Office is located on the third floor of the Dental Building in room 7353. The NSU Health Care Centers are located at 3200 South University Drive, Davie, FL, and 1750 NE 167th Street, North Miami Beach, FL. The hours of daily operation for the NSU Health Care Centers are:
 - Monday through Friday from 8:45 am - 5:00 pm
 - Saturday from 8:45 am - 1:00 pm.
5. **NSU Health Care Center/Davie:** For exposure incidents that occur **between 5:00 pm and 7:00 pm Monday - Thursday** the employee shall immediately report with the completed First Report of Injury Form and Employee Exposure Incident Report to:
 - The Student Health Center located on the 1st Floor of the Sanford Ziff Building. Telephone Number (954) 262 - 1262.
6. **NSU Health Care Center/Davie:** For exposure incidents that occur **after 7:00 pm Monday - Thursday, after 5:00 pm on Friday, and after 1:00 pm on Saturday** the employee shall immediately report with the completed First Report of Injury Form and Employee Exposure Incident Report to:
 - Concentra Medical Centers
501 SE 24th Ft. Lauderdale, Fl 33316
Telephone Number: (954) 522-6009
 - or**
 - Westside Regional Hospital Emergency Room
8201 West Broward Blvd., Plantation, Florida
Telephone Number: (954) 473-6600
7. **NSU Health Care Center/NMB:** For exposure incidents that occur **after 5:00pm Monday - Friday, and after 1:00 pm on Saturday** the employee shall immediately report with the completed First Report of Injury Form and Employee Exposure Incident Report to:
 - Golden Glades Concentra Medical Centers
17601 NW 2nd Ave, Miami Gardens, 33169
Telephone Number: (305) 770-4500
 - or**
 - Jackson North Medical Center
160 NW 170th St. North Miami Beach, Fl 33169
Telephone Number: (305) 651-1100
8. Pre-HIV test counseling of the exposed employee will be provided once it is established that a significant body substance exposure has occurred. Counseling of the employee will be provided by the NSU Health Care Center physician.

9. NSU employees must make the decision regarding post-exposure medical evaluation and testing, e.g., consent to test for Human Immunodeficiency Virus (**See Protocol E**) and consent for Chemoprophylaxis for Prevention of HIV Infection After Potential Occupational/Educational Exposure to HIV (**See Protocol C**).
10. In the event that the individual decides not to proceed with the Chemoprophylaxis for Prevention of HIV Infection he or she shall sign the declination section of the consent form (**See Protocol B**).
11. In the event that the individual decides not to proceed with the post-exposure evaluation, he or she shall sign the Employee Waiver of Post-Exposure Evaluation form (**See Protocol D**).
12. Employees are responsible for following-up on related exposure laboratory tests and immunizations as directed and counseled by the NSU physician.
13. Employees receive copies of Protocol A, B or C, NSU post exposure protocol and counseling and education informational handouts.

B. Non-NSU Employees

1. Report incident immediately to the supervisor where the exposure occurred.
2. Complete the **Non-NSU Employee Exposure Incident Report** with the assistance of the supervisor and sign as directed to verify accuracy of information (**See Form Exhibit 1 and Exhibit 2**).
3. In addition, agency employees and/or contract workers should also report the incident immediately to their employer. It is the agency or contract employer's responsibility to report the incident to the state.
4. The non-NSU employee shall report for medical assessment and treatment as directed by employer and/or school. If directed by employer and/ or school, to seek medical assessment and treatment at NSU Health Care Center, the non-NSU employee will participate in counseling session with the NSU physician.
5. Non-NSU employees must make the decision regarding post-exposure medical evaluation and testing, e.g., consent to test for Human Immunodeficiency Virus (**See Exhibit E**) and consent for Chemoprophylaxis for Prevention of HIV Infection After Potential Occupational/Educational Exposure to HIV (**See Protocol C**).
6. In the event that the individual decides not to proceed with the Chemoprophylaxis for Prevention of HIV Infection he or she shall sign the declination section of the consent form (**See Protocol B**).
7. In the event that the individual decides not to proceed with the post-exposure evaluation, he or she shall sign the Student/Non-NSU Employee Waiver of Post-Exposure Evaluation form (**See Exhibit D**).
8. Non-NSU employees are responsible for the follow-up of related exposure labs and immunizations as directed by designated medical personnel.
9. All bills for non-NSU employees will be the responsibility of the non-NSU employee.

C. NSU Students

1. All NSU students within the Health Professions Division are required to obtain and maintain health insurance. The student has exclusive responsibility for his or her own medical bills.

2. EXCEPTION FOR INITIAL EXPOSURE PROTOCOL VISIT AT A NSU HEALTH CARE CENTER ONLY:

If the initial post-exposure protocol (Protocol A) is performed at a NSU Health Center and the NSU physician is not the primary care provider under the student's health insurance, or the student does not have the required health insurance, the cost of the initial exposure protocol visit at a NSU Health Center, laboratory tests and 3 day supply of medications shall be the responsibility of the NSU academic college the student attends.

3. All subsequent follow-up visits shall be with the NSU student's primary care physician, and the student has exclusive responsibility for his or her own medical bills.

D. Infection Control Coordinator and/or Supervisor:

1. Assist in completing the **First Report of Injury Form and the Student or Non-NSU Employee Exposure Incident Report or Employee Exposure Incident Report**, where applicable. Assure that all information required is present and check that the correct form is completed. Be sure that all signatures are included.
2. Inform and fax the appropriate information for employees to the Office of Human Resources-Workers Compensation Department.
3. Initiate procedure to obtain Hepatitis and HIV tests on the source / patient of the blood or body fluid exposure. Inform source of NSU policy and request that he/she go with the student to the clinic for testing.
4. In the event that the patient refuses to consent for testing, the Infection control coordinator is to notify via telephone the NSU physician or the applicable Emergency Room physician.

E. Source/Patient

1. The source (patient) will be asked to report to the NSU Health Care Center for pre-HIV counseling and exposure protocol testing.
2. The source will be provided an HIV consent form (See Protocol E). If the source is incapacitated, the family must be approached in order to obtain consent.
3. The cost of the exposure laboratory tests for the source/patient shall be billed to the NSU college of the NSU employee or of the NSU student.
4. The source/patient's refusal to consent to an HIV test, and all information concerning the performance of an HIV test and its result, shall be documented only in the medical record of the exposed employee and/or non-NSU employee/student, unless the source/patient gives consent to entering this information on their medical record.

F. NSU Health Care Centers

1. Obtain and review the First Report of Injury Form or Student/Non-Employee Exposure Incident Form.
2. If the exposed individual is determined to have a non-significant exposure to blood and / or body fluids, the Exposure Protocol A will be so marked and the individual will sign the Exposure Protocol Record form and it will be witnessed by the physician (**See Protocol A**).
3. For NSU employees and non-NSU employees having a significant exposure to blood and / or body fluids, the NSU physician will complete the Exposure Protocol Record. This form documents if exposure is significant or not significant, pre-test counseling and recommended immunizations, laboratory work and follow-up. A copy of the completed form is given to the exposed individual and the original remains in the exposure record. All exposure-related records will be retained by the NSU Health Center for a minimum of 30 years in a separate file.

4. If an employee is determined to have a significant exposure to blood and / or body fluids, the NSU physician will notify the supervisor where exposure occurs to initiate the procedure to request consent on the source/ patient of the blood and / or body fluid exposure if not already done so through the Infection Control Coordinator's office.

G. North Broward Hospital District Medical Residents:

1. Report incident immediately to the person in charge of the department where the exposure or needle stick occurred. In addition, the Family Medicine Residency Director should be notified of the incident.
2. Complete the First Report of Injury Form and Student/Non-Employee Exposure Incident Report with the assistance of the supervisor and notify the Infection Control Coordinator and sign as directed to verify accuracy of information.
3. NBHD medical residents exposed while at the hospital should report to Broward General Employee Health and if exposed while outside the hospital may report to a NSU Health Center on the Davie or North Miami Beach Campus for initial treatment and follow-up. The NSU Health Center(s) shall receive authorization from the NBHD Worker's Compensation Department.
4. In the event that the NSU Health Center(s), or Broward General Employee Health Department are closed, the medical resident should immediately go to the Broward General Emergency Room.
5. All follow-up treatment and /or laboratory tests shall be performed at the Broward General Employee Health Department at 1600 South Andrews Avenue, Fort Lauderdale, FL, 3316.

H. Palmetto General Hospital Medical Residents:

1. Report incident immediately to the person in charge of the department where the exposure or needle stick occurred. In addition, the Family Medicine Residency Director should be notified of the incident.
2. Complete the First Report of Injury with the assistance of the supervisor where the incident occurred and sign as directed to verify accuracy of information.
3. Immediately report to the Palmetto General Hospital Employee Health Department for initial exposure protocol and treatment. The Employee Health Office is located at 2001 West 68th Street, Hialeah, FL., # (305) 823-5000 ext. 3519. In the event the Palmetto General Hospital Employee Health Department is closed report to the Palmetto General Hospital Emergency Room.

III. TRACKING OF INCIDENTS

A. Infection Control Coordinator:

1. Responsible for on-going surveillance and monitoring of exposures for identification of trends and patterns and compliance with established policy.
2. Will establish corrective action plans and development of monthly report for employees and students.
3. Post the OSHA 300 Exposure Log for employees.
4. Maintain copies of all exposure incidents for the appropriate time.
5. Provide monthly report of student exposure incidents to University Risk Manager, and to the University Director of Compliance.

B. Workers Compensation

1. Maintain completed First Report of Injury Form for NSU employees.
2. Forward completed First Report of Inquiry Form to HR immediately via fax to ext. 6860 or 6859.

Appendix B
Medical College of Georgia
From <http://www.mcg.edu/sod/patientservices/infection/>

X. Student and Employee Health and Injuries

- A. Employees who are classified in OSHA categories I and II will be tested regularly for tuberculin sensitivity according to standard procedures. This will be done by Employee Health. Individuals who seroconvert may be placed on a prophylactic antibiotic regimen, if recommended by Employee Health. SEROCONVERSION DOES NOT MEAN YOU HAVE OR WILL GET TUBERCULOSIS. It means that you have been exposed to the extent that you have developed an immune response. The antibiotics are preventive. Tuberculin testing and any subsequent prophylaxis for students is done by Student Health.
- B. Employees or students who are injured by contaminated sharps during patient treatment or at other times in the performance of their duties will terminate their participation in the procedure as expeditiously as possible, then notify Admissions at 1-8582 or 1-6832.
- C. Event of a Blood borne Pathogen Exposure
In the event of a blood borne pathogen exposure, the Employee and/or Student will immediately stop the procedure in progress.
1. Patient/Employee/Student/Post-doctoral student: If a Patient, Employee, Student or Post-doctoral student treating, observing, or assisting on a patient is the injury recipient and the patient being treated is the source, the attending Faculty must be notified immediately. The attending Faculty will stabilize the patient to a point that work may stop on the procedure in progress.
 2. Faculty: If a Faculty member working on a patient is the injury recipient and the patient being treated is the source, another Faculty member will be asked to stabilize the patient to a point that work may stop on the procedure in progress.
 3. Admissions will be immediately notified by dialing 1-8582 or 1-6832.
 4. An Admission employee will immediately notify Oral and Maxillofacial Surgery at 1-9744 that an incident has occurred, and for a nurse to be ready to receive the source patient to draw blood for the lab. If a blood borne pathogen exposure occurs after 4 pm and a patient is directly involved, a nurse at Employee Health must be contacted at 1-3420 to draw the patient's blood for testing.
 5. The Source and Recipient will proceed to Patient Admissions. Data collection will be done discreetly and involved parties will be counseled in a private area. The Blood borne Pathogen Exposure Packet contains:
 - One (1) **MCG Student Incident Report Form**: this form requests any and all information as required by, but not limited to, OSHA, CDC, and Georgia House of Representatives HB 1448.
 - One (1) **MCG Employee's Report of Accident /Injury Form**: this form requests any and all information as required by, but not limited to, OSHA, CDC, and Georgia House of Representatives HB 1448.
 - One (1) **Blood/Body Fluid Exposure Form**: This form requests information as needed and required by Student and Employee Health.
 - One (1) **Clinical Immunology IV Lab Request Form****: This form is a request for evaluation for blood work drawn on the Source. Evaluation includes testing for:
 - HILV-III Antibody (EIA)
 - HbsAg: RPR and Hepatitis C

1. The Attending Faculty, Recipient, and Source will complete (as required) the appropriate Accident/Injury Form and Blood/Body Exposure Form.
 - *Two forms of the Clinical Immunology IV Lab Request form are used when an incident involves Visitor/Patient's as both Recipient and Source. Each form is marked with the ID number followed by either an "R" or "S" as determined who the Source is and who is the Recipient.
2. The attending Faculty of a blood borne pathogen exposure is responsible for the following:
 - Notifying the patient as soon as possible after the exposure has occurred.
 - Counseling the patient about the exposure and HIV testing.
3. Upon completion of the blood borne pathogen exposure packets, the Recipient and Source will immediately proceed to the appropriate clinic area:

Recipient: Recipient is defined as that person who experiences exposure (e.g. parenteral, mucous membrane, intact skin exposure, or puncture exposure) to blood or substances during a course of treatment.

- A. Student/Post-doctoral student. The Student or Post-doctoral student will proceed directly to Student Health with a copy of the Post Exposure Source Patient Data Form and with the Blood/Body Fluid Exposure form.
 - Upon arrival to Student Health, the Student or Post-doctoral student will sign in.
 - The Student or Post-doctoral student will complete the required forms and will be presented with a discharge form and counseled on the appropriate course of action to take until the results of the blood work of both the Recipient and the Source are determined. When blood is drawn on the Recipient, the ID number is followed with an "R" and the account number "A6001178" is also included on the label of the blood sample.
- B. Employee/Faculty. The Faculty or Employee will proceed directly to Employee Health with a copy of the Post Exposure Source Patient Data Form and with the Blood/Body Fluid Exposure Form.
 - The Employee/Faculty will check in with Employee Health.
 - The Employee or Faculty will complete the required forms and will be counseled on the appropriate course of action to take until the results of the blood work of both the Recipient and the Source are determined. When blood is drawn on the Recipient, the ID number is followed with an "R" and the account number "A6001178" is also included on the label of the blood sample.
- C. Visitor/Patient: The Visitor or Patient will be escorted directly to Oral and Maxillofacial Surgery with the Clinical Immunology IV Lab Request Form. The Visitor or Patient will have been counseled by the attending Faculty member as described in the Exposure section of the Blood borne Pathogen Exposure Control Plan.
 - The attending nurse in Oral Surgery will draw two (2) yellow topped vials of blood. The specimens will be handled in accordance with procedures set forth in the Blood borne Pathogen Exposure Control Plan, Policy: Standard Precautions, Section 13 (page 8).
 - The specimens will be labeled with the Incident ID number followed by an "R" and the account number "A6001178" is also included on the label of the blood samples. The specimens will immediately be transported to the Lab by the attending Employee from Admissions.

Source: The Source is defined as that person from whom the contamination (e.g., parenteral, mucous membrane, intact skin exposure, or puncture exposure to blood or substances during a course of treatment) extends.

- A. **Student/Post-doctoral student:** The Student or Post-doctoral student will proceed directly to Student Health with a copy of the Post Exposure Source Patient Data Form and with the Blood/Body Fluid Exposure Form
 - Upon arrival to Student Health, the Student or Post-doctoral student will sign in.
 - The Student or Post-doctoral student will complete the required forms
- B. **Employee/Faculty:** The Faculty or Student will proceed directly to Employee Health with a copy of the Post Exposure Source Patient Data Form and with the Blood/Body/Fluid Exposure Form.
 - The Employee/Faculty will check in with Employee Health.
 - The Employee or Faculty will complete the required forms and will be counseled on the appropriate course of action to take until the results of the blood work of both the Recipient and the Source are determined. When blood is drawn on the Recipient, the ID number is followed with an “R” and the account number “A6001178” is also included on the label of the blood sample.
- C. **Visitor/Patient:** The Visitor or Patient will be escorted directly to Oral and Maxillofacial Surgery with the Clinical Immunology IV Lab Request Form. The Visitor or Patient will have been counseled by the attending Faculty member as described in the Exposure section of the Blood borne Pathogen Exposure Control Plan. The attending nurse in Oral Surgery will draw two (2) yellow topped vials of blood. The specimens will be handled in accordance with procedures set forth in the Blood borne Pathogen Exposure Control Plan, Policy: Standard Precautions, Section 13 (page 8). The specimens will be labeled with the Incident ID number followed by an “S” and the account number “A6001178” is also included on the label of the blood samples. The specimens will immediately be transported to the Lab by the attending Employee from Admissions.

The clinic or area responsible for obtaining the result of the blood tests (of both Recipient and Source) as well as providing post-test counseling is dependent on who is directly involved (i.e. the Recipient and/or Source). The following chart dictates who is responsible.

Designated Area Responsible	
Student/Post-doctoral student	Student Health
Faculty Employee	Employee Health

Appendix C

University of Kentucky



Information for:

Dentists

- The PreViser Practice
- Understanding Risk
- Sample Reports
- PreViser Research
- Power Points
- Practice Analysis
- What Others Say
- Costs
- Download the Technology

Hygienists

Periodontists

Orthodontists

Employers

Insurers

Product Managers

Academic Institutions

Consultants

PreViser Corporate Info

Sample PreViser Analytic Reports

- [Periodontal Risk and Disease Assessment \(Patient format\)](#)
- [Periodontal Risk and Disease Assessment \(Clinical format\)](#)
- [Caries, Fracture, and Root Surface Risk \(Patient format\)](#)
- [Caries, Fracture, and Root Surface Risk \(Clinical format\)](#)
- [Oral Cancer Risk \(Patient format\)](#)
- [Correlation Report \(for managing periodontally affected patients\)](#)
- [Practice Analysis Report \(P.A.R.\)](#)

For more details and information about these reports, please [visit our Products page](#).

University of Kentucky
College of Dentistry
Direct Operative Procedures

Student Name & #: _____ Patient Name & #: _____ Clinical Course #: RSD 821
 RSD 831
 RSD 841
 Date: _____

Amalgam Composite Glass Ionomer IRM

SELF EVALUATION Tooth No(s) _____ Surfaces _____ Cusp Replace? ____ FACULTY EVALUATION

- | | | | | |
|--------------------------|---|--|--|--------------------------|
| <input type="checkbox"/> | 1. Clinical Preparedness
<input type="checkbox"/> Reviewed record
<input type="checkbox"/> Prepared operator, inc. xrays in viewbox
<input type="checkbox"/> Supplies/equipment available | <input type="checkbox"/> Knowledge of procedure
<input type="checkbox"/> Formulated plan for appointment
<input type="checkbox"/> Other _____ | <input type="checkbox"/> | |
| <input type="checkbox"/> | 2. Technical Performance
a. Initial Procedures
<input type="checkbox"/> Anesthesia delivery
<input type="checkbox"/> Isolation of field | <input type="checkbox"/> Other _____ | <input type="checkbox"/> | |
| <input type="checkbox"/> | b. Tooth preparation
<input type="checkbox"/> Outline Form
<input type="checkbox"/> Internal Form
<input type="checkbox"/> Outline Form of Box
<input type="checkbox"/> Margin Design
<input type="checkbox"/> Pin Placement | <input type="checkbox"/> Caries removed
<input type="checkbox"/> Retention Form
<input type="checkbox"/> Resistance Form
<input type="checkbox"/> Debris removal / prep cleansing
<input type="checkbox"/> Other _____ | <input type="checkbox"/> Accessory retention
<input type="checkbox"/> Nicking of Adjacent teeth**
<input type="checkbox"/> Placement of Base / Liner
<input type="checkbox"/> Matrix Band Placement | <input type="checkbox"/> |
| <input type="checkbox"/> | c. Restoration
<input type="checkbox"/> Occlusion
<input type="checkbox"/> Proximal contacts
<input type="checkbox"/> Axial contour | <input type="checkbox"/> Margins
<input type="checkbox"/> Anatomy / Surface Finish
<input type="checkbox"/> Composite Shade | <input type="checkbox"/> Composite Polish
<input type="checkbox"/> Other _____ | <input type="checkbox"/> |
| <input type="checkbox"/> | 3. Clinical Judgment
<input type="checkbox"/> Problem recognition
<input type="checkbox"/> Problem solving skills
<input type="checkbox"/> Solution implementation | <input type="checkbox"/> Independence
<input type="checkbox"/> Personal limits recognized
<input type="checkbox"/> Other _____ | <input type="checkbox"/> | |
| <input type="checkbox"/> | 4. Professionalism/Professional conduct
<input type="checkbox"/> Communication skills
<input type="checkbox"/> Confident
<input type="checkbox"/> Respectful
RECORD KEEPING:
<input type="checkbox"/> Notes/forms signed & dated
<input type="checkbox"/> Legible entries | <input type="checkbox"/> Patient management
<input type="checkbox"/> Dress code
<input type="checkbox"/> Infection control
<input type="checkbox"/> Radiographs dated | <input type="checkbox"/> Productive
<input type="checkbox"/> Other _____ | <input type="checkbox"/> |

5. Comments

STUDENT SIGNATURE

GRADING SCALE
 4 Exceptionally high level of performance
 3 High level of performance
 2 Expected level of performance
 1 Marginal level of performance
 0 Unacceptable level of performance

FACULTY SIGNATURE

Previous Weighted Average

Clinical Preparedness		Initial Procedures		Tooth Preparation		Restoration		Clinical Judgment		Professional Conduct	
15%		20%		20%		20%		15%		10%	
Raw Score	Adjusted Score	Raw Score	Adjusted Score	Raw Score	Adjusted Score	Raw Score	Adjusted Score	Raw Score	Adjusted Score	Raw Score	Adjusted Score
4	100	3	90	2	80	2	80	4	100	4	100
50.0											

New Weighted Average

Clinical Preparedness		Initial Procedures		Tooth Preparation		Restoration		Clinical Judgment		Professional Conduct	
5%		15%		30%		30%		15%		5%	
Raw Score	Adjusted Score	Raw Score	Adjusted Score	Raw Score	Adjusted Score	Raw Score	Adjusted Score	Raw Score	Adjusted Score	Raw Score	Adjusted Score
4	100	3	90	2	80	2	80	4	100	4	100
88.5											

BLOODBORNE PATHOGEN OCCUPATIONAL EXPOSURE PROTOCOL Glena Jarboe pager # 3-3000 X 4905

Definition: A potential blood-borne pathogen exposure is defined as a percutaneous injury (e.g., needle stick or cut with a sharp object), contact with skin (especially when the exposed skin is chapped, abraded, or afflicted with dermatitis, or the contact is prolonged or involves an extensive area) with blood, tissues or other bodily fluids to which standard precautions apply.

Proper treatment and recording of any potentially infectious exposure is important and should begin as soon as possible after the exposure occurs, preferably within the first few hours.

Perform Basic First Aid
Clean the wound, skin, or mucous membrane IMMEDIATELY with soap and running water. Allow blood to flow freely from the wound. DO NOT attempt to squeeze or "milk" blood from the wound. If the exposure is to the eyes, flush the eyes with water or normal saline solution for several minutes.

Report the incident to your supervisor, faculty member or appropriate superior IMMEDIATELY.
Glena Jarboe Pager 323-3000 X 4905

UK EMPLOYEES		UK STUDENTS	
8:00 am to 4:30 pm	4:30 pm to 8:00am and holidays	8:00 am to 4:30 pm	4:30 pm to 8:00 am and holidays
Call UK Worker's Care @ 9-1-800-440-6285. Report a potential blood-borne exposure. Appointment will be made for you at UHS.	Call UK Worker's Care @ 9-1-800-440-6285. Report a potential blood-borne exposure. An appointment will be made for you at UHS the next working day. You will be connected with the UHS physician on call, if you desire.	Call UHS @ 323-5823. Report a potential blood-borne exposure. An appointment will be made for you at UHS.	Contact UHS physician on call @ 323-5321. Ask for UHS Physician. Report exposure. Make appointment at UHS next working day.

DO NOT ATTEMPT TO HAVE YOUR OWN BLOOD DRAWN. UNIVERSITY HEALTH PERSONNEL WILL OBTAIN PROPER SAMPLES.

COMPLETE THE PROPER FORMS from the Occupation Exposure Packet:

- Exposure Incident Form
- Source patient consent form

HOSPITAL SOURCE PATIENT

Notify the RN responsible for the patient that blood needs to be Drawn. RN will collect blood sample from the source patient.

KENTUCKY CLINIC OR COLLEGE OF DENTISTRY SOURCE PATIENT

Take the patient to 3rd floor of the KY Clinic and register patient. Take source to lab on 2nd floor of KY Clinic, and give them the lab slips from the Exposure packet, or let them know a needle stick panel needs to be drawn.

WHEN YOU REPORT TO UNIVERSITY HEALTH SERVICE, BE SURE TO BRING YOUR SOURCE PATIENT'S NAME

HIGH RISK EXPOSURES: It is important that you indicate either to UK Worker's Care or to the UHS appointment clerk and to the clinician that your exposure may be HIGH RISK.

YOU MAY HAVE A HIGH RISK EXPOSURE IF:

- The source patient is known to be HIV positive and / or have symptoms of AIDS OR
 - The source patient does not have a documented positive HIV test, but is believed to be at high risk by virtue of multiple blood transfusions before 1985, multiple sexual partners, homosexual activity, or history of illegal drug injection. OR
 - Significant blood or bodily fluid exposure has occurred.
- A decision will be made whether or not to start post-exposure prophylactic medication.

Revised 02/3/06

Appendix D

University of Louisville

BLOODBORNE EXPOSURE INCIDENT REPORTING PROCEDURE

Any University of Louisville student, resident, staff or faculty member who sustains an occupational exposure will be provided post exposure evaluation and follow-up. An **occupational exposure** is considered any exposure by percutaneous injury (e.g., a needlestick or cut with a sharp object) as well as through contact between potentially infectious blood, tissues, or other body fluids and mucous membranes of the eye, nose, mouth or non intact skin.

The United States Public Health Service currently recommends that evaluation be undertaken immediately, so that treatment prophylaxis, if indicated, can be started preferably within 1-2 hours post-exposure. Report all occupational exposures or any emergency or spill involving human blood or other potentially infectious material to the Clinical Affairs Office, Room 218. (852-5128)

Protocol

1. Immediately cleanse the wound thoroughly with soap and water. If the eye is affected then use the eyewash station.
2. Inform the attending faculty member that an exposure has occurred. (Green "Needlestick Exposure Cards" are maintained in the dispensary areas.)
3. The source patient should be informed that an exposure occurred and request that they remain until someone from the Clinical Affairs Office has been contacted and an incident report has been completed.

During Working Hours:

1. Report to the Clinical Affairs Office (room 218) to complete an exposure incidence report.
2. The nature, extent, and circumstances of the exposure will be documented on the **Bloodborne Pathogens Exposure Incident Report*** form (page 61), located in the Clinical Affairs Office, Room 218. This form should be used for all **exposures**. See attachment.

The exposed student, resident, staff or faculty member must then take the completed form with them for medical evaluation.

1. A representative from the Office of Clinical Affairs or the exposed individual (if after hours) should call the University of Louisville Health Services Office-502-852-6446 for medical consultation and evaluation. The phone is answered 24 hours a day.
2. The clinic is located in the first floor Ambulatory Care building, University Hospital.
3. Both the exposed individual and source individual should report to the University of Louisville Health Services Office.

After Working Hours:

1. If you have an exposure after hours call 852-6446 immediately and ask to speak to the physician on call at the U of L Health Services Ambulatory Care Building/First floor 530 South Jackson Street.
2. The source and the exposed individual should report to the University of Louisville Health Services Clinic located on the first floor of the Ambulatory Care Building and register in that clinic.
3. Appropriate paperwork will be given to both individuals for completion.

Source individual

1. The source individual's blood should be drawn the same day as the exposure after consent is obtained. The blood should be tested for Hepatitis B surface antigen (HbsAg) and antibodies to HIV and HCV. If the source individual is known to be seropositive for HBV, HCV, or HIV, testing for that virus need not be done. If consent cannot be obtained; this should be noted in writing.
2. The source individual will not incur any financial expenses for testing.
3. The results of testing will be made available to the exposed individual. The exposed individual will also be informed of laws and regulations governing confidentiality of the source individual's status.

Exposed individual

1. PEP (postexposure prophylaxis) against HIV and HBV should be provided. Currently, there are no effective postexposure prophylaxis treatments available for HCV. However, early diagnosis and treatment of HCV infection can reduce the risk of chronic HCV infection. PEP against HIV, if medically indicated, should be initiated promptly, preferably with 1-2 hours after the exposure incident.
2. The exposed individual's blood should be drawn the same day as the exposure incident, after consent is obtained. If the exposed individual in consultation with the evaluating physician elects to take PEP against HIV, the CDC recommends drug toxicity/monitoring at baseline and 2 weeks after starting PEP. Monitoring by the physician should include a complete blood count and renal and hepatic chemical function tests.
3. If the exposed individual gives consent for baseline blood collection, but does not give consent for HIV testing, the blood sample must be preserved for 90 days. If, within this time period, the individual decides to consent to HIV testing, such testing must be done as soon as feasible.
4. The exposed individual will be offered postexposure prophylaxis in accordance with the current recommendations of the U.S. Public Health Service and CDC.
5. If the source individual is HIV seropositive or his/her status is unknown, the CDC recommends that HIV testing be repeated at 6 weeks, 12 weeks, and at 6 months.
6. If the source individual is HCV seropositive or his/her status is unknown, the CDC suggests that HCV testing be repeated at 6 months.
7. The University of Louisville Health Services Clinic will follow an approved protocol for evaluation, testing, treatment, counseling, and follow-up.
8. The exposed individual will be given appropriate counseling concerning precautions to take during the period after the exposure incident. The exposed individual will be advised to report any febrile illness, flulike symptoms, rash, lymphadenopathy, or other illness within 12 weeks of the incident to the treating physician.
9. During the follow-up period after the exposure, exposed individuals will be advised to follow the U.S. Public Health Service recommendations for preventing transmission of infectious agents.
10. The exposed individual should contact the University of Louisville Health Services physician with any questions or concerns. Documentation of each incident, and associated records will be kept in the Office of the Associate Dean for Clinics and Postdoctoral Education with limited access and strict confidentiality maintained.

During all phases of the follow-up, confidentiality of the exposed and source individuals will be protected.

Healthcare Professional's Written Opinion

After the consultation, the attending physician (University of Louisville Health Services) or Health Care Provider (HCP) should provide a written opinion to the Assistant Dean for Clinical Affairs (University of Louisville School of Dentistry) and the exposed individual within 15 days of the evaluation.

The written opinion will be limited to:

- The recommendation for HBV vaccination
- That the exposed individual has been informed of the results
- That the exposed individual has been informed about any medical conditions resulting from the exposure to blood or other potentially infectious materials that require further evaluation.

All other findings or diagnoses will remain confidential and will not be included in the written opinion.

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(* This form is to be completed by any faculty, staff or student who has a needlestick or puncture wound OR contamination of any open wound or mucous membrane by blood or saliva.)

Bloodborne Pathogen Exposure Incident Report

This form must be completed following an exposure incident. When an exposure incident occurs, the exposed employee shall notify the appropriate supervisor and complete the front of this form as soon as feasible. The clinical supervisor is responsible for completing the sections on the back of this sheet and ensuring that the plan for postexposure evaluation and follow-up is adhered to.

Exposed Individual:

Social Security #

Position/Title:

Department: _____

Have you received the HBV vaccination series? _____ No _____ Yes

Incident Description:

Date:

Time:

Exact Location:

Potentially Infectious Material(s) involved:

Source Individual, If known:

TYPE:

Describe your duties as they relate to the exposure incident:

Route of exposure: (ie. Splash, needlestick, etc..)

Describe the circumstances under which exposure occurred:

Which personal protective equipment was being used? (i.e. gloves, etc.)

I verify that the information above is correct and accurately describes the exposure incident in which I was involved.

Exposed Individual's Signature

Date