

Consortium of Operative Dentistry Educators

(CODE)



REGIONAL REPORTS
FOR
FALL 2007

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 22, 2007, CODE held a National/International meeting during the annual meeting of the Academy of Operative Dentistry in Chicago.

Dr. Kevin Frazier, Associate Professor, Medical College of Georgia School of Dentistry, presented and facilitated the program in concert with the Regional CODE Directors/representatives. The program, "*Preclinic Operative Dentistry Curriculum: The Future Top Ten Concepts/Technique Taught in the Operative Curriculum,*" was an outcome of the Regional responses to the Fall 2006 CODE National Agenda Item #1.

I had the privilege to attend the Region VI meeting at the University of Puerto Rico 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.

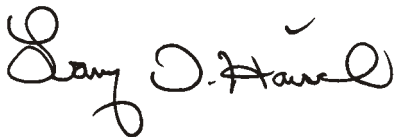
Continue to spread the word about CODE and work to provide input to Licensure Boards on Restorative Dentistry. Also encourage/invite members of the Licensure examining boards to attend the Fall Regional meetings. Invite our colleagues in the Armed and Public Health Services to our meetings - both Regional and National.

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. Ed Hewlett, Scott Shaddy, Terry Fruits, Ed Deschepper, Richard Lichtenthal, and Juan Agosto), 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 | 2006-2008 |
| II | Midwest | Dr. R. Scott Shaddy Creighton University Omaha, NE | 402-280-5226 shaddy@creighton.edu | 2006-2008 |
| 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 | 317-274-2419 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)
2007-2008**

Paid - Regions and Schools

✓ = Paid Member as of January 7, 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 2007

was established after review of the suggestions contained in the reports of the 2006 Fall Regional meetings, National CODE Meeting and from the Regional CODE Directors. Previous National agendas are reviewed to avoid topic duplication. Inclusion of a previous topic may occur for discussion from the aspect to what has changed and the response/action taken and the outcome.

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

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

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

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

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

The required format and sequence will be:

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

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

NOTE: to locate the web site via a search engine, enter Academy of Operative Dentistry 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 21, 2008 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.

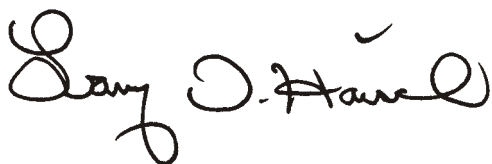
To update your university's directory listing on the CODE website, <http://www.unmc.edu/code/>, click on the red link, "Please help update," found under the CODE menu on the left side of the screen. Make any necessary changes and click "submit form".

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 68583-0750

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

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. Teaching Dental Biomaterials in North American Dental Schools

The following questions were provided by the ADEA Section on Operative Dentistry and Biomaterials. The responses will be presented as part of this section's program at the 2008 ADEA Meeting in Dallas. Be as specific as possible although multiple answers may be appropriate in some cases. Please add appropriate comments to further explain your answers as needed for clarity or elaboration.

A. Does your school have a distinct academic entity known as Dental Biomaterials (DBM) or other similar title for this subject (*Dental Materials, etc.*)?

- Yes or No
- If yes, what is it called?
- If yes, classify it per your school's organizational scheme - Department, Division, Section, Other (*explain*).
- If it is a subset of another department, identify the department.

B. How many full-time faculty teach DBM at your school as their primary teaching responsibility?

How many full-time faculty co-teach DBM at your school as part of their teaching responsibility?

How many part-time faculty teach or co-teach DBM at your school?

C. When in the curriculum is DBM taught?

(Indicate all that apply if taught in more than one year.)

- Freshman year
- Sophomore year
- Junior year
- Senior year

D. How is DBM (*specifically*) taught at your school?

- Separate Course(s) only
- Part of another Course or Courses only
- Combination (*Both as a separate introductory course, AND as part of other courses e.g. Operative Dentistry, and/or Prosthodontics, and/or Bio-clinical Seminars*)
- Other (*Describe*)

- E. What format, setting and method is used to teach DBM at your school?
(Indicate all that apply if a combination of formats is used.)
- Lecture (*whole class*)
 - Laboratory (*hands-on*)
 - Clinic (*with patients present*)
 - Seminar (*small groups, ≥10 students*)
 - Individual or very small groups (*1-5 students*) with an instructor
 - Individual (*Self-instructional learning via CD or DVD*)
 - Individual (*Self-instructional learning via web-based program*)
 - Textbook (*Provide the name of the book*)
 - School-produced DBM Manual
- F. Did your school experience a curricular revision during the last 7 years? If yes, on a scale of 1 to 5 (*1 is less important and 5 is highly important*) rate the level of importance given to DBM SINCE the curricular revision at your school. Was this rating an increase or decrease compared to DBM's status before the revision?
- G. Does your school make a specific effort to integrate the science of DBM into the clinical curriculum? If yes, please describe how you try to accomplish this?
- H. Are you satisfied with the overall time and effort allotted to teaching DBM at your school? Yes/No. If not, what would you change if you could?
- I. *Please provide any other comments or thoughts about this issue.*

II. National Testing Agency for Licensure and Credentialing.

There is an increased utilization of a national testing agency for licensure and credentialing. Do your students take this exam while they are still students? When are these exams given? What are your outcomes in terms of passing and failures? Are these results better than previous exams? What is the level of involvement of your school with this exam? Most of the exams utilize dentoforms as part of the testing. Is your school preparing your students to pass this exam? If yes, how?

III. Dual-arch Impressions

Dual-arch impressions are a very popular technique, but some faculty are reluctant to use this technique although literature supports the usage. Is your school using dual-arch impressions (triple tray) for single tooth restorations, quadrant trays or full-arch? What type of dual-arch impression trays are used? What departments/sections utilize this technique? If dual-arch impression trays are used, what guidelines are recommended?

IV. Vital Pulp Therapy (Indirect/direct pulp capping)
(This topic is being revisited - refer to 1999 CODE Regional Reports)

Is your school policy accepted by all disciplines? Do you incorporate vital pulp therapy exercises in your preclinical operative curriculum? Are you in agreement with treatment approaches taught in Endodontics? Pedodontics? Prosthodontics?

V. Restoration of Implants

What experiences are provided to your students in the restoration of implants?
Do your students have the opportunities to PLACE implants (surgical phase) and/or do the second stage surgery to uncover them (after integration)?
Who/what departments/sections are supervising the restoration of implants?
What training is provided to the faculty?

VI. Electronic Patient Records

Does your school use an electronic patient record (EPR)?
If yes, which EPR system do you use?
Please list the pros and cons of your school's EPR system.

Does your school use digital radiography as the primary radiographic imaging system?
(Expanded topic - refer to 2006 CODE Regional Reports)
If so, which software do you use for digital radiographs?
Is the digital radiographic system integrated into the EPR?
Please list the pros and cons of your experiences with digital radiography.

Regional CODE Agenda

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

Suggestions for CODE.

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

- Other comments/suggestions?

CODE REGIONAL MEETING REPORT FORM

REGION:

LOCATION AND DATE OF MEETING:

CHAIRPERSON:

Name:

Phone #:

Address:

Fax #:

E-mail :

List of Attendees:

Please complete the CODE Regional Attendees Form (following page)

Suggested Agenda Items for Next Year:

LOCATION & DATE OF NEXT REGIONAL MEETING:

Name:

Phone #:

Address:

Fax #:

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 68583-0750.

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 |
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CODE REGIONAL MEETING REPORT FORM

REGION: I (Pacific)

LOCATION AND DATE OF MEETING:

UCLA School of Dentistry

Los Angeles, CA

November 8-9, 2007

CHAIRPERSONS:

Name: Dr. Edmond R. Hewlett

Phone #: 310-825-7097

Address: UCLA School of Dentistry

Fax #: 310-825-2536

10833 Le Conte Avenue

E-mail : ehewlett@dentistry.ucla.edu

Los Angeles, CA 90095-1668

Date: November 8-9, 2007

List of Attendees:

Please see reverse of this page for List of Attendees to 2007 Regional Meeting

Suggested Agenda Items for Next Year:

LOCATION & DATE OF NEXT REGIONAL MEETING:

Name: Dr. John C. Lee

Phone #: 503-494-8948

Address: Oregon Health Sciences School of Dentistry

Fax #: 503-494-8892

611 SW Campus Drive #175

E-mail leejoh@ohsu.edu

Portland, OR 97239

Date: October 23-24, 2008

Please return all completed enclosures to
Dr. Larry D. Haisch, National Director, UNMC College of Dentistry;
40th and Holdrege Streets; Lincoln, NE 68583-0750.

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 | ATSU | 480-219-6184 | 480-219-6180 | krazoky@atsu.edu |
| Douglas Roberts | LLU | 909-558-4640 | 909-558-0235 | droberts@llu.edu |
| Robert Hasel | MUCDM | 623-572-3803 | 623-572-3830 | rhasel@midwestern.edu |
| Juliana da Costa | OHSU | | | dacostaj@ohsu.edu |
| John Lee | OHSU | 503-494-8948 | | leejoh@ohsu.edu |
| Mark Fogelman | UBC | | | |
| Karen Gardener | UBC | 604-822-3566 | 604-526-7998 | drkg@interchange.ubc.ca |
| Janey Bauer | UCLA | 310-825-7747 | 310-641-0523 | jbauer@dentistry.ucla.edu |
| Edmond Hewlett | UCLA | 310-825-7097 | 310-825-2536 | ehewlett@dentistry.ucla.edu |
| William Morgan | UCLA | 310-206-2789 | 310-825-2536 | bmorgan@dentistry.ucla.edu |
| Sue Spackman | UCLA | 310-794-5674 | 310-825-2536 | sspackman@dentistry.ucla.edu |
| David Graham | UCSF | 415-476-1176 | | David.Graham@ucsf.edu |
| Sam Huang | UCSF | 415-892-4845 | 415-246-5801 | samuelhuang@earthlink.net |
| Jonathan Rothbart | UNLV | 702-774-2516 | | jonathan.rothbart@unlv.edu |
| Richard Walker | UNLV | 702-774-2684 | | Richard.Walker@unlv.edu |
| Phil Buchanan | UOP | 415-351-7152 | 415-929-6531 | jbuchan@garlic.com |
| Alan Budenz | UOP | 415-929-6574 | | abundez@pacific.edu |
| Marc Geissberger | UOP | 415-929-6581 | | mgeissbe@pacific.edu |
| Douglas Young | UOP | 415-749-3308 | | dyoung@pacific.edu |
| Loris Abedi | USC | 213-740-5830 | | labedi@usc.edu |
| Calvin Lau | USC | 213-740-1525 | 213-740-6778 | cslau@usc.edu |
| Gary Harmatz | USC | 213-740-6778 | | harmatz@usc.edu |
| Rick Kahn | USC | 213-740-8084 | | rkahn@usc.edu |
| J. Martin Andersen | UW | 253-852-5155 | | jma@u.washington.edu |

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

(Editor note: Questions condensed for printing purposes)

I. Teaching Dental Biomaterials in North American Dental Schools

Five responding schools have a distinct DBM academic entity and four do not. Six of these schools have at least one full-time faculty person (range: 1 to 3) with DBM as a primary teaching responsibility. DBM is typically taught in the first two years with a follow-up in year three or four. Course material is predominantly presented in combination of separate course(s) plus integration of DBM into other courses. Lecture-plus-lab is the common teaching mode. Two schools perceive a reduced importance of DBM in the curricula over the last five years, while importance level is unchanged elsewhere. All but two schools – both with PBL-based curricula – report satisfaction with the time and effort devoted to teaching DBM

II. National Testing Agency for Licensure and Credentialing.

Students at U.S. Region I school almost exclusively take the WREB, the exception being UNLV, where students take WREB and/or ADLEX. The exam is taken prior to graduation at all but one responding school.

III. Dual-arch Impressions

Dual-arch impressions are taught and utilized at six responding schools, with the other three schools exclusively using full-arch impressions.

IV. Vital Pulp Therapy (Indirect/direct pulp capping)

Most schools report general acceptance of their vital pulp therapy policy across disciplines, but there are exceptions. MTA is increasingly being used as a pulp-capping material.

V. Restoration of Implants

Only one school – UOP – reports that some predoctoral students place implants. Implant restoration is taught by restorative and/or prosthodontic disciplines, with prosthodontists predominantly supervising the restoration procedures.

VI. Electronic Patient Records

Eight of ten responding schools use and EPR, though not all of these are completely paperless w/r to patient records. The axiUm system is most common. Five respondents use digital radiography in both pre-doctoral and graduate clinics. At two school digital intraoral radiography is used only in graduate programs so far, and two have not adopted digital as of yet, but plan to.

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.

Dr. Bob Hasel of MUCDM provided an update on this new school. The CDM will enroll its inaugural class of 105 students in August, 2008. Midwestern University is a 100 year-old institution which began as an osteopathic medical school in Chicago. The CDM is the seventh program at the Phoenix, Arizona campus. The planned non-traditional curriculum has so far garnered positive feedback from CODA for its innovative aspects. axiUm will be used in the simulation clinic, and the entire curriculum will be accessible to students on Blackboard. The CDM is also working closely with Brown and Herbranson group at Stanford University to develop virtual reality training modules. The VR work is funded by a \$5M grant from NIH/NIDCR and NASA. The CDM has a total of 60 FTE that we be filled on a phase-in basis. The basic science curriculum is 500 hours, entirely systems-based, and will be presented in a case-based format. The pre-doctoral clinic to be organized into 15 “pods,” each consisting of 15 students, one faculty director, one assistant director, and one receptionist. Pre-requisites include biochemistry, microbiology, physiology, and human anatomy.

Dr. Karen Gardener Provided an update on the Dentportfolio program that she has instituted at UBC. Dentportfolio is Dr. Gardener’s adaptation of the ePortfolio concept to produce a globalized educational experience in the predoctoral dental curriculum. Students from UCSF and UCLA will participate with those from UBC, Saskatchewan, Melbourne, and Sydney in a Dentportfolio International Peer Review project this academic year. Please visit www.dentportfolio.com for more information and examples of projects by UBC students.

Drs. Doug Young and Alan Budenz of UOP provided an update on CAMBRA, including the development of two more regional CAMBRA consortia in addition to the original west coast group. Individual school representatives commented on the progress and challenges of adopting the CAMBRA philosophy into their institutions’ curricula. The three CAMBRA consortia will meet jointly in conjunction with the WCMID meeting in Chicago on August 13-14, 2008

Suggestions for CODE.

- What can the organization do to improve its effectiveness?
 - Publish a QUARTERLY which presents a review of articles pertinent to CODE members
 - Change the name so it will appeal to more than “Operative” instructors
- 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.

- Enable more open communication with a chat room and blogging where we can present concepts/problems for others to offer their comments.
- Other comments/suggestions?

2007 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. Teaching Dental Biomaterials in North American Dental Schools

The following questions were provided by the ADEA Section on Operative Dentistry and Biomaterials. The responses will be presented as part of this section's program at the 2008 ADEA Meeting in Dallas. Be as specific as possible although multiple answers may be appropriate in some cases. Please add appropriate comments to further explain your answers as needed for clarity or elaboration.

A. Does your school have a distinct academic entity known as Dental Biomaterials (DBM) or other similar title for this subject (*Dental Materials, etc.*)?

- **Yes or No**
- **If yes, what is it called?**
- **If yes, classify it per your school's organizational scheme - Department, Division, Section, Other (*explain*).**
- **If it is a subset of another department, identify the department.**

UA: No responses noted.

ATSU: No responses noted.

UBC: Yes – Division of Biomaterials. Departments are the smallest academic unit recognized by the University. Divisions are recognized within the Faculty. The faculty member in charge of the Division of Biomaterials is cross-appointed between the two departments of the Faculty, i.e. Oral Biological and Medical Sciences (OBMS) and Oral Health Sciences (OHS).

LLU: Not a distinct entity – it is under the Center for Dental Research but faculty have appointment in the Dept. of Restorative Dentistry

MUC: No responses noted.

UNLV: No.

- OHSU:** Yes, the Division of Biomaterials and Biomechanics. It is a division of the Department of Restorative Dentistry. Operative and Prosthodontics are the other two divisions.
- UOP:** No, Dental Materials has been absorbed into larger interdisciplinary courses. Historically, Dental Materials was a free-standing, 10 week lecture course to third year dental students. That changed with our curricular revision over the last three years
- UCLA:** Yes, the Section of Biomaterials within the Division of Advanced Prosthodontics, Biomaterials and Hospital Dentistry.
- UCSF:** Yes, we have a distinct academic entity – the Division of Biomaterials and Bioengineering in the Department of Preventive and Restorative Dental Sciences. The Division includes three Ph.D. full-time researchers who lecture on the subjects in the D1 class for the entire year. Their lectures are integrated into the pre-clinical curriculum as procedures are being taught. Clinical application is taught by clinical faculty.
- USC:** We do not have a DBM entity, but the subject would be under the aegis of the Division of Primary Oral Health Care, which includes Operative.
- UW:** Yes – the Dental Material Science Division in the Department of Restorative Dentistry

**B. How many full-time faculty teach DBM at your school as their primary teaching responsibility?
 How many full-time faculty co-teach DBM at your school as part of their teaching responsibility?
 How many part-time faculty teach or co-teach DBM at your school?**

- UA:** No responses noted.
- ATSU:** No responses noted.
- UBC:** One (Materials scientist). None. None.
- LLU:** None. Three. None.
- MUC:** No responses noted.
- UNLV:** One. None. None.
- OHSU:** Three. One. Two.
- UOP:** None. Two. Four.

UCLA: One. One. Four.

UCSF: Three (Materials Ph.D.s). None. None.

USC: We use a problem-based learning (PBL) pedagogy as the primary method of implementing its curriculum. DBM is introduced as part of dental cases that result in student self study and discussion facilitated by faculty, who are not necessarily expert or even specifically knowledgeable in this discipline.

UW: Two. Two. Eight.

C. When in the curriculum is DBM taught?

(Indicate all that apply if taught in more than one year.)

- **Freshman year**
- **Sophomore year**
- **Junior year**
- **Senior year**

UA: No responses noted.

ATSU: No responses noted.

UBC: D1, D2, D3, and an update/Q&A session in the 4th year.

LLU: D1, D2, D3 (review course)

MUC: No responses noted

UNLV: Freshman year summer semester and Sophomore year fall semester

OHSU: D1 and D3.

UOP: With our recent curricular revision, DBM has been woven into the curriculum in several courses.
First year – Preclinical Fixed Prosthodontics covers information on Alginate, Silicone Impression Materials, Gypsum Materials, Casting Alloys, Ceramic Substrates and Ceramics, Cements, Abrasives and Polishing Materials and Provisional Materials. Operative Dentistry covers information on Amalgam, Composite, Resin Chemistry, Adhesive Cements, and Dentin Bonding. Cariology introduces the use of Glass Ionomer restorative materials in the clinical management of caries risk patients.
Second year – Dental Practice 201-203 is an integrated course which covers several disciplines and talks about the clinical applications of basic dental materials. This course is designed to bring clinical relevance to the information learned during the first year curriculum. Removable

Prosthodontics covers information on Gypsum Products, Denture Teeth, Acrylics, Partial Denture Alloys, and Polishing Materials.

Third year – Dental Practice 301-303 is another integrated course which covers advanced topics in dentistry. There is continued reinforcement of the basic information taught during the first and second year. Topics include information on where dentists go for information on new materials and how to assess a new product for incorporation into clinical practice.

UCLA: First and Second Years – one full lecture course in each year dedicated to DBM with additional lectures integrated throughout the preclinical courses. Third Year – additional topics covered in Advanced Restorative Dentistry lecture course.

UCSF: D1 (lectures), then clinical application of the information is taught by clinical faculty through D4.

USC: No responses noted

UW: D1 – Dental Materials Science lecture & lab course. D4 – elective lecture course (New Dental Materials)

D. How is DBM (*specifically*) taught at your school?

- **Separate Course(s) only**
- **Part of another Course or Courses only**
- **Combination (*Both as a separate introductory course, AND as part of other courses e.g. Operative Dentistry, and/or Prosthodontics, and/or Bio-clinical Seminars*)**
- **Other (*Describe*)**

UA: No responses noted.

ATSU: No responses noted.

UBC: Two introductory lectures in first year; a series of material-specific lectures, to ensure that students acquire a basic understanding of the materials that they use in clinical-related exercises, in second year; a core of biomaterials lectures, concentrated into a biomaterials module, in the second term of third year; a few other lectures integrated within clinical modules

LLU: Combined with other courses within the Department of Restorative Dentistry and scheduled as the topics are appropriate to the procedures to be done. Grading is integrated with the rest of the course. There is also a “review” course in the D3 year that is a stand-alone course

MUC: No responses noted.

UNLV: Biomaterials is taught as a separate course and as a part of other courses. The Freshman introductory biomaterials course is fourteen weeks and

includes the following topics: Introduction, Structure of Materials, Properties of Materials, Optical Properties, Surface Science, and Introduction to Polymers, Introduction to Ceramics, and Introduction to Metals, Corrosion, Abrasion, Finishing and Polishing. During the freshman year introductory biomaterials lectures are presented in Operative Dentistry and General Clinic Stream courses. These topics include: Dental Amalgam, Gypsum and Irreversible Hydrocolloid. In addition, the course director of Pre-clinical Operative Dentistry presents lectures on Resin-based Composite, Dentin Bonding, Dental Amalgam, and Cast Gold, during the pre-clinical course in Operative Dentistry. The course director of Pre-clinical Restorative Dentistry also presents lectures on impression materials and cast metal.

The Sophomore applied biomaterials course is fourteen weeks and includes the following topics: Gypsum, Impression Materials, Dentin Bonding, Pit and Fissure Sealants, Photo polymerization, Denture-base Materials, Cements, Dental Amalgam and Mercury Hygiene, Metals for Prosthodontics. During the fall semester biomaterials lectures are presented in the Simulated Patient Care course. These topics include: Resin-based Composite, Glass Ionomer, Resin-modified Glass Ionomer and Compomers. In the spring semester, a lecture is presented on ceramic materials and metals for ceramic restorations in the Simulated Patient Care course.

- OHSU:** Combination (Both as a separate introductory course, AND as part of other courses e.g. Operative Dentistry, and/or Prosthodontics, and/or Bio-clinical Seminars)
- UOP:** Refer to Section I-C for response.
- UCLA:** Combination – a separate course in each of years 1 and 2 and as part of other preclinical and D3 advanced courses
- UCSF:** Combination (Both as a separate introductory course, AND as part of other courses)
- USC:** We use a problem-based learning (PBL) pedagogy as the primary method of implementing its curriculum. DBM is introduced as part of dental cases that result in student self study and discussion facilitated by faculty, who are not necessarily expert or even specifically knowledgeable in this discipline.
- UW:** Separate courses only. Refer to Section I-C for response

**E. What format, setting and method is used to teach DBM at your school?
(Indicate all that apply if a combination of formats is used.)**

- **Lecture (whole class)**
- **Laboratory (hands-on)**
- **Clinic (with patients present)**
- **Seminar (small groups, ≥10 students)**
- **Individual or very small groups (1-5 students) with an instructor**
- **Individual (Self-instructional learning via CD or DVD)**
- **Individual (Self-instructional learning via web-based program)**
- **Textbook (Provide the name of the book)**
- **School-produced DBM Manual**

UA: No responses noted.

ATSU: No responses noted.

UBC: Lecture, some topics covered using PBL, textbook (Anusavice, O'Brien, Van Noort, Darvell), and School-produced DBM manual.

LLU: Lecture; Laboratory; Teacher produced manual; Textbook - Craig's Restorative Dental Materials 12th edition by John Powers and Ronald Sakaguchi. (as a secondary: Phillips' Science of Dental Materials 10th edition by Anusavice) (Dental Materials and Their Selection 3rd edition by William O'Brien as a reference).

MUC: No responses noted

UNLV: Lecture (whole class). In pre-clinical courses often a material is presented via lecture then the students have a hands-on project in the laboratory with that material. There is also individualized instruction in the clinic with materials and techniques that the students may be unfamiliar with. The students have Restorative Dental Materials, by Craig in their VitalSource Library.

OHSU: Lecture; Laboratory; Clinic;
Seminar – We use a team based learning concept where students work in small groups of 6-7 to complete an exam as well as an external assignment and a class discussion
Individual– lectures are presented on an e-curriculum website for use by the students outside of class
Textbook (we do not use a specific text, but suggest several options – Powers and Sakaguchi, Anusavice, Ferracane)
School-produced DBM Manual – We produce a manual called “Technical Procedures” which explains the composition and use of dental materials and is used in the DM labs as well as a reference for the preclinic and clinic

UOP: During the first year segments of our curriculum, lectures are used to deliver 100% of the content described above. Additionally, students have a

laboratory course which utilizes many of the materials discussed in lecture. During the second year a mix of Lecture, Hands-on Exercises (Lab), Clinic and Seminars are utilized. The Dental Practice course utilizes both lecture and small group seminars to discuss the topics presented during lecture

- UCLA:** Lecture, laboratory, textbook (Craig's Restorative Dental Materials, 12th ed.)
- UCSF:** Lecture. All lectures are videotaped and available to students on the Web.
- USC:** In addition to the PBL pedagogy described above, DBM is also incorporated into the pre-clinical simulation classes. The didactic material is taught as part of the lecture portion (resource sessions) of classes in Introduction to Restorative & Amalgam, Bonded Restorations including composite, and Anterior and Posterior Fixed Prosthodontics. This takes the following forms:
- Lecture (whole class)
 - Laboratory (hands-on)
 - Clinic (with patients present)
 - Seminar (small groups, 6-8 students)
- UW:** Lecture (whole class); Laboratory (hands-on); Textbook (Craig) and School-produced DBM manual (Clinic Manual).

F. Did your school experience a curricular revision during the last 7 years? If yes, on a scale of 1 to 5 (*1 is less important and 5 is highly important*) rate the level of importance given to DBM SINCE the curricular revision at your school. Was this rating an increase or decrease compared to DBM's status before the revision?

- UA:** No responses noted.
- ATSU:** No responses noted.
- UBC:** Yes, DBM rates a 2, down from approximately 4 prior to the revision.
- LLU:** Current rating is 4. No change since last revision.
- MUC:** No responses noted
- UNLV:** From 1-5, rate the level of importance given to DBM since the curricular revision – 5. This was an increase compared to the previous status. Prior to 2006, we contracted with lecturers from other schools to present biomaterials information in an ad hoc manner. We have since activated the two courses that were planned in the curriculum
- OHSU:** Curriculum revision is in process. DBM was considered important and its

status has not really changed – level is 2-3

- UOP:** We just completed a curricular revision. On a scale of 1 to 5 the level of importance for DBM is 4. This would represent an increase from the previous rating of 3
- UCLA:** We are currently in the process of a major curriculum revision planned to launch with the Fall 2008 entering class. All DBM material will be integrated throughout the “Restoration of Form, Function, and Esthetics” core thematic track. The importance of DBM will remain at its current level of 4.
- UCSF:** Yes, we underwent a curriculum revision in Operative 2 years ago. The DBM was recently re-organized to be more integrated and timed with procedures being taught. The amount of lectures was decreased slightly but insignificantly.
- USC:** While curriculum change has occurred recently, the importance of DBM decreased to 2. PBL utilizes an integrated approach through small group case studies, preclinical simulation classes, and clinic. USC is not satisfied with the current integrated approach and has a proposal before the curriculum committee to introduce a dedicated DBM course consisting of lectures and a laboratory component.
- UW:** No, although the Curriculum Committee constantly adjusts the curriculum. Specifically, the DBM curriculum changes with changes in the profession and with changes in new dental materials. The Restorative Department supervises and administers these changes.

G. Does your school make a specific effort to integrate the science of DBM into the clinical curriculum? If yes, please describe how you try to accomplish this?

- UA:** No responses noted.
- ATSU:** No responses noted.
- UBC:** By integrating dental material-specific lectures with clinical exercises – to coincide with the first time usage by the students. The entire course highlights the relevance of biomaterials science to the practice of dentistry
- LLU:** Yes, with student research projects.
- MUC:** No responses noted.
- UNLV:** In addition to PowerPoint lectures and textbook chapters, journal articles are presented to illustrate the science underpinning clinical techniques. For example, during the lecture on corrosion an article entitled, “Galvanic

Interaction Between Gold and Amalgam: Effect of Zinc, Time, and Surface Treatments.” Walker, R.S., Wade, A.G., Iazzetti, G., and Sarkar, N.K., *JADA* 134:1463-1467, 2003, explains why dental galvanic pain occurs and how it may be treated. The following two articles concerning the stability of alginate impressions are presented to show how much distortion takes place depending on the time of pouring of the impression: “Dimensional stability of irreversible hydrocolloid impression material,” Coleman, R.M., Hembree, J.H., Weber, F.A., *Am J Ortho*, 75(4) 438-46, 1979, and “Dimensional stability of three different alginate impression materials,” Cohen, B.I, et al, *J Prosthodont*, 4:195-99, 1995.

- OHSU:** Our third year course is very applied and aimed at answering student’s clinical questions with the basic science information revolving around material selection and use
- UOP:** Faculty attend several cross-training seminars at noon designed to bring them up to speed on the latest advances and changes in the materials utilized at Pacific. They are then encouraged to share this information with students as they engage in patient care
- UCLA:** Again, many DBM fundamentals are integrated into the preclinical curriculum and thus taught concurrently with instruction in the clinical applications for many materials. This integration will be expanded in the new curriculum.
- UCSF:** No.
- USC:** No responses noted.
- UW:** Yes. We use a Restorative Dentistry Clinical Reference booklet which is updated yearly

H. Are you satisfied with the overall time and effort allotted to teaching DBM at your school? Yes/No. If not, what would you change if you could?

- UA:** No responses noted.
- ATSU:** No responses noted.
- UBC:** No. Moving to a PBL-based curriculum, a significant loss in curriculum time (50%) and in continuity occurred. Through continuous efforts, however, the situation has been redressed and the curriculum time allocated to bio/dental materials has increased to ~80-85% of the initial (40 hours over two years) allotment.
- LLU:** It should be better applied in the clinic by attending faculty.
- MUC:** No responses noted.

- UNLV:** Yes. An elective course during the Junior year enrichment period would be of benefit to the students.
- OHSU:** Yes.
- UOP:** Yes.
- UCLA:** Yes.
- UCSF:** Yes.
- USC:** We are attempting to re-introduce a stand-alone DBM hybrid “course”, i.e., not pure PBL.
- UW:** Yes.

I. *Please provide any other comments or thoughts about this issue.*

- UNLV:** Calibration of adjunct faculty is conducted twice annually.

II. National Testing Agency for Licensure and Credentialing.

There is an increased utilization of a national testing agency for licensure and credentialing. Do your students take this exam while they are still students? When are these exams given? What are your outcomes in terms of passing and failures? Are these results better than previous exams? What is the level of involvement of your school with this exam? Most of the exams utilize dentoforms as part of the testing. Is your school preparing your students to pass this exam? If yes, how?

- UA:** No responses noted.
- ATSU:** No responses noted.
- UBC:** No responses noted
- LLU:** About 98% of LLU students take WREB examination that at present is given in March and June at LLU.
- MUC:** No responses noted
- UNLV:** Our students take their dental licensure examination while they are students. The WREB is scheduled for April 3-6, 2007 and the ADLEX compact form is scheduled for May 2-4, 2007. Our pass rate for the WREB was 86% in 2005 and 90% in 2006. We have one faculty member involved with the WREB -- on the Operative Committee. We also have three faculty

members that are examiners for the ADLEX in other states. Currently, we provide some review lectures for the WREB and instruct students how to prepare their endodontic models. We intend to offer review lectures for the ADLEX restorative portion. KAVO Dentoforms may be checked out of our pre-clinical lab to practice preparations. We will be ordering dentoforms for the ADLEX examination.

- OHSU:** The OHSU students take the Western Regional Examining Board (WREB) which is given just prior to their graduation. First time pass rate for WREB is quite high, about 97%. WREB uses dentoforms for the Endo portion, but not for the Operative exam...at least at our school
- UOP:** We are not involved in this. We have preparation courses for regional examinations only.
- UCLA:** Our students take the WREB – without exception, because they can earn the right to apply for licensure in California and another 31 states. The WREB is given in March, and most our students take the exam at that time, before graduation. Our students receive a formal course in exam preparation, and a Mock Board Examination. The pass rate on the WREB is about 80% which is roughly the same as the CA Board results in the past.
- UCSF:** Our students predominantly take the WREB and do so prior to graduation. We do have WREB reviews. Our passing rates for the WREB have been high and better than on the previous CA State Board exam.
- USC:** Almost all of our students take WREB when they qualify. ADEX does not have a presence in California. Qualification from the USC standpoint involves meeting requirements from both Academic Affairs and Clinical Affairs. USC has a faculty member serving as liaison to WREB; he arranges the logistics of WREB utilizing our facility. Future WREB exams are scheduled at USC in May, August, and December of 2008. Thus far this year (2007), USC has a pass rate in the low 90%. On the surface these results appear better, but that is an unfair comparison. Pass rates for the licensure exam given by the Dental Board of California were lower, but that exam is different in content and other significant ways. WREB permits faculty from other schools to be official observers. USC has availed themselves of this opportunity to attend a WREB exam, which included the calibration of WREB examiners. USC does not teach specifically to the exam. Dentoforms are used for simulation in preclinical courses. Clinical students refresh their skills by participating in lab simulation exercises and exams. Student also take clinical exams where they do amalgam and composite restorations along with other procedures that use USC criteria. While these exams are intended to test for clinical competency, they do help prepare students for board exams. Students participate in mock board exams in the following clinical disciplines: operative/restorative, endodontics, periodontics, prosthodontics, and diagnosis/treatment planning.

Commentary:

When Gov. Arnold Schwarzenegger (CA) signed SB 1865 in September, 2004 and it was implemented in early 2006, the licensure landscape changed dramatically for California dental school graduates. The bill permitted substitution of WREB for the California clinical examination. There was now a choice:

- 1) Take the traditional Dental Board of California (DBC) examination whose content had not changed much over the years, or
- 2) Take the WREB examination, which was perceived as more user friendly, had a historically higher pass rate than DBC, and is accepted by numerous state licensure agencies.

In 2005 there was no choice for new graduates. DBC was the only game in town. In 2006 some took DBC, others took WREB, and both agencies had licensure exams scheduled throughout the state. However, in 2007 DBC had very few exams, whereas WREB had even more than before in California. Today almost no California dental graduate takes DBC. At USC we do prepare our students for their licensure exam with simulations, presentations, and mock boards. Our format for the clinical component has been based on the DBC model with a timed exam of three hours for either a Class II amalgam or a Class III/IV composite. We utilize the USC evaluation criteria for scoring. Other California schools also do similar exams. Loma Linda does a full WREB qualifying exam that uses WREB forms and criteria. WREB does not have a three-hour time limit. There are other differences as well. WREB criteria and protocols are generally less stringent than those of USC. At USC we believe that if our students can pass the USC clinical exams, they should be able to pass the WREB exam. That has proven to be the case. Over the years, the pass rate for DBC among California dental schools has generally been in the low 70% to mid 80% range. This year USC's experience with WREB has been in the 90% range. As you know, DBC spent a considerable amount of time and resources validating WREB as equivalent to DBC before enacting SB 1865. All of this just begs the question of whether licensure by examination is still a valid and necessary premise. One should fully expect that licensure by graduation, as conceptualized and supported tirelessly by Dr. Arthur Dugoni for over 20 years, will become a reality in some form in California. It is doubtful that DBC or the department of Consumer Affairs will be able to significantly change the existing DBC licensure exam without going the legislative route. In fact DBC is working on alternative ways of determining competency. That is where you should expect to see change occurring. In a way DBC has its hands tied with the Dental Practice Act, and bureaucracy has affected its nimbleness to respond to contemporary issues in an efficient and effective way. Until the recent change in the membership of DBC, it tended to be reactive and defensive of its licensure exam. SB 1865 was a wake up call that DBC was ill-equipped to answer. Its exam became irrelevant for California dental school graduates this year. How many exams did DBC conduct this year? How many are listed on its website? The net effect of SB 1865 was to outsource the clinical exam to WREB. For now, WREB has replaced DBC for the clinical portion of the licensure exam for the vast majority of

California dental graduates. DBC is working to change licensure, but it is not through its clinical exam.

UW: No – they take it in June after graduation. We have a 98.5% pass rate since 1996, with 100% pass rate currently. We provide an elective course to seniors to prepare them for the WREB exam.

III. Dual-arch Impressions

Dual-arch impressions are a very popular technique, but some faculty are reluctant to use this technique although literature supports the usage. Is your school using dual-arch impressions (triple tray) for single tooth restorations, quadrant trays or full-arch? What type of dual-arch impression trays are used? What departments/sections utilize this technique? If dual-arch impression trays are used, what guidelines are recommended?

UA: No responses noted.

ATSU: No responses noted.

UBC: We teach full-arch impressions with custom trays and PVS impression material. This is taught by the Division of Prosthodontics at UBC

LLU: LLU clinic uses the Discus posterior quadrant tray. (We do not use the anterior dual arch trays.) Dual arch impressions are allowed when the unprepared occlusal surfaces provide adequate occlusal stability for the arch and the impression material is adequately supported by the tray. Two prepared teeth are the maximum and must meet the occlusal stability requirement. Impression of first premolars are not allowed because of impression material support. The dual arch impressions are used in conjunction with the Artimax disposable articulator system.

MUC: No responses noted

UNLV: Dual-arch impressions are taught in pre-clinical Restorative Dentistry and commonly used in the Clinic for single tooth indirect restorations. Our Clinical Sciences department is not subdivided into smaller entities; therefore, this technique is used throughout the department. Dual-arch impressions may be made of one or two single restorations with unprepared teeth anterior and posterior to the prepared teeth. Full-arch stock trays and quadrant trays are also used in clinic. We have the following brands of dual-arch impression trays: Premier – Triple Tray sideless, Anterior, Posterior, Neotray Anterior, Posterior, Sideless and Full-arch; COE – Sideless; Discus – $\frac{3}{4}$ Arch and Full-Arch. The following in vivo studies indicated that dual-arch impressions were accurate enough for single tooth restorations:

- Ceyhan, J., Johnson, G., Lepe, X., Phillips, K., A clinical study comparing the three-dimensional accuracy of a working die generated

from two dual-arch trays and a complete-arch custom tray. JPD 2003; 90:228-34.

- Cox, J., Brandt, R., Hughes, H., A clinical pilot study of the dimensional accuracy of double-arch and complete-arch impressions. JPD 2002;87:510-5.

The following in vitro studies indicated that dual-arch impressions were accurate enough for single tooth restorations:

- Cayouette, M., Burgess, J., Jones, E., and Yuan, C. Three-dimensional analysis of dual-arch impression trays Quint Int 2003;34:189-98.
- Davis, R and Schwartz, R. Dual-arch and custom tray impression accuracy, Am J Dent 1991;4(2)89-92.
- Davis, R, Schwartz, R. and Hilton, T. Marginal adaptation of castings made with dual-arch and custom trays, Am J Dent 1992;(5)253-254.

OHSU: Full-arch only.

UOP: No, we currently take full arch impressions for all fixed prosthesis.

UCLA: We teach and use the dual-arch tray technique, and limit its use to quadrant trays for single tooth posterior restorations. We exclusively use the Emery quadrant tray pictured here:

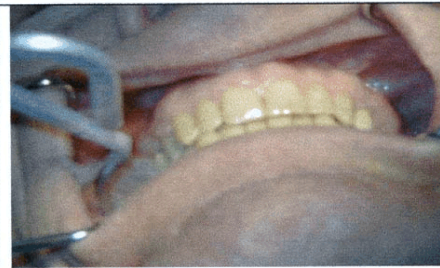


UCSF: Dual-arch impressions are taught and the mounting of the casts are also simulated in a lab exercise. Students trim the dies, wax-up and cast a gold restoration and polish. Dual-arch impressions are taught for simple single tooth cast restorations with harmonious occlusion. The COE check-bite impression is introduced as well as plastic triple trays. Limitations are taught.

USC: USC used dual arch impressions in the days of hydrocolloid over 40 years ago. With the advent of PVS (polyvinyl siloxane) impressions, full arch impressions became the standard. Three years ago, however, that changed to also include the dual-arch trays (Quad-Tray Xtreme from Clinician's Choice). This is used primarily for single indirect units, though stable occlusion may permit more than one unit. The following are guidelines for using dual-arch trays. There is also a PowerPoint that shows this same information.

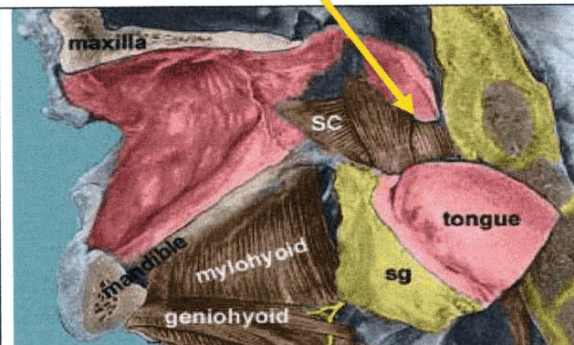
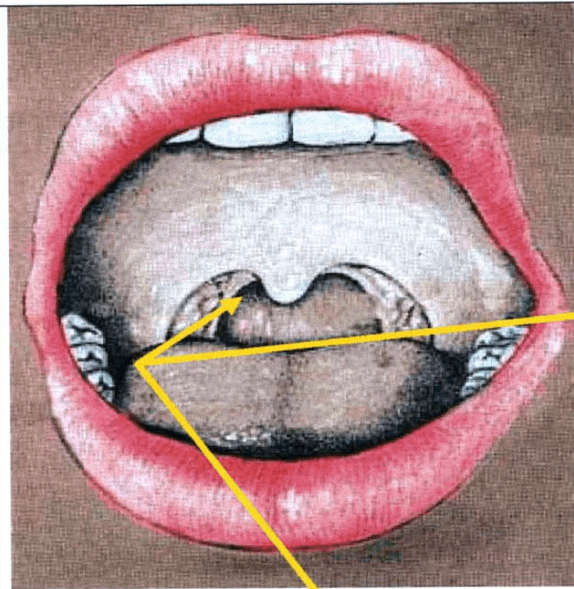
Quad Tray – Protocol and Technique

- Single unit posterior restorations
 - Two units, once student has done a case
- Patient has stable CO/MIP
- Patient can occlude identically with and without Quad Tray in place
 - Visually verify anterior centric contact (usually with mirror view)
- No other bite registration

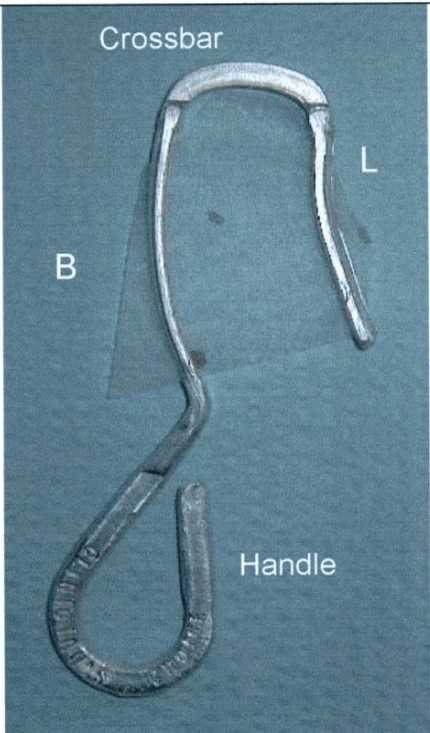


Quad Tray – Preliminaries

- Prep, provisionalize, and retract as usual
- Rehearse patient: e.g., "Close. Remember how your teeth come together. It should be the same with the tray in place."
- Preplace tray to ensure passive fit and note intercuspation
 - Crossbar of tray will contact and seat at pterygomandibular raphe
 - Anterior teeth will have centric contact



Adapted from Norman Lesley – <http://mywebpages.comcast.net/wnor/lesson10.htm>

| Quad Tray – Impression | |
|--|--|
| <ul style="list-style-type: none"> • Work with a dental assistant <ul style="list-style-type: none"> – Follow usual procedure for PVS impressions • Remove cord and inject syringe material, as usual, while the assistant holds the loaded Quad Tray • Seat tray <ul style="list-style-type: none"> – Hold with Handle – Place Crossbar at raphe – Have patient close – Verify Anterior Centric Contact • Let set as usual • Have patient open with quick snap and remove Quad Tray • Inspect impression |  |

UW: We use dual-arch for single-tooth restorations only, and use full-arch for multiple teeth and bridges. We present guidelines in lecture and document them in the Fixed Prosthodontics Syllabus. The dual-arch technique is used by the Restorative Department.

IV. Vital Pulp Therapy (Indirect/direct pulp capping)

(This topic is being revisited - refer to 1999 CODE Regional Reports)

Is your school policy accepted by all disciplines? Do you incorporate vital pulp therapy exercises in your preclinical operative curriculum? Are you in agreement with treatment approaches taught in Endodontics? Pedodontics? Prosthodontics?

UA: No responses noted.

ATSU: No responses noted.

UBC: Yes to all. Have also offered MTA as a pulp capping material.

LLU: Endo uses MTA, also being used in Pedo. Restorative uses MTA or CaOH with GIC covering.

- MUC:** No responses noted.
- UNLV:** Our policy is to place calcium hydroxide liner for indirect and direct pulp caps followed by resin-modified glass ionomer liner/base. In the clinic, completion of indirect restorations on teeth with indirect or direct pulp caps is dependent on the health of the pulp and strategic importance of the tooth. Vital pulp therapy exercises are incorporated into the preclinical operative dentistry curriculum. The vital pulp therapy procedure is accepted by all faculty in our Clinical Sciences department, including endodontists, pedodontists, and prosthodontists.
- OHSU:** Yes, we incorporate vital pulp therapy exercises in our preclinical operative curriculum to the extent that students are taught to base deep preparations, to vitality test questionable teeth (although this is covered in greater detail in Endodontology) and to avoid cast restorations on teeth where a direct pulp cap has been done. We are in agreement with the other disciplines.
- UOP:** Yes, all disciplines are on board with the use of MTA at a vital pulp capping material. It is in regular use clinically. Dycal and Virtebond are used for indirect pulp capping. There is strong agreement and collaboration between all departments on these products and techniques.
- UCLA:** The preclinical operative dentistry curriculum includes lecture and lab exercise material on rationale and technique for management of exposed vital pulps during restorative treatment. This curriculum instructs students to use a small amount of CaOH covered with a resin-modified glass ionomer liner for direct pulp capping in permanent teeth. MTA is not used by the predoctoral students at UCLA. Treatment approaches regarding this issue are currently not consistent across disciplines – an issue that is being addressed under the curriculum revision.
- UCSF:** We do teach vital pulp therapy and we simulate this in natural teeth using extracted teeth in a caries block. MTA or calcium hydroxide paste is used and our endodontic faculty are not fully supportive of the long-term treatment results related to vital pulp therapy.
- USC:** A permanent tooth with deep caries could be a candidate for vital pulp therapy under three conditions:
1. The tooth tests vital (e.g., cold test),
 2. The tooth is asymptomatic (e.g., lack of provoked or unprovoked pain),
 3. Lack of radiographic change at the apex
- Clinical judgment also plays a role, such as history, age, restorability, and strategic value. Determination of indirect or direct pulp capping would be contingent on trying to avoid pulp exposure. This is not taught in the operative preclinical curriculum. Classically, we would perform indirect pulp capping, which intentionally leaves the last vestige of caries over the

pulp, with a layer of calcium hydroxide (Dycal) material sealed with either IRM or glass ionomer. The area is allowed to form secondary dentin over a period of at least 6-8 weeks, followed and retested as needed, then cleaned out of any remaining caries. We do not intentionally leave caries internally under a final restoration, even one with an indirect pulp cap. There is no standardized use of caries indicating solution, nor ways to distinguish affected from infected dentin other than perceived hardness. Color is not a definitive criterion for caries. Direct pulp capping would be performed should a pulp exposure meet the above and it is a pinpoint or smaller than 0.5 mm. Root canal therapy (RCT) is typically discussed as part of informed consent. Younger teeth with larger pulps and better circulation tend to have more healing capacity for secondary dentin formation and maintenance of vitality. If there is doubt, RCT is generally preferred. Vital pulp therapy exercises are not incorporated preclinically. This policy is in agreement with what endodontics and fixed prosthodontics teach. Pediatric dentistry primarily does pulpotomies on primary teeth, but on permanent teeth may elect to use only glass ionomer for dentinal seal and has gotten away from calcium hydroxide.

UW: Yes to all.

V. Restoration of Implants

What experiences are provided to your students in the restoration of implants? Do your students have the opportunities to PLACE implants (surgical phase) and/or do the second stage surgery to uncover them (after integration)? Who/what departments/sections are supervising the restoration of implants? What training is provided to the faculty?

UA: No responses noted.

ATSU: No responses noted.

UBC: Student experience is currently limited to maintenance of implant-retained overdentures. No surgical opportunities for students. Restoration of implants is taught by Prosthodontics. No training is provided to faculty.

LLU: Students have preclinical experience in the D2 year with single implant diagnosis and restoration. In D3 year students have preclinical experience with placing attachments for an implant supported overdenture. For patient treatment, the predoctoral students do the diagnostic procedures and construct a surgical template and are requested to assist/observe the surgical placement which is done by one of the graduate students. After integration, the implant is uncovered by the graduate student and returns to the predoc student for restoration. Training of the attending faculty who are all members of the Department of Restorative Dentistry is done by our in house staff.

- MUC:** No responses noted
- UNLV:** UNLV tries to give all students restorative experience with implants. There is a required *Implant Competency* that requires a comprehensive treatment plan workup for an implant supported restoration. The case can be a single tooth replacement or an overdenture supported by two implants and attachments. Advanced students will also have the opportunity to plan and restore simple, implant supported 3 unit bridges. Students do not place fixtures nor do they perform second stage surgery, but it is expected that they will assist at both surgeries for their patients. Faculty supervision is within the Clinical Sciences Department. All clinical disciplines are within the one department. The surgical procedures are supervised by a periodontist or oral surgeon, and the restorative procedures are supervised by either a prosthodontist or general dentist. There is a new protocol that was recently developed and is expected to be implemented within the next month. It will require a multi-disciplinary workup by the student with review by a clinical case review board. Faculty training will follow when the new protocol is finalized. Previous training has been provided by the manufacturer for both surgical and restorative faculty.
- OHSU:** Each student is required to assist in the placement of and restore a fixed unit and to assist in the placement of and restore two implants under a lower denture. Restorative Dentistry supervises implant restoration. The director is actually a general dentist in the Operative Dentistry area. This is because we had an open line there. We realize it belongs in Prosthodontics. All supervising clinical faculty have worked in the pre-clinical implant course and or are practitioners with significant experience in implant dentistry.
- UOP:** All students have clinical experience with the restoration of at least a single implant. Additionally, several students restore multiple implants. Currently, student may place implants clinically, but there are no formal requirements for this. Implants are under the direct supervision of two departments: Removable Prosthodontics and Oral Surgery. Additionally, Restorative and Periodontics are involved in implant care.
- UCLA:** Students receive experience in treatment planning and restoration of cases involving replacement of individual posterior teeth with implant-supported crowns and in implant-assisted mandibular overdenture cases. There are no requirements for clinical implant cases at this time, but the predoctoral implant program is growing rapidly and at this time the majority of dental students are getting clinical experience. Students do not, however, participate in the surgical procedures beyond case planning and observation. The Restorative and Advanced Prosthodontics Divisions supervise the implant crown and overdenture cases, respectively. There is currently no formal faculty training program for faculty.

UCSF: We are just in the process of implementing an implant program. Our goal is to provide every student with an implant experience. We are including implant options as a standard of care option for all tooth replacement treatment plans. Students will be trained with simulation exercises in restoring implants, overdentures, surgical stent fabrication, implant surgical assisting, simulated surgical exercise, implant impressions and restorations, and advanced elective courses with our grad prosthodontic rotations. Faculty who are able to treatment plan and oversee implant cases have to be certified via a mandatory calibration session for diagnosis and treatment planning and undergo all the simulation exercises.

USC: Predoctoral students are involved with treatment planning for implants, diagnostic wax-up for placement of implants, radiographic and CT scan evaluation for implant placement, radiographic and surgical guide evaluation/try-in on patients, surgical assist during placement of implants, abutment placement, and delivery of cemented restoration. There are instances where they may have to do screw retained restorations. All of the implants may be involved with bone grafting and sinus elevation. They include single and multiple units. Anterior restorations at this time are limited to single units. Predoctoral students do not place implants, but they are required to be present and assist implant surgery. All predoctoral implants are placed by Advanced Periodontics and Oral Surgery. All implant faculty are Prosthodontists and undergo in-service faculty education about 2-4 times per year.

UW: The students are exposed to dental implants during the Fall Quarter of their third year. Students are required to take the Implant Course, which includes a series of 10 lectures on implant dentistry including the following topics:

- Diagnosis and Treatment Planning

- Principles of Osseointegration

- Surgical Implant Placement Procedures and Bone Grafting Techniques

- Management of the Hard and Soft Tissues

- Implant Restorations in the Esthetic, and Non-esthetic-Zone

- Implant Prosthodontics for the Edentulous Patient

Students are also required to participate in the implant lab course to gain familiarity of the implant components used in the clinic, and how to:

- Fabricate a surgical template

- Surgically place implants on models

- Make impressions on implants

- Provide a provisional implant restoration

- Perform implant overdenture exercise

Students will have to successfully complete the didactic and laboratory courses to be able to perform implant treatments in the clinic. Students may be able to restore single tooth restorations, two adjacent implant restorations, short span FPDs not exceeding 4 units and mandibular overdentures supported by 2 implants with individual attachments. Mats Kronstrom DDS, Ph.D., is the Director Undergraduate Implant Program.

VI. Electronic Patient Records

Does your school use an electronic patient record (EPR)?

If yes, which EPR system do you use?

Please list the pros and cons of your school's EPR system.

UA: No responses noted.

ATSU: No responses noted.

UBC: Yes - axiUm.

LLU: Yes - axiUm. We went on axiUm July 2, 2007 so we have about 4 months experience - steep learning curve.

MUC: We will use axiUm..

UNLV: UNLV uses Salud for its electronic patient records.

Note: All of the pros refer to the advantages of EPR's over paper charts, while many of the cons refer specifically to the Salud system as implemented at UNLV.

Pros:

- ▶ Accessibility – Patient records can be accessed from any network terminal in the school. Each operatory is equipped with a terminal as are all faculty offices, smart classrooms, and student workstations. In addition, the school is equipped with a wireless network that will connect with Salud. There is no conventional chartroom, and thus no backup to sign out charts at the beginning of a clinic session.
- ▶ No Physical Loss of Chart Components – Because the chart is electronic, pages, radiographs, forms, etc. cannot fall out of chart and become lost.
- ▶ Potential Superior Data Retrieval - for documentation, research, and analysis of procedures, student progress, and productivity.
- ▶ Password Protection – for confidentiality

Cons:

- ▶ Speed – Due to the size of the program and the number of terminals, the program often slows down at times of heavy usage. This can be very frustrating and unproductive, especially at the beginning and end of a clinic session when faculty must read multiple charts, grade and sign in and out for multiple students
- ▶ Non User-Friendly – Non-intuitive interface, non-parallel screens. The program seems to have been written from the top down, rather than from the bottom up (with the end user as top priority). Fields jump after entries. Can be very distracting and time consuming.
- ▶ Cumbersome to Use – Extremely time consuming for the end user (student and faculty). Must use multiple “check steps” to approve a procedure. To grade a single multiple step procedure, takes multiple mouse clicks and multiple entries of faculty user name and password.

- ▶ Difficult to Show Multiple Windows Simultaneously – Makes treatment planning difficult as restorative charting, perio charting, and radiographs cannot easily be displayed at same time.
- ▶ Difficult to Trace History – Each progress note shows up as a separate window. Not efficient, non-intuitive. Does not read like an electronic version of a paper chart.
- ▶ European Software Company – Not written to work in a Citrix environment, so each upgrade requires extensive on-site testing by UNLV IT department. Each upgrade seems to result in glitches that require attention. Written for European tooth numbering system, so treatment plans do not lay out in numeric order for our numbering system.

OHSU: Only Pediatric Dentistry at this time.

UOP: We are not completely paperless, however, all hard and soft tissue charting is done electronically. Daily chart entries are made by hand. All treatment plans are developed in computer software. We are a hybrid system.

UCLA: We presently have a hybrid (paper/electronic) record system. We continue to use paper charts for many of our forms – particularly any that require patient signatures – and storage of radiograph films. Our EPR is Software of Excellence (SOE), which is used for treatment planning (including all consultations), progress notes, instructor sign-off of all clinical procedures, and the academic system (recording/tracking of progress toward graduation) for the clinical curriculum. We will continue to transition away from the paper records as the following issues are addresses: incorporation of intraoral digital radiography (in progress), creation of electronic versions of our paper existing forms within SOE, and adoption of an electronic signature protocol for patient signatures. Regarding SOE:

Pros:

A complete academic tracking system is incorporated.

ALL cubicles in the school have network terminals for access to SOE via student laptops.

Remote access via Internet for students to check their schedules, check appointment availability, and request appointments (students DO NOT schedule their own appointments).

User-friendly *for* students.

Cons:

Complex, multi-layered.

Poorly-conceived odontogram

High learning curve *for faculty*

UCSF: Yes, we use axiUm. At UCSF it is a “five letter word.” It is lengthy, costly to maintain and manage. Time consuming and takes a lot of teaching time away from clinical procedure. It is a necessity.

USC: We use conventional radiographic films in addition to digital radiography. The software is Planmeca Dimaxis Pro and CDR Dicom (Schick). Scanned or digital radiographs are uploaded into axiUm EPR, and images stored in the software programs can be reached via links available in axiUm.

Pros:

- ▶ Quick and easy to access patient's information
- ▶ Faster than booking with a paper chart
- ▶ Efficient
- ▶ Comprehensive
- ▶ Easy to use
- ▶ Thorough
- ▶ Accessible
- ▶ Billing easier as all info provided for patient is in one location rather than having to search different departments.
- ▶ No need to copy chart
- ▶ If culture adopts technology/technological advancement, benefits can be fully realized
- ▶ Information can be mined using established database/data mining technologies
- ▶ Risk of data loss is minimized if proper data backup and disaster recovery practices are implemented
- ▶ Collaboration between facilities/schools may increase as a result of common system use

Cons:

- ▶ Greater investment required in Information Technology & IT support personnel to support EPR system
- ▶ Failure to invest in IT and IT human resources results in unrealized benefits
- ▶ Need to refresh IT equipment
- ▶ Cultural resistance to technology results in unrealized benefits
- ▶ EPR requires the adoption of other IT-related disciplines (identity management, role-based access controls, data security) to ensure proper data management
- ▶ Faculty "culture of entitlement" may resist (or in some cases undermine) the adoption of new technologies & processes
- ▶ Success is highly dependent on organization's ability to adopt/embrace information technology
- ▶ Success of EPR is highly dependent on non-technological factors (cultural adoption, organizational support, financial support, executive support)
- ▶ A lack of knowledge of IT within leadership (faculty or executive management) may result in added risks to EPR systems (poor data security practices, information exposure, data management practices that place patient data at risk)
- ▶ Failure to plan for system replacement results in gradual degradation of system performance as system demands increase and computers cannot scale to meet demand

- ▶ Faculty/staff who are not technology savvy place a greater drain on the organization in the form of increased support requests

UW: No. We use patient charts. We do use a CMS system (Clinic Management System) to track billing and patient progress.

Does your school use digital radiography as the primary radiographic imaging system? (Expanded topic - refer to 2006 CODE Regional Reports)

If so, which software do you use for digital radiographs?

Is the digital radiographic system integrated into the EPR?

Please list the pros and cons of your experiences with digital radiography.

UA: No responses noted.

ATSU: No responses noted.

UBC: Yes, all radiographs are digital, no analogue radiography is being used or taught. We use Romexis software. No integration into EPR yet.

| | PSP | CCD |
|----------------------------|---|--|
| P R O S | <ul style="list-style-type: none"> ▶ Reusable up to 50 times ▶ Thin, flexible and tolerable ▶ Economical ~\$25 ▶ Infection control barriers are effective ▶ Image quality/appearance comparable to film, no learning curve ▶ No chemicals, no environmental impact ▶ Efficient storage and retrieval ▶ Finicky sensor holders | <ul style="list-style-type: none"> ▶ Instant image ▶ Decreased exposure ▶ Totally reusable, as long as not damaged ▶ No chemicals, no environmental impact ▶ Efficient storage and retrieval ▶ Immediate feedback on quality to learner ▶ Finicky sensor holders |
| C O N S | <ul style="list-style-type: none"> ▶ Same exposure as film ▶ Easily damaged ▶ Require a scanner and relatively low ambient light when loading ▶ Should be scanned within 10 min. ▶ PC and storage dependant, requires an ever expanding storage space and IT support | <ul style="list-style-type: none"> ▶ Thick, rigid, uncomfortable ▶ Difficult to use à many retakes à more exposure eventually ▶ Expensive ~\$10,000 ▶ Sensitive to damage when dropped ▶ Can not be sterilized & barriers are ineffective ▶ Image quality and interpretation require a learning curve, different gray scale from film ▶ PC and storage dependant, requires an ever expanding storage space and IT support |

LLU: All new radiographs are taken with digital. Old radiographs are scanned and placed into the EPR. Digital is a problem for WREB exam candidates – for that we use film.

MUC: No responses noted.

UNLV: UNLV utilizes both a sensor system (Dexis) and a phosphor plate system (Scanex by Air Techniques). The majority of films taken are with the phosphor plate system. The images from both systems are stored in MIPACS which is not directly integrated with Salud, but utilizes a bridge between the systems. Note: Most of the pros refer to the advantages of digital radiography over film, while most of the cons refer specifically to the system and hardware implemented at UNLV.

Pros:

- Easy Storage – No individual films to be lost from chart
- Easy Access – from any network terminal in school
- Decreased Radiation to Patient – when compared to traditional radiographs.
- Phosphor Screens Similar to Film – thin and flexible. No need to alter traditional film techniques.
- Sensors – result in instant image
- No Chemistry – cost savings, no hazardous disposal, clean processing area
- Can Easily Manipulate Images - contrast, color, magnification
- MIPACS Allows Storage of Scanned Items – Photos, intraoral photos, documents, consults
- WREB Accepted – experienced with digital

Cons:

- Difficult to Read Images – mismatch of imaging system and monitors, which result in pixilated images. Viewing of images is sensitive to ambient light in room. May tend to “over diagnose caries due to digital noise, and under diagnose due to poor definition.” Uniform frustration among faculty and students with diagnostic quality of images when compared to traditional film.
- Non-Seamless Integration with Management Program – must utilize bridge between programs which seems to result in degradation of image.
- Must Replace Phosphor Plates Periodically – otherwise results in artifact in image
- Must Scan and Erase Phosphor Plates – similar to processing film, not instant image as with sensors
- Tendency to Over Manipulate Images
- ADLEX Still Requires Printouts of Images

OHSU: No. Digital is used in pediatric dentistry, graduate endodontics, and graduate periodontics, but not in pre-doctoral restorative.

UOP: We utilize digital radiography as our primary radiographic imaging system. We utilize Dexis. The system is integrated into the EPR. We love digital radiography. The only drawback for us has been the sensor size is cumbersome for some patients. Best move we've made!

- UCLA:** All extraoral radiography in the School is digital. We are currently in a transition to digital intraoral radiography – three specialty clinics are now all-digital, with the entire School expected to be all-digital within the next 24 months. All intraoral radiography in predoctoral clinics remains film-based. Digital radiography will eventually be integrated into our EPR – the SOE software is capable now.
- UCSF:** We do not have digital radiography yet, but it is a top priority as outlined by our Dean.
- USC:** See above under Electronic Patient Record
- UW:** No, not yet. There are plans to have a new system for the present CMS system and digital radiography will be included with the new management system. Expected to be in place in about one year.

Regional CODE Agenda

Suggestions for CODE.

- ▶ What can the organization do to improve its effectiveness?
 - ▶ Publish a QUARTERLY which presents a review of articles pertinent to CODE members
 - ▶ Change the name so it will appeal to more than “Operative” instructors
 - ▶ 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.
- ▶ Enable more open communication with a chat room and blogging where we can present concepts/problems for others to offer their comments.
 - ▶ Other comments/suggestions?

CODE REGIONAL MEETING REPORT FORM

REGION: II (Midwest)

LOCATION AND DATE OF MEETING:

Creighton University School of Dentistry Omaha, Nebraska

September 17 -18, 2007

CHAIRPERSON:

Name: Dr. Scott Shaddy

Phone #: 402-280-5076

Address: Creighton University

Fax #: 402-280-5094

Omaha, NE 68178-0001

E-mail : shaddy@creighton.edu

List of Attendees:

Please see reverse of this page for List of Attendees to 2007 Regional Meeting

Suggested Agenda Items for Next Year:

- ▶ What are the essential hand instruments and burs necessary to teach Operative Dentistry, pre-clinically and clinically
- ▶ Bisphenol A exposure from composite restorations. Are levels unsafe? Do they contribute significantly to the overall exposure to our population? Has a safe level been established?
- ▶ Should gold inlays/onlays be taught in the curriculum?
- ▶ What post system is being used – cast, fiber, pre-cast, or no post? And why?
- ▶ Is there evidence to use or not use amalgam pins? What types?
- ▶ Review of composite polishing systems
- ▶ Community-based education in the curriculum: How much time is devoted to it? How many sites? Who's teaching at the sites? Calibration? Finances, logistics, funding? What procedures are being done? Credit for requirements given?

LOCATION & DATE OF NEXT REGIONAL MEETING:

Name: Dr. John Purk

Phone #: 816-235-2168

Address: UMKC School of Dentistry

Fax #: 816-235-2157

650 E 25th Street

E-mail : Purkj@umkc.edu

Kansas City, MO 64108-2784

Date: September 28 - 30, 2008

Please return all completed enclosures to Dr. Larry D. Haisch, National Director, UNMC College of Dentistry;

40th and Holdrege Streets; Lincoln, NE 68583-0750.

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) 235-2157 | 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. Blaine Cook | UNMC | (402) 472-1362 | (402) 472-5290 | blainecook@unmc.edu |
| Dr. Craig Passon | University of Colorado | (303) 724-7073 | (303) 724-7079 | Craig.Passon@uchsc.edu |
| Dr. Gary Stafford | Marquette University | (414) 288-5409 | (414) 288-3586 | Gary.Stafford@mu.edu |
| Dr. Amazis Louka | University of Manitoba | (204) 789-3324 | (204) 789-3916 | ALouka@ms.umanitoba.ca |
| Dr. Nici Kimmes | Creighton University | (402) 280-5025 | (402) 280-5094 | NicoleKimmes@creighton.edu |
| Dr. Scott Shaddy | Creighton University | (402) 280-5226 | (402) 280-5094 | shaddyr@creighton.edu |
| | | | | |

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

(Editor note: Questions condensed for printing purposes)

I. Teaching Dental Biomaterials in North American Dental Schools

There is variance as to how Dental Biomaterials (DBM) are presented at the member schools. About half of the schools have dedicated courses devoted to DBM, while others integrate the material into larger courses. Most DBM material is presented early in the 4-year curriculum, and then put into practice during the clinical rotations.

As on the national, the schools have either gone through a curricular revision or are in the midst of a curricular assessment and review. As a rule, DBM has not been affected adversely, and practically all of the schools are satisfied with the emphasis that DBM receives.

II. National Testing Agency for Licensure and Credentialing.

The Canadian system allows for national licensure when the student successfully completes the dental school program and graduates. There is a standardized OSCE exam that all students must pass in order to receive their diplomas.

All of the U.S. schools in Region II are utilizing the national testing agency for licensure. Though the format of the exam may be spread out over a longer period of time, the schools are not seeing any significant change in the outcomes for their students.

III. Dual-arch Impressions

The preferred impression technique for all indirect restorations, whether single or multi-toothed, is custom tray for all schools. There are situations where dual-arch impressions are used. When used, metal trays are preferred, bite registrations are recommended, and single-units are the only allowable cases.

IV. Vital Pulp Therapy (Indirect/direct pulp capping)

Vital pulp therapy that involves capping the pulp, directly or indirectly is usually limited to mechanical exposures. For the most part, departments are in agreement with this policy.

V. Restoration of Implants

The greater majority of schools do not permit their students to place implants. That is left to the graduate students; however, the undergraduate dental students have the opportunity to assist. Students throughout the region are getting the opportunity to be involved in the restoration of implants.

VI. Electronic Patient Records

Electronic dental records are beginning to show use throughout much of the region, along with digital x-rays. Degree of usage varies from very minimal to 100% electronic records and x-rays. The most common software is AxiUm, although other electronic record softwares are being used

Regional CODE Agenda

No Responses noted

Suggestions for CODE.

What can the organization do to improve its effectiveness?

Any comments or suggestions to improve the Web site?

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

Other comments/suggestions?

No Responses noted

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. Teaching Dental Biomaterials in North American Dental Schools

The following questions were provided by the ADEA Section on Operative Dentistry and Biomaterials. The responses will be presented as part of this section's program at the 2008 ADEA Meeting in Dallas. Be as specific as possible although multiple answers may be appropriate in some cases. Please add appropriate comments to further explain your answers as needed for clarity or elaboration.

- A. Does your school have a distinct academic entity known as Dental Biomaterials (DBM) or other similar title for this subject (Dental Materials, etc.)?**
- **Yes or No**
 - **If yes, what is it called?**
 - **If yes, classify it per your school's organizational scheme - Department, Division, Section, Other (explain).**
 - **If it is a subset of another department, identify the department.**

COLO: No, there is no distinct academic entity known as Dental Biomaterials. It resides in Dental Research, and is taught by faculty who have no clinical responsibilities or practices.

CRE: Yes, it is called Dental Materials, and taught out of the Department of General Dentistry

IOWA: No response noted.

MAN: Yes, it is a division and it is at the graduate level too

MARQ: On the undergraduate level, the entity is included in a "Program in Prosthodontics and Biomaterials". On the graduate level, there is a "Graduate Program in Dental Biomaterials" that offers a MS degree. Both are subsets within the Department of General Dental Sciences.

MINN: No response noted.

UMKC: No, it is taught out of the Department of Oral Biology

UNMC: Yes we do have a distinct academic entity. It is called “Biomaterials”. It is a section. It is a subset of the Department of Adult Restorative Dentistry.

SASK: No response noted.

SIU: No response noted.

**B. How many full-time faculty teach DBM at your school as their primary teaching responsibility?
How many full-time faculty co-teach DBM at your school as part of their teaching responsibility?
How many part-time faculty teach or co-teach DBM at your school?**

COLO: 1 FT (researcher) as primary teaching responsibility
0 FT co-teach
0 PT

CRE: 2 FT as primary teaching responsibility
5 FT co-teach
0 PT

IOWA: No response noted.

MAN: 1 FT as primary teaching responsibility
1 FT co-teach
0 PT

MARQ: 1 FT as primary teaching responsibility (mostly at the graduate level)
3-5 FT co-teach
3-5 PT

MINN: No response noted.

UMKC: 1 FT as primary teaching responsibility
2 FT co-teach
0 PT

UNMC: 1 FT) as primary teaching responsibility
3 FT co-teach
0 PT

SASK: No response noted.

SIU: No response noted.

**C. When in the curriculum is DBM taught?
(Indicate all that apply if taught in more than one year.)**

- **Freshman year**
- **Sophomore year**
- **Junior year**
- **Senior year**

COLO: Freshman year
Sophomore year

CRE: Freshman year - Primarily in Dental Materials
Sophomore year – integrated with other courses
Junior year – integrated with other courses
Senior year – integrated with other courses

IOWA: No response noted.

MAN: Freshman year
Sophomore year

MARQ: Freshman year
Junior year

MINN: No response noted.

UMKC: Freshman year – integrated with other courses with a few lectures
Sophomore year – integrated with other courses with a few lectures
Junior year – a one semester course devoted to Dental Biomaterials

UNMC: Freshman year, first semester

SASK: No response noted.

SIU: No response noted.

D. How is DBM (specifically) taught at your school?

- **Separate Course(s) only**
- **Part of another Course or Courses only**
- **Combination (Both as a separate introductory course, AND as part of other courses e.g. Operative Dentistry, and/or Prosthodontics, and/or Bio-clinical Seminars)**
- **Other (Describe)**

COLO: DBM-1 deals with forces, stresses, and physical properties. DBM-2 deals with dental materials. It is taught in many places by necessity.

CRE: Freshman year - Primarily in Dental Materials; also, as a part of other courses.

- IOWA:** No response noted.
- MAN:** Taught as courses Freshman and Sophomore years.
- MARQ:** Taught as a part of another course or courses
- MINN:** No response noted.
- UMKC:** Other (Describe) Nine different biomaterials lectures are presented in various dentistry Occlusion, Operative, and Prosthodontics courses throughout the first 2 years. The lectures are presented to be well-timed to the application of different materials in laboratory projects and as a result, reduce repetition of lecture material between courses. A separate, formal Dental Biomaterials course is offered in the 3rd-year. By offering the course later in the curriculum, the students are more familiar with restorative terminology and procedures and have had at least an initial previous exposure to many dental materials through preclinical dental laboratories. With this curriculum change, the biomaterials course is presented as a clinically-applied materials science course to 3rd-year dental students as they begin the clinical aspect of their dental education. In addition, since biomaterial questions are included in Part II of the National Board exam, during the 4th year, offering the course later also provides a more timely association with the National Board exam.
- UNMC:** DBM is taught as a separate course in the freshman year, but there is also input in the Advanced Topics courses in Operative Dentistry and Prosthodontics. Both of these courses are taught in the junior year.
- SASK:** No response noted.
- SIU:** No response noted.
- E. What format, setting and method is used to teach DBM at your school? (Indicate all that apply if a combination of formats is used.)**
- **Lecture (whole class)**
 - **Laboratory (hands-on)**
 - **Clinic (with patients present)**
 - **Seminar (small groups, ≥10 students)**
 - **Individual or very small groups (1-5 students) with an instructor**
 - **Individual (Self-instructional learning via CD or DVD)**
 - **Individual (Self-instructional learning via web-based program)**
 - **Textbook (Provide the name of the book)**
 - **School-produced DBM Manual**
- COLO:** There is no lab, just lecture setting. Textbook – Phillips’ Science of Dental Materials, Anusavice ed., 11th edition
- CRE:** Lecture (whole class); Lab (hands-on); Small groups

- IOWA:** No response noted.
- MAN:** Textbook – Phillips’ Science of Dental Materials, Anusavice ed.,11th ed
- MARQ:** Lecture (whole class); Lab (hands-on), Small groups
Textbook – Phillips’ Science of Dental Materials, Anusavice
ed.,11th ed
- MINN:** No response noted.
- UMKC:** Lecture (whole class)
Lab (hands-on)
Textbook – Craig’s Restorative Dental Materials, 2006
- UNMC:** In the freshman course we have 3 hours of lecture and 5 hours of
laboratory each week. The laboratory portion compliments the lecture
and allows the students to work with the materials and find out what
happens when materials are used correctly and incorrectly. We have a
laboratory technician demonstrate production of ceramic crowns. The
students fabricate a Class II inlay and learn how to solder contacts on cast
restorations. Textbook – The students use Phillips’ Science of Dental
Materials (11th edition – Ken Anusavice) as their primary textbook.
We have produced a lecture and laboratory manual for the
students’ use. We also place much of the lecture and laboratory
material on the course’s website (Blackboard).
- SASK:** No response noted.
- SIU:** No response noted.

- F. Did your school experience a curricular revision during the last 7 years? If
yes, on a scale of 1 to 5 (1 is less important and 5 is highly important) rate
the level of importance given to DBM SINCE the curricular revision at your
school.
Was this rating an increase or decrease compared to DBM’s status before
the revision?**

- COLO:** Yes, there has been a curricular revision, and the course went from the
Restorative Department to the Research Department.
- CRE:** We are currently assessing and reviewing the curriculum for purposes of
revision.
- IOWA:** No response noted.

- MAN:** No curriculum revision recently
- MARQ:** Yes, there has been a curricular revision.
Level of Importance – 1 or 2, a decrease
- MINN:** No response noted.
- UMKC:** YES – Previously, Dental Biomaterials was a 1st-semester, 1st-year course. Because the course was offered so early in the curriculum, it was formatted as a materials science course rather than a clinically-applied materials course. Level of Importance – 4, an increase.
- UNMC:** We have not undergone a major curricular revision in the past 7 years and the amount of time allotted to DBM has not changed. In fact it may have slightly increased due to the expansion of “Advanced Topics” courses.
- SASK:** No response noted.
- SIU:** No response noted.

G. Does your school make a specific effort to integrate the science of DBM into the clinical curriculum? If yes, please describe how you try to accomplish this?

- COLO:** No, there is not a specific effort to integrate the science of DBM into the clinical curriculum.
- CRE:** Yes, DBM is integrated into all pre-clinical labs and into clinically-focused lecture courses.
- IOWA:** No response noted.
- MAN:** No response noted
- MARQ:** DBM material for the most part is included in dentistry classes and not as stand-alone courses.
- MINN:** No response noted.
- UMKC:** YES – The lectures are presented to be well-timed to the application of different materials in laboratory projects and as a result, reduce repetition of lecture material between courses. A separate, formal Dental Biomaterials course is offered in the 3rd-year. By offering the course later in the curriculum, the students are more familiar with restorative terminology and procedures and have had at least an initial previous exposure to many dental materials through preclinical dental laboratories. With this curriculum change, the biomaterials course is presented as a clinically-applied materials science course to 3rd-year dental students as they begin the clinical aspect of their dental education. In addition, since

biomaterial questions are included in Part II of the National Board exam, during the 4th year, offering the course later also provides a more timely association with the National Board exam.

UNMC: There is not a specific emphasis, however since most of the Operative faculty are involved in teaching dental materials we will tend to stress why we are choosing a specific material for the case at hand. One of the professors likes to play “Dental Materials Jeopardy” with the clinical students in the Operative clinic.

SASK: No response noted.

SIU: No response noted.

H. Are you satisfied with the overall time and effort allotted to teaching DBM at your school? Yes/No. If not, what would you change if you could?

COLO: No

CRE: Yes

IOWA: No response noted.

MAN: Yes

MARQ: Subjective and depends upon respondent, but strictly DBM faculty are of the opinion that more time and effort to teaching DBM should be incorporated.

MINN: No response noted.

UMKC: Yes

UNMC: We are happy with the amount of time allotted for DBM. The only recommendation we might like to see would be an Advanced Topics course in dental materials, but since we are included in the other Advanced Topics course, that may not be needed.

SASK: No response noted.

SIU: No response noted.

I. Please provide any other comments or thoughts about this issue.

No response noted.

II. National Testing Agency for Licensure and Credentialing.

There is an increased utilization of a national testing agency for licensure and credentialing. Do your students take this exam while they are still students? When are these exams given? What are your outcomes in terms of passing and failures? Are these results better than previous exams? What is the level of involvement of your school with this exam? Most of the exams utilize dentoforms as part of the testing. Is your school preparing your students to pass this exam? If yes, how?

- COLO:** Yes, our students take this exam while they are still students.
- Both CRDTS and WREB are hosted by the school. Most students take WREB.
 - No mock board exams, only clinical competencies.
 - Test results are unchanged

- CRE:** Yes, our students take this exam while they are still students.
- October – manikin, March – patient-based
- | | 2006 (%) | 2007(%) |
|---------------------|----------|---------|
| Restorative | 92.5 | 96.7 |
| Prosthetic | 95.2 | 93.3 |
| Endodontic | 89.8 | 93.3 |
| Periodontic | 100.0 | 90.0 |
| Computer Simulation | 90.2 | unknown |
- Results are very similar to prior years
 - We provide the test site and materials for a fee, and we have a consultant to CRDTS/ADEX.
 - We are preparing our students to pass the dentoform part of the exam. We pattern the Senior mock board exercises after the ADEX exam.

IOWA: No response noted.

MAN: Graduation from an accredited Canadian dental school is the requirement for license eligibility. All schools must administer a national, standardized OSCE-based that each student must successfully pass before graduation. The faculty don't prepare them specifically for the exam.

MARQ: We have given the ADEX/CRDTS exam since its inception to Senior Dental Students. We have given the integrated version for the past two years only to MUSOD Senior Dental Students. We give the Manikin portion (Endo and Pros) in October and the Patient portion the following March. The students take the computerized portion at a Prometric Computer Center during this time period. There is an opportunity in December for the students to re-take any failed manikin procedures at their home school.

The ADEX exam is made up of 5 sections:
 Section I (Computerized Exam.)
 Section II (Endodontic Manikin Procedures)
 Section III (Prosthetic Manikin Procedures)
 Section IV (Periodontal Patient Procedures)
 Section V (Restorative Patient Procedures)
 In '05-'06' Year (80 dental students):

Section I 5 failures
 Section II 5 failures
 Section III 1 failure
 Section IV 0 failure
 Section V 5 failures

In '06-07' Year (76 dental students):

Section I 2 failures
 Section II 5 failures
 Section III 4 failures
 Section IV 5 failures
 Section V 3 failures

In prior years when we did this exam the Traditional way, there were several more failures. Also, the grades that the students are receiving are quite a bit higher than previous years. The Site Coordinator begins meeting with the junior class the summer before they become seniors informing them of the upcoming exam and what is involved with it as well as a schedule of events for the exam. By June, the order is placed for the manikins and teeth with specific companies who provide the teeth and typedonts. Since we do not use the required typedonts, the student must purchase these typedonts and specific teeth either new or from previous students. The Coordinator continues meeting with the senior class several times a month all year long discussing each phase of the exam in detail.

Several months prior to the October manikin exam, there is a Mock Manikin Exam held which mirrors the CRDTS exam. Several MUSOD faculty participate as examiners for the exam as well as grading the manikin procedures. Students receive feedback and there is a Mock Manikin re-take exam scheduled for the Pros. procedures one month later. MUSOD Endo faculty provides feedback to the students also. There is also a Mock Patient Exam held several months prior to the CRDTS patient exam where again, we have MUSOD faculty participate as examiners in grading the procedures. We also calibrate our MUSOD faculty prior to each exam. Again, the students receive feedback from our faculty after the exam. There are review sessions given by our faculty for each section of the ADEX/CRDTS exam which are video taped for further student review if desired. Since we have gone to the integrated exam format, it has made quite a change in our clinic schedule throughout the year. We also have incorporated several exam procedures for our second and third year dental students in anticipation of these exams.

MINN: No response noted.

UMKC: Yes, our students take this exam while they are still students.

- They do not take the ADEX exam or CRDTS anymore, except for a few students from Hawaii or those who want to take CRDTS (About 6 of them). The great majority of our students (94/100) take WREBS.

- The exams are given 6 weeks before and 2 weeks after each clinical exam.
- Last WREBS exam we had a 100% pass rate for our students who took it for the first time.
- These results are better than previous exams.
- We provide the facility and prepare our students with mock dental boards on patients and manikins.
- We used to do patient based mock board exams. But last year we changed to WREBS with very little notice and we only had time to give the students a manikin mock dental board exam. This allowed the students to have a much better patient selection for the exam. Since we had a 100% pass rate we might only do a manikin mock board exam so the students will have a better patient pool to take the exam.

UNMC: Yes, our students take this exam while they are still students.

- Manikin portion in October, patient-based portion in February.
- Outcomes have remained unchanged by the new format.
- Our school is moderately to highly involved with the examination. Policy in Nebraska is to have a faculty member from each dental school be on the state board. Additionally there are faculty members on the CRDTS board.
- We prepare our student by the use of mock board examinations. We have done this for years, but now with the integrated examination we have modified the process to match CRDTS format.

SASK: No response noted.

SIU: No response noted.

III. Dual-arch Impressions

Dual-arch impressions are a very popular technique, but some faculty are reluctant to use this technique although literature supports the usage. Is your school using dual-arch impressions (triple tray) for single tooth restorations, quadrant trays or full-arch? What type of dual-arch impression trays are used? What departments/sections utilize this technique? If dual-arch impression trays are used, what guidelines are recommended?

COLO: 80% of impressions for single tooth restorations are made using a full arch impression tray.

Dual-arch or quadrant trays are used for single tooth impressions, unless:

- Complex occlusal scheme
- A molar that is the last tooth in the arch

Only COE check bite metal dual arch trays are used. An occlusal bite registration is taken separately.

- CRE:** The use of dual-arch trays is dependent upon the faculty member. If employed, the “TRI-BITE” tray from Direct Dental Services is used.
Guidelines:
General Dentistry – Single unit in posterior with multiple stops
Fixed Pros – If custom tray fails or if no custom tray at appointment, then for single units in the posterior with multiple stops
- IOWA:** No response noted.
- MAN:** Full arch for all indirect restorations
- MARQ:** We currently use full arch trays with mounted casts for all posterior indirect restorations except for inlays which are rarely made. We will use a triple tray in this instance
- MINN:** No response noted.
- UMKC:** Our school uses full arch trays for all types of single and multiple unit restorations
- UNMC:** We use triple trays (Quad Tray Extreme from Clinician’s Choice), quadrant and custom full arch trays for single tooth restorations. Dual arch trays are used in Operative clinic, but generally not in the prosthodontic clinic. Guidelines for use include:
1. Senior students
 2. Single tooth restoration
 3. Canine protected occlusion
 4. At least one tooth anterior and posterior to tooth being restored.
- SASK:** No response noted.
- SIU:** No response noted.

IV. Vital Pulp Therapy (Indirect/direct pulp capping)

(This topic is being revisited - refer to 1999 CODE Regional Reports)

Is your school policy accepted by all disciplines? Do you incorporate vital pulp therapy exercises in your preclinical operative curriculum? Are you in agreement with treatment approaches taught in Endodontics? Pedodontics? Prosthodontics?

- COLO:** The school policy is accepted by all disciplines. Taught by Endodontics with input from Restorative

- CRE:**
- There is no policy for pulp capping. It is up to the individual professor.
 - Endodontics does not support capping of a carious pulp exposure.
 - Endodontics will support capping of a non-carious exposure, if the isolation is controlled.
 - Vital pulp therapy exercises are incorporated into preclinical operative curriculum
- IOWA:** No response noted.
- MAN:**
- Endodontics does not support the policy
 - Practice is restricted to mechanical exposures
 - Glass ionomer is used for pulp capping
- MARQ:** Yes, we teach the students about direct/indirect pulp capping in the D1 year with both didactic and natural tooth exercises. Yes, we are all on the same page.
- MINN:** No response noted.
- UMKC:**
- The school policy is accepted by all disciplines.
 - Vital pulp therapy exercises are not incorporated into preclinical operative curriculum.
 - We are in agreement with treatment approaches taught in Endodontics, Pedodontics, and Prosthodontics
- UNMC:**
- The school policy is not completely accepted by all disciplines.
 - Vital pulp therapy exercises are not incorporated into preclinical operative curriculum.
 - Endodontics: Pulp cap only if exposure is small and occurred after removal of all caries and only if the tooth was asymptomatic. If root has not completely formed, keep pulp vital as long as possible to form root. After traumatic exposure, if only a very small exposure occurred and it was day or less since the injury.
 - Prosthodontics: Never pulp cap.
 - Pediatric dentistry: Primary teeth, do not pulp cap, proceed to pulpal therapy. In the case of permanent teeth, if root has not completely formed, keep pulp vital as long as possible to form root.
- Operative policy:
Direct pulp capping:
1. The direct pulp cap will only be used for a small exposure of an asymptomatic, healthy pulp with normal, controllable hemorrhage.
 2. This procedure is dependent upon other factors being favorable, such as age, health, occlusion, site of exposure (pulp horn vs vertical area), carious vs mechanical exposure, active vs inactive decay, etc.

3. All caries must have been removed before the exposure occurred.
4. Excellent isolation must be achieved and maintained with no contamination of the exposed pulp. The time lapse between the point of exposure and the pulp cap must be minimal. Ca(OH)₂ should be placed and the tooth restored with amalgam (posteriors) or composite (anteriors). Definitive cast restorations or crowns may be delayed for a minimum of 6 months.

One-Step Indirect Pulp Cap:

1. This procedure is used as a planned caries control procedure to decrease microbial activity of deep caries, as a diagnostic aid in determining the status of the pulp, and to promote pulpal healing and formation of reparative dentin.
2. The pulp must show radiographic and clinical signs and symptoms of vitality.
3. All peripheral decay is removed first, and then all soft decay is carefully removed from the deeper areas.
4. Deep remaining decay is covered with Ca(OH)₂. A base, e.g. Vitrebond (not ZnPO₄) will be placed and the tooth restored with amalgam (posteriors) or composite (anteriors). Definitive cast restorations or crowns may be delayed for a minimum of 6 months.

SASK: No response noted.

SIU: No response noted.

V. Restoration of Implants

What experiences are provided to your students in the restoration of implants?
 Do your students have the opportunities to PLACE implants (surgical phase) and/or do the second stage surgery to uncover them (after integration)?
 Who/what departments/sections are supervising the restoration of implants?
 What training is provided to the faculty?

COLO: Students do not participate in the surgical phase of dental implants; however, they may assist. Students do treatment plan for the restoration of the implants, and provide the treatment in the Department of Restorative Dentistry.

CRE: Juniors may restore an implant case if there is one available, and if they have demonstrated a certain level of competency as dictated by the Prosthodontic Department. Seniors may, in some uncomplicated cases, place implants, and follow up with uncovering post healing. Prosthodontics supervises the restoration of implants. The Prosthodontics Department has developed and circulated criteria to the other departments of the requirements for candidates to receive implants.

IOWA: No response noted.

MAN: No response noted.

MARQ: Our pre-doctoral students are allowed to treatment plan and restore single unit posterior teeth with implants. Anterior implants are restored by our Graduate Prosthodontic Residents. D3 students must do 4 assists in their D3 year before they are allowed to do any surgical procedures. Once a D4 student, at the discretion of the surgeon, they may be allowed to do the second stage surgery or in rare instances, help place an implant. The Department of General Dental Sciences supervises the restoration of the implants with only calibrated faculty members. Training is provided by the department via CE courses and outside companies (Nobel Biocare, Straumann, Astra).

MINN: No response noted.

UMKC: They have an opportunity to restore implants in our undergraduate clinic in fixed and removable prosthodontics. We do ~25-30 implants per month. Students are encouraged to do 2 each but it is not required. For Removable we use overdentures mostly on the lower using the Zest Locator attachment by Straumann. For Fixed we use SteriOss by Nobel Biocare. Students do not have the opportunities to PLACE implants (surgical phase) and/or do the second stage surgery to uncover them (after integration). The students can work with our Periodontal, Oral Surgery and AEGD residents and assist them during the surgical phase. Restorative department (Fixed and Removable and some Generalists) are supervising the restoration of implants. In-service lecture and lab during the summer and the manufacturer comes in and gives training for the faculty. There is a hands on lab and lecture that lasts about 3 hours for the faculty. If you are using the software with the implant vendor it requires a very good relationship with the vendor and sales rep.

UNMC: Each of our students must restore at least one implant crown or one implant retained removal prosthesis during the clinical phase of his/her education. Our students assist during the surgical placement of implants. The majority of our cases do not have a second surgical phase (healing abutments are placed in most cases), but in those cases where surgical uncovering of the implants is needed the students assist. The surgical phase(s) is/are done by the periodontal residents. The implants are restored under the supervision of the prosthodontic and operative faculties. Operative faculty now supervise single-tooth restorative situations. The operative faculty members recently completed a day long training session provided by our prosthodontic faculty. The prosthodontic faculty were trained in restoration of implants as part of their specialty residencies, or have gained experience in their private practices.

SASK: No response noted.

SIU: No response noted.

VI. Electronic Patient Records

Does your school use an electronic patient record (EPR)?

If yes, which EPR system do you use?
Please list the pros and cons of your school's EPR system.

COLO: Yes, we use an EPR. AxiUm is the software. It has been in use for a year, and the clinic is totally paperless. Paper record and x-rays have been scanned into the digital system.

PROS

1. Good product support, since 40 schools are using it.

CONS

1. Interface design could be better.

CRE: Yes, we use an EPR. Axiom software.

Pros: Legible record-keeping

Date-stamped records (permanency)

Access from any computer, operatory, or faculty office

Grades/criteria can be stored, compiled and viewed at any

time

Secure system

Good product support

Cons: Learning curve

Initial slowdown of clinical activities

IOWA: No response noted.

MAN: No response noted

MARQ: Yes, we use an EPR. Axiom software. Does a lot of things, but some of the most used things are difficult to use. We are all digital as of 9/4/07

MINN: No response noted.

UMKC: Yes, we use an EPR. CMS (Clinical Management Software) licensed by Bob Grove and UMKC.

PROS

- Specific for dental education
- Tracks time units and competencies given to students
- Has specific scheme for each procedure that mandates correct procedures performed
- Has specific oral exams and diagnosis for each department
- It is better suited for pre-dental programs
- It has good accountability. Very good security and approval steps by faculty.
- It is very comprehensive
- It is highly similar to our former paper record
- It is highly customized to UMKC procedures and faculty
- It supports how we practice and teach. The culture is not required to be changed to meet the EPR requirements. The EPR was programmed around our dental culture and climate

CONS

- It has cumbersome security sign in's with fingerprint recognition. If fingerprints are dusty from gloves have to continual wipe them off.
- Software is not fully fault tolerant. If there is a power outage there is no seamless backup up system.
- Orthodontics still uses their own paper record.

UNMC: We are making the transition to an electronic record. Salud software. System flexibility is both a pro and a con. Multiple logins is a problem

SASK: No response noted.

SIU: No response noted.

Does your school use digital radiography as the primary radiographic imaging system? (Expanded topic - refer to 2006 CODE Regional Reports)

If so, which software do you use for digital radiographs?

Is the digital radiographic system integrated into the EPR?

Please list the pros and cons of your experiences with digital radiography.

COLO: Yes, we use digital radiography as the primary radiographic imaging system. Soredex Optime software

CRE: Yes, we use digital radiography as the primary radiographic imaging system. Schick with Emago software. It is integrated into the EPR
Pros: Reduction in radiation exposure is \pm 40%-50%
Radiographs can be viewed from any computer, operatory, or faculty office
X-rays are viewed on a 15" monitor
Pt. education is simplified by discussing condition as projected on the monitor.
Cons: If exposure time is too minimal, contrast is sacrificed
Faculty and students alike must calibrate for successful time exposures in order to capture diagnostic radiographs

IOWA: No response noted.

MAN: No response noted

MARQ: Yes, we use an EPR. Emago software. We had to change the size of our monitors to a 19 inch screen for clarity, a huge cost. Training and acceptance were issues. Unable to use digital films in all circumstances

MINN: No response noted.

UMKC: Yes, we use digital radiography as the primary radiographic imaging system. MIPACS software It is integrated into the EPR.

PROS

1. WREBS exam loved it but CRDTS still likes film.
2. 8 bit to 16 bit gave us better quality
3. We have better image management
4. Uses same KVP but less exposure time ~ 50% less
5. The DICOMM standard is used which makes radiographs more universally readable.

CONS

1. It is easy to lose images if one is not careful
2. Sensors are not as comfortable to patients
3. It is easy for students to take too many pictures (patients can get overexposed since feedback is within 15 seconds) they have a tendency to retake for minor imperfections.
4. Because DICOMM standard is used it takes a lot of time to prepare students for WREBS so that the patient data is removed from the radiograph when students take the WREB exam. Depending upon the number of series of x-rays it can take up to one hour to remove DICOMM data for each student.

UNMC: No, we do not use digital radiography as the primary radiographic imaging system

SASK: No response noted.

SIU: No response noted.

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.

Topics for future discussion:

- What schools have Operative Departments? What is the organizational structure?
- How is Dental Anatomy taught?
- Is there a threat of Bisphenol-A exposure from composite restorations?

Suggestions for CODE.

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

- Other comments/suggestions?

CODE REGIONAL MEETING REPORT FORM

REGION: III South Midwest

LOCATION AND DATE OF MEETING:

University of Oklahoma College of Dentistry 1001 Stanton Young Blvd, Oklahoma City, OK
November 7 - 9, 2007

CHAIRPERSON:

Name: Dr. Terry Fruits

Phone #: 405-271-5735

Address: University of Oklahoma

Fax #: 405-271-3006

1001 Stanton Young Blvd

E-mail : Terry-fruits@ouhsc.edu

Oklahoma City, OK 73190-3044

List of Attendees:

Please see reverse of this page for List of Attendees to 2007 Regional Meeting

Suggested Agenda Items for Next Year:

1. Is the patient pool at your school adequate to supply enough appropriate patients to allow your students access to sufficient numbers of clinical experiences in various procedures to become competent for independent practice?
2. Are there opportunities for region 3 schools to apply for grants to conduct multicenter clinical research?
3. Are schools teaching for the national board examinations? Why? Board prep courses given? Mandatory or elective?
4. Are schools teaching ART for root caries? What has been the experience
5. To what extent are your students using a flowable composite, and for what types of restorative situations are they being used?
6. Are schools calibrating clinical and pre-clinical faculty? How and when?
7. How are new restorative materials introduced into the curriculum?
8. Who teaches post and cores in the school? What are the indications? What type of post(s), cement(s) and core materials are being used.
9. To what extent are you using retentive pins for core restorations?
10. Does your school use caries detection dye? Do students and or faculty use? What are the criteria? What product?
11. How do you handle remediation? Pre-clinical? Clinical?
12. How do you assign comprehensive care patients?
13. Are you using Vital Books? What has your experience been with Vital Books?
14. Are you using student portfolios as a method of student evaluation. (Rita Parma)

LOCATION & DATE OF NEXT REGIONAL MEETING:

Name: Dr. Janet Harrison

Phone #: 901-448-6692

Address: University of Tennessee
Dept of Restorative
Dentistry

Fax #: 901-448-1294

875 Union Avenue

E-mail : Jharrison@utmem.edu

Memphis, TN 38163

Date: TBA

Please return all completed enclosures to Dr. Larry D. Haisch, National Director, UNMC College of Dentistry;
 40th and Holdrege Streets; Lincoln, NE 68583-0750.
 Deadline for return: 30 Days post-meeting
 Office: 402 472-1290 Fax: 402 472-5290 E-mail: lhaisch@unmc.edu
 Also send the information on a disk and via e-mail with all attachments.
 Please indicate the software program and version utilized for your reports.

CODE Region III Attendees Form

| NAME | UNIVERSITY | PHONE # | FAX # | E-MAIL ADDRESS |
|--------------------|-------------------|----------------|--------------|---------------------------------|
| Terry Fruits | Oklahoma | 405-271-5735 | 405-271-3006 | terry-fruits@ouhsc.edu |
| Colin Foster | Oklahoma | 405-271-5735 | 405-271-3006 | colin-foster@ouhsc.edu |
| Robert Miller | Oklahoma | 405-271-5735 | 405-271-3006 | robert-miller@ouhsc.edu |
| Frank Miranda | Oklahoma | 405-271-5735 | 405-271-3006 | frank-miranda@ouhsc.edu |
| Lynn Montgomery | Oklahoma | 405-271-5735 | 405-271-3006 | C-lynn-montgomery@ouhsc.edu |
| Randy White | Oklahoma | 405-271-5735 | 405-271-3006 | jonathan-white@ouhsc.edu |
| Chris Beninger | Baylor | 214-828-8211 | 214-874-4544 | cbeninger@bcd.tamhsc.edu |
| George Cramer | Baylor | 214-828-8468 | 214-874-4544 | gcramer@bcd.tamhsc.edu |
| Bill Tate | Texas-Houston | 713-50-4264 | 713-500-4108 | William.H.Tate@uth.tamhsc.edu |
| Gary Frey | Texas-Houston | 713-500-4475 | 713-500-4108 | Gary.N.Frey@uth.tamhsc.edu |
| Ryan Quock | Texas-Houston | 713-500-4276 | 713-500-4108 | Ryan.Quock@uth.tmc.edu |
| Richard Bebermeyer | Texas-Houston | 713-500-4286 | 713-500-4108 | Richard.D.Bebermeyer@uth.tmc.ed |
| Robert Sergent | Louisiana | 504-941-8257 | | rserg@lsuhsc.edu |
| Alan Ripps | Louisiana | 504-941-8261 | 504-941-8218 | aripps@lsuhsc.edu |
| William Yeadon | Louisiana | 504-984-6030 | | weadon@lsuhsc.edu |
| Scott Phillips | Mississippi | 601-9846030 | 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@utmeme.edu |
| Scott Hollis | Tennessee | 901-448-6692 | 901-448-1294 | whollis@utmeme.edu |
| Joseph Connor | Texas-SA | 210-567-3693 | | connorj@uthscsa.edu |
| Kevin Gureckis | Texas-SA | 210-567-3688 | | gureckis@uthscsa.edu |
| Rita Parma | Texas-SA | 210-567-3533 | | Parma@uthscsa.edu |
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**2007 NATIONAL CODE AGENDA
REGION III
SUMMARY RESPONSES TO NATIONAL AGENDA**

(Editor note: Questions condensed for printing purposes)

I. Teaching Dental Biomaterials in North American Dental Schools

All schools had a distinct entity teaching Dental Biomaterials

There was a range from 0-2 full-time faculty members with primary responsibility in DBM, a range from 0-10 for full-time co-teachers and an range from 0-6 for part0time co-teachers.

All schools have courses in Freshman and Sophomore years, with some listing courses in the Senior Year.

Most schools have stand-alone courses that are complimented by additional information in other preclinical and clinical courses.

The majority of the course work occurs in lecture and laboratory types of classes.

Many of the schools also listed web-based materials as another method of presenting the materials. Most had school-produced manuals along with textbooks.

Textbooks used:

Fundamentals of Operative Dentistry, Third Edition; James B. Summit et. Al, 2006

Quintessence.

The Art and Science of Operative Dentistry, Third Edition; Clifford M. Sturdevant, et.

Al., 1995, Mosby

Introduction to Dental Materials, Richard Von Noort, 1994

Applied Dental Materials, 7th edition; John McCabe

Craig's Restorative Dental Materials, 12th ed. By John M. Powers

Phillip's Science of Dental Materials, 11th ed. By Kenneth Anusavice

Tooth Colored Restoratives, Eighth Edition; Harry F. Albers; 1996, B.C. Decker

Esthetic Color Training in Dentistry, Paravina, R. and Powers, J.M., 1st ed., Mosby, Elsevier Inc., 2005.

Two or three schools noted a recent curriculum revision and all of those indicated that DBM has an increase in importance in their curriculum. Several schools noted some decline in the emphasis on DBM based research. This was mostly due to a lack of faculty and/or support for the research efforts.

Most schools make some effort to integrate the science of DBM into the clinical curriculum. Some integrate it on a daily basis in clinical contact with students, while others indicate specific preclinical laboratories to integrate it into clinical technique courses.

Three or four schools indicated that they were not entirely satisfied with the overall time and effort allotted. The main problem seemed to stem from a lack of sufficient faculty to effectively integrate DBM into the clinical courses.

II. National Testing Agency for Licensure and Credentialing.

Four of the schools in our region primarily utilize the WREB licensing exam and the others use mixture of CITA, SRTA, and WREB. The students take the exam prior to graduation and they begin taking them as early as January and as late as May. The WREB examination does not utilize typodont teeth at this time, however the other boards such as CITA are including typodonts in their examination processes. Most of the schools have some form of Mock Boards or typodont course to prepare their students to take the Board examinations. The schools' student success rates seem to be very good on the first try, and eventually all students seem to pass the exam on subsequent attempts.

III. Dual-arch Impressions

Most of the schools in the region hesitate to allow students to use dual arch impressions in the clinics. Those that allow it, for the most part have definite limitations for its use such as:

- Single tooth use
- Not used on distal tooth in the quadrant
- Not used for surveyed crowns
- Limited to experienced students
- Utilization of rigid trays

IV. Vital Pulp Therapy (Indirect/direct pulp capping)

For the most part, the schools indicated that there was not a set guideline for the entire school in regard to vital pulp therapy (UT at San Antonio does list a school guideline). Most felt that there was a general agreement on vital pulp therapy. The main disagreements came between Endodontic philosophies compared to Operative philosophies. Endodontic departments tended to be much more conservative toward the use of pulp capping procedures and more prone to suggest endodontic treatment.

V. Restoration of Implants

Most of the schools are attempting to encourage their students to participate in the restoration phase of implants. Most are assigning patients to the student for restoration of the implants, the surgical procedures are completed generally by the oral maxillo-facial or periodontic departments (faculty or residents). The training provided to the faculty ranges from each faculty member being responsible for seeking out their own training, to programs to train faculty provided by grants from dental implant companies.

VI. Electronic Patient Records

All but two of the schools indicated that they were utilizing electronic records and digital radiography at this time. The other two schools are in the process of developing the capabilities to proceed with these capabilities. The predominate software system used for clinic management is Axium. The systems used for digital radiography included:

MiPacs, Schick Technologies CDR, Mediadent, and VixWin Platinum Enterprise (Gendex Dental Systems).

See individual schools' comments for Pros and Cons for each system.

Regional CODE Agenda

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

No Responses noted

Suggestions for CODE.

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

- Other comments/suggestions?

No Responses noted

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. Teaching Dental Biomaterials in North American Dental Schools

The following questions were provided by the ADEA Section on Operative Dentistry and Biomaterials. The responses will be presented as part of this section's program at the 2008 ADEA Meeting in Dallas. Be as specific as possible although multiple answers may be appropriate in some cases. Please add appropriate comments to further explain your answers as needed for clarity or elaboration.

- A. Does your school have a distinct academic entity known as Dental Biomaterials (DBM) or other similar title for this subject (*Dental Materials, etc.*)?
- Yes or No
 - If yes, what is it called?
 - If yes, classify it per your school's organizational scheme - Department, Division, Section, Other (*explain*).
 - If it is a subset of another department, identify the department.

BAY: Yes. Department of Biomaterials Science. This is a standing department primarily designed for research purposes. Several years ago the pre-doctoral teaching of Dental Materials was moved from this department to the Department of Restorative Sciences. Presently the Department of Biomaterials Science is not involved in pre-doctoral teaching of Dental Materials with the exception of the use of several faculty members who assist in the Dental Materials Course #6580 for D-1 students.

LSU: Yes. Biomaterials Division. Comprehensive Dentistry. There is a Director of Biomaterials Research and research group. The Director participates in the undergraduate dental materials course but the course is directed by a clinical faculty member.

- MISS:** We do not have a department or section called Biomaterials. We do have a department called Biomedical Materials Science. The department has four full time faculty with a fifth faculty line to be added in the near future. These faculty teach a Materials Science Course during the D1 year (37 hours). There is an additional faculty whose primary responsibility is teaching dental materials in the dental courses with assistance from the four faculty in the Biomedical Materials Science Department. The additional faculty's primary appointment is in the Department of Care Planning and Restorative Sciences. This faculty also teaches in the Material Sciences course. There are currently four faculty that teach DBS sections during dental courses.
- OKU:** Yes. Dental Materials. Department of Dental Materials within the Division of Restorative Dentistry.
- TENN:** Yes. Division of Biomaterials. Division. Operative, Pros, Grad Ortho
- UTSA:** Yes. Biomaterials. Division of Biomaterials, Department of Restorative Dentistry. Department of Restorative Dentistry
- UTH:** Yes. Houston Biomaterials Research Center.
Two areas of Biomaterials: Department of Restorative Dentistry and Biomaterials, Biomaterials Research Center; Department of Restorative Dentistry and Biomaterials.
- B. How many full-time faculty teach DBM at your school as their primary teaching responsibility?
How many full-time faculty co-teach DBM at your school as part of their teaching responsibility?
How many part-time faculty teach or co-teach DBM at your school?
- BAY:** There are no faculty members whose primary teaching responsibility is Dental Materials. There is a course director and course co-director for Dental Materials #6580. Approximately 8-10 full-time faculty are involved in co-teaching Dental Materials #6580. Approximately 4-6 part-time faculty are involved in the Dental Materials #6580.
- LSU:** Two. One. One (for Dental Hygiene Program)
- MISS:** There are currently four (4) full-time faculty that co-teach DBM as their primary teaching responsibility.
- OKU:** One full-time faculty with DBM as primary teaching responsibility. No full-time or part-time co-teachers.
- TENN:** One. One full-time co-teacher. No part-time co-teachers.
- UTSA:** Two full-time faculty. No full-time co-teachers. One part-time teach or co-teach.

- UTH:** No full-time faculty. Six full-time co-teach. Two part-time with several others presenting various topical seminars.
- C. When in the curriculum is DBM taught?
(Indicate all that apply if taught in more than one year.)
- Freshman year
 - Sophomore year
 - Junior year
 - Senior year
- BAY:** Dental Materials #6580 is a second semester D-1 course.
- LSU:** Freshman year – As part of Introduction to Operative Dentistry
Sophomore year – Dental Materials course, Part of Introduction to Clinical Operative Dentistry course
Junior year – As part of Advanced Clinical Operative Dentistry
Senior year
Residents/graduate students (MS degree)- Advanced Dental Materials course.
- MISS:** DBM lectures are given during the Freshman and Sophomore years as part of the clinical courses. A materials science course is taught during the freshman year.
- OKU:** Two DBM courses in Freshman year
One DBM course in Sophomore year
Three lectures in the Restorative Seminar series in Junior year
Four lectures in the Restorative Seminar series in Senior year
- TENN:** Freshman year – Basic Course
Senior year – Advanced Course
- UTSA:** Freshmen year - Yes
Sophomore year – Yes
- UTH:** DBM is taught within each of the four years and within the appropriate graduate areas as follows:
Academic Courses:
Biomaterials I: Direct Restorative Materials
Biomaterials II: Indirect Restorative Materials
Biomaterials III Applications to Clinical Dentistry
Biomaterials IV: Product Selection
Post-doctoral courses:
Oral Biomaterials I; Prosthetic Materials
Oral Biomaterials II; Esthetic Materials
- D. How is DBM (*specifically*) taught at your school?
- Separate Course(s) only
 - Part of another Course or Courses only

- Combination (*Both as a separate introductory course, AND as part of other courses e.g. Operative Dentistry, and/or Prosthodontics, and/or Bio-clinical Seminars*)
- Other (*Describe*)

- BAY:** Dental materials is taught as a stand alone course, “Dental Materials #6580”, however, dental materials is heavily incorporated into other Restorative Sciences courses including Operative Dentistry, Removable and Fixed Prosthodontics and Implantology. Reinforcement is provided through D-1, D-2 and D-3 Operative Dentistry and D-4 General Dentistry courses.
- LSU:** Combination. As a preclinical course in the second year and as part of preclinical and clinical operative and prosthodontic courses.
- MISS:** Separate Course(s) only. Part of another Course or Courses only. Combination (Both as a separate introductory course, AND as part of other courses e.g. Operative Dentistry, and/or Prosthodontics, and/or Bio-clinical Seminars).
- OKU:** Three specific courses in DBM and seven lectures in three Restorative Seminar series. Other restorative courses (operative, fixed prosthodontics, removable prosthodontics, Endodontics) also provide information on the materials used in their disciplines.
- TENN:** It is taught in combination with Operative, Pros, and Grad Ortho.
- UTSA:** Dental Materials has freshman and sophomore numbered courses that are taught without reference to brand name products. Operative Dentistry and Prosthodontics in both the sophomore lab courses and in the junior didactic courses teach by brand name the when, where, why and how about the specific materials we use in the lab and clinic.
- UTH:** Yes, Combination.

E. What format, setting and method is used to teach DBM at your school? (*Indicate all that apply if a combination of formats is used.*)

- Lecture (*whole class*)
- Laboratory (*hands-on*)
- Clinic (*with patients present*)
- Seminar (*small groups, ≥10 students*)
- Individual or very small groups (*1-5 students*) with an instructor
- Individual (*Self-instructional learning via CD or DVD*)
- Individual (*Self-instructional learning via web-based program*)
- Textbook (*Provide the name of the book*)
- School-produced DBM Manual

BAY: Dental Materials #6580 is a once-semester lecture and laboratory course. The lecture portion focuses on the science of the materials, terminology, composition and clinical applications. The laboratory portion is directed toward hands-on manipulation of the materials commonly used in clinical dentistry with the exception of amalgam, composite, cements, bases, liners and porcelain. These are incorporated into other clinical and preclinical restorative courses. In clinical situations, the various materials, advantages and disadvantages, are discussed by the students and instructors with patients while formulating treatment plans. Also clinically, instructors will question students concerning materials to be used for the clinical procedure. This is usually done out of patient hearing and is a one on one teaching experience.

The materials section of Student's Art and Science of Operative Dentistry, 5th edition and Fundamentals of Operative Dentistry, Summitt, J.B., et al, 3rd edition, are used in preclinical and clinical courses.

Introduction to Dental Materials, Richard Von Noort, 1994 and Applied Dental Materials, 7th edition; John McCabe are supplemental reading for Dental Materials #6580. This course also uses an in-house produced manual as well as school produced DVD's.

LSU: Lecture (whole class) – digital videos are used to demonstrate both basic materials behavior and handling techniques.

Clinic (with patients present) – demonstrations of proper handling techniques are given as needed.

Individual (Self-instructional learning via web-based program)

Lectures are given to students with accompanying Powerpoints, Acrobat files or Word files which are all posted on the school's server for download by the students.

Textbook: Craig's Restorative Dental Materials, 12th ed. By John M. Powers as primary text & use as an additional resource: Phillip's Science of Dental Materials, 11th ed. By Kenneth Anusavice.

MISS: Lecture (whole class), Laboratory (hands-on), Clinic (with patients present), Seminar (small groups, approximately 10 students), Individual or very small groups (1-5 students) with an instructor, Individual (Self-instructional learning via CD or DVD), Individual (Self-instructional learning via web-based program),

Textbooks include:

Fundamentals of Operative Dentistry, Third Edition; James B. Summitt et. Al, 2006, Quintessence.

The Art and Science of Operative Dentistry, Third Edition; Clifford M. Sturdevant, et. Al., 1995, Mosby.

Tooth Colored Restoratives, Eighth Edition; Harry F. Albers; 1996, B.C. Decker.

Phillips' Science of Dental Materials, 11th Edition, Anusavice, Kenneth J, 2003, Elsevier.

Restorative Dental Materials, 12th Edition, Craig, Robert G., 2006
Mosby.
School-produced DBM Manual

- OKU:** Lecture (entire class). Pre-clinical Laboratory (entire class)
Textbook (entire class): Hillips' Science of Dental Materials, 11th Edition, Anusavice, K J, 2003, Elsevier.
Other: Blackboard course management system for posting of course content including links to external websites, asynchronous (on-demand streaming) lecture videos, critical review articles, course evaluations,
- TENN:** Lecture – Yes, D1 and D4 years
Laboratory – D1 year
Individual or very small groups (1-5 students) with instructor – Grad Orth
Individual (Self-instructional learning via web-based program) – D4 year after introductory lecture.
Textbook – Introduction to Biomaterials, Richard Van Noort
- UTSA:** Lecture (whole class)- Yes
Laboratory (hands on) – As used in prosthodontics and operative.
- UTH:** Lecture – Yes
Laboratory – Secondarily taught within various courses.
Clinic (with patients present)
- DBM, foundation as well as advanced, is taught (or should be taught) with every student-faculty-patient interaction involving a restorative procedure(s). There is more continuity and emphasis placed upon the teaching of materials within the fourth year clinics where senior students work with specifically assigned “primary bay instructions.” Full-time and part-time “Operative” faculty also emphasize materials teaching, especially if they are or have been associated with the Operative preclinical courses.
 - Seminar (small groups, 10 students). Various topics are discussed within “rounds” (small/brief seminars presented by faculty within each individual fourth year “clinical bay,” prior to the beginning of each clinical session).
 - Individual or very small groups (105 students) with an instructor
 - Various topics are discussed within “rounds” (small/brief seminars presented by faculty within each individual fourth year “clinical bay,” prior to the beginning of each clinical session).
 - Individual (Self-instructional learning via web-based program)

- Program on Blackboard: IRWIN (Information Resources When in Need)
- Textbooks used throughout the four years include the following:
 - Restorative Dental Materials, Craig, R.G. and Powers, J.M. eds., 12th ed., Mosby, 2006 Supplemental textbooks
 - Craig's Dental Materials: Properties and Manipulation, Craig, O'Brien, and Wataha, 8th ed., Mosby, 2004
 - Esthetic Color Training in Dentistry, Paravina, R. and Powers, J.M., 1st ed., Mosby, Elsevier Inc., 2005.
- School-produced DBM Manual
- Handouts are given as appropriate in the various courses.

F. Did your school experience a curricular revision during the last 7 years? If yes, on a scale of 1 to 5 (*1 is less important and 5 is highly important*) rate the level of importance given to DBM SINCE the curricular revision at your school. Was this rating an increase or decrease compared to DBM's status before the revision?

BAY: Yes, the curriculum was revised several years ago and for dental materials, it represented an increase in the importance of materials. On the 1-5 scale, dental materials science is a 4 now.

LSU: 3, Increase

MISS: There has not been a curriculum revision involving DBM in the last 7 years.

OKU: Not applicable.

TENN: Yes, rate a score of 4. DBM increases in importance.

UTSA: No response noted

UTH: Continual revisions are implemented, to a less and/or greater degree depending on the administration and their priorities.
 In the past, basic biomaterials research was stronger. Due to faculty departure in this area, the research emphasis has been directed more toward attracting basic research, with associated finances. However, the Biomaterials Research Center has a new director who plans on reviving faculty driven biomaterials research (research designed around a practitioner-general dentist's limited or nonexistent research experience as opposed to research

performed at a PhD level), as well as expanding basic research projects.

Academically, the teaching emphasis on biomaterials remains strong; research wise there has been a decline, but this decline was not due to a revision within the curriculum.

G. Does your school make a specific effort to integrate the science of DBM into the clinical curriculum? If yes, please describe how you try to accomplish this?

BAY: BCD does make an effort to incorporate dental materials science into its clinical curriculum. This is done by discussing with and questioning students about the use of indications and contra-indication of various materials during the treatment planning process. Also, D-3 Operative #8220 lecture occurs weekly just prior to clinic and a portion of that time is spent discussing materials manipulation and use in clinical situations encountered by the students. It is a question/answer time which often focuses on materials.

LSU: Yes, it is integrated in several courses that rely more heavily on dental materials such as Operative Dentistry & Prosthodontics.
In the graduate DBM course, we have made efforts in three aspects: (1) Added a special session of lecture and lab demonstration of CAD/CAM mill copying. (2) Included the progress of on-going research projects in the school in dental composites and bonding agents. (3) Added a literature review and presentation session about the topics of interests to different specialty programs.

MISS: All DBM lectures are given in the clinical courses where the materials are first introduced to the students. DBM faculty participate in the laboratories where the materials are used as well; providing instructions for proper mixing, placement and use of dental materials. One preclinical laboratory is devoted to preparing two macro shear bonding specimens for each student and testing them immediately and after 7 days of storage in water at 37°C.

OKU: No, however, the full-time DBM faculty person makes an effort to provide close integration with pre-clinical courses in various disciplines by ensuring that students learn about the relevant materials prior to their use in the pre-clinical courses.

TENN: Not enough faculty.

UTSA: Not at this time.

UTH: DBM is taught throughout the four years, making it an important component of the preclinical as well as clinical curriculum. Clinically, biomaterials is taught with each patient restorative procedure.

H. Are you satisfied with the overall time and effort allotted to teaching DBM at your school? Yes/No. If not, what would you change if you could?

BAY: At BCD, it seems that the time and effort allotted to teaching dental materials is adequate - if only the students would pay attention!

LSU: No, relative to before Katrina, the course hours for the 2nd year dental students is currently 20% less. There are more and more new materials and even new categories of them that need explaining. Time is too short. I would also change the timing of the lectures so that there are at least 2-3 days between each 2-hour lecture session. I want students to understand the information and not simply memorize facts and so time is needed for the main ideas to sink in and become part of the students' practice.

MISS: The majority of the faculty believes that the time and effort allotted to teaching DBM is adequate.

OKU: We are not entirely satisfied with the number of faculty allotted to teach DBM because the level of effort required by one full-time faculty person to teach DBM science singlehandedly is too great. Having only one full-time faculty person also places logistical restraints for the integration of DBM with the clinical sciences. Other problems include the mentoring of a fewer number of summer research projects for dental and dental hygiene students, mentoring of fewer numbers of graduate students for Masters theses and PhD dissertations, and mentoring of junior faculty who are on tenure-track appointments. The lack of support for the DBM faculty, vis-à-vis lack of additional full-time faculty in the department, also prevents one faculty person from providing hands-on instruction in pre-clinical and clinical use of DBM to an entire class. The solution is to fund 1-2 salary lines for full-time faculty trained in DBM or a related science so that the efforts of the department in serving the college result in high levels of productivity in all aspects of the college's mission (teaching, mentoring, scholarly activity and service).

TENN: Yes, however additional faculty would be nice to increase research activities.

UTSA: The major instructor for biomaterials is satisfied with the time and effort allotted to teaching DBM at UTHSCSA.

UTH: Overall, yes; however, areas could be revised and strengthened (which is an ongoing effort). At some point, we would like to have a hands on lab associated with the lecture (at least in the second year course).

I. *Please provide any other comments or thoughts about this issue.*

- BAY:** No responses noted
- LSU:** No responses noted
- MISS:** No responses noted
- OKU:** More effective instruction in DBM science combined with the integration of DBM science with the clinical dental sciences would benefit the students, the faculty and the college in many ways, as described in the response to question 1-H above. Furthermore, the rapid and continuous improvements made in the biomedical sciences and in biomaterials science will perpetuate the need for faculty who can provide students with the training necessary to ensure that they become competent dental professionals.
- TENN:** No responses noted
- UTSA:** When taught as a separate, condensed course, dental biomaterials fares best when temporal coordination is maintained with the other preclinical courses, especially in operative dentistry and prosthodontics. Fairly frequent shifts in the scheduling of those courses in the first two years have made such coordination difficult at best and impossible at worst. It would be preferable if materials-intensive clinical disciplines always involved dental materials faculty in any significant rescheduling of their lecture schedules.
- UTH:** No responses noted

II. National Testing Agency for Licensure and Credentialing.

There is an increased utilization of a national testing agency for licensure and credentialing. Do your students take this exam while they are still students? When are these exams given? What are your outcomes in terms of passing and failures? Are these results better than previous exams? What is the level of involvement of your school with this exam? Most of the exams utilize dentoforms as part of the testing. Is your school preparing your students to pass this exam? If yes, how?

- BAY:** No. Our students take the WREB exam in April while still students. As part of the preparation for the WREB exam, our students utilize dentoforms for progress exams in the fourth year.
- LSU:** This will be the first year that Louisiana will participate in the Council of Interstate Testing Agencies (CITA) examination. The examination manual is available online (citaexam.com) and students are encouraged to begin familiarizing themselves with the manual in the junior year. The manikin examination for CITA is a significant change from the Louisiana Dental Board examination. The preparations required are all crown preparations taught by the Prosthetic Dentistry Department. Eight hours of laboratory

time previously dedicated to preparing for operative preparations has been transferred to the junior fixed prosthetics course for exam preparation. CITA guidelines allow junior students to challenge the manikin portion of the examination (crown preparations and endodontics). CITA will present information on the examination to junior and senior students before the examination in February 2008.

MISS: Mississippi utilizes the Council of Interstate Testing Agencies, Inc. (CITA) to administer its licensure examination. We have participated since 2005 and have not given a separate state examination. Pre-graduation Manikin-based exam is taken in the junior year and the patient based exam is taken in the senior year. This year January 25-26, 2008 and April 25-26, 2008. A traditional exam is given in August (August 29-30, 2008) Traditional exams are also given at four other institutions throughout the year. For dates see www.citaexam.com. We have not seen a significant difference. We average 1-4 failures per examination and all have passed on retake of exam. Only one total failure has occurred where the student had to retake the entire exam. Similar, with the exception students can become eligible to receive their license upon graduation. The school receives a facility usage fee per student. Our clinic and preclinical areas are used on the days of the examination. Third year students have board preparation as part of a course taught by fixed prosthodontic faculty focusing on similar preparations on the dentofom used by CITA. The endodontic department also provides opportunities to critique their portion in a more informal setting. In preparation for the clinical exam, a separate screening protocol has been established for students to screen patients for operative needs without taking a patient through the admissions process.

OKU: The Board of Dentistry for the state of Oklahoma recognizes the Western Regional Examining Board as its credentialing examination. We have a WREB examination on site once a year at our school, this usually occurs in May while they are still students. The Periodontal and Removable Prosthodontics portion of the exam may be taken on-line within forty-eight days prior to the actual WREB examination. The initial pass rate for the last class was 93%, with the other candidates passing the exam at subsequent attempts. Our results seem to remain in the 93-98% range with few exceptions.

Here are the "first attempt" pass rates for the past few years:

2007: 58 (WREB), 54 passed 4 failures (2 partial, 2 complete) 93%

2006: 47 (WREB), 46 passed 1 failure (1 complete) 98%
1 (CITA), 1 passed

2005: 56 (WREB); 44 passed 12 failures (2 partial, 10 complete) 79%

2004: 46 (WREB); 44 passed 2 failures 96%

2003: 49 (WREB); 47 passed 2 failures 96%

2002: 45 (WREB); 42 passed 3 failures

9 (other) 9 passed 94%

2001: 46 (WREB); 44 passed 2 failures 96%

All students who failed on the first attempt have passed on subsequent attempts.

Our school has members of the faculty that serve as WREB board examiners at other sites during the year. We also send faculty to observe WREB exams at other sites to get first hand experience of how they are run. WREB often asks for input from our faculty on various aspects of the examination, and we have participated in the development and preliminary testing of new concepts for the WREB examination format in operative, periodontics, removable prosthodontics, and treatment planning. At this time, the only part of the WREB that utilizes a typodont is the Endodontics portion. The Endodontics exam is not done on a typodont tooth, but rather on a natural tooth mounted in a typodont.

Our students can attend an optional preparation course directed at familiarizing them with the requirements and procedures of the board examination. It is directed mainly at the WREB exam, but much of it is useful for the students wishing to take other regional licensing examinations. The Operative department requires the fourth year dental students to participate in a mock board examination during the spring semester. It consists of a one day clinical examination during which the students will be asked to complete two procedures selected from the following options: Class II amalgam, Class II resin composite, Class III resin composite, or a cast gold inlay or onlay. These requirements mirror the requirements of the WREB for the section relating to operative dentistry. During the exam we attempt to follow the procedures, paperwork, and grading criteria that the actual WREB examination follows. Students have provided very positive feedback in regard to the effectiveness of this mock board in preparing them for the actual exam.

TENN: Because there is currently no official national testing agency, ADEX being administered by NERBS and/or CRDTS, I will answer this question in relation to the regional exam that is recognized by the states of Tennessee and Arkansas, those being the states in which the majority of our students will practice. Tennessee recognizes SRTA and WREBS with the majority of our students taking the SRTA exam. Our students take the SRTA exam generally, beginning with the lab portions of it as a partial exam in February and the clinical portion being given in early April and again in June. Our outcomes vary slightly by portion of the exam in terms of initial pass rate with the ultimate pass rate for the last two years being virtually 100%. Our outcomes have been steadily improving with the implementation of a Mock Clinical Board exam given to all students and in which some of the SRTA examiners participate and which mirrors the process of the actual clinical exam. Our school is very involved with the SRTA examiners. During preparation for the exams, faculty are invited and do attend two of their Board meetings a year and have input into their process and help define the clinical exams. Also during the exams themselves, faculty are invited to sit in on the examiners initial calibration sessions before the actual exam starts. Because SRTA has been moving

away from patient oriented exams - the periodontal patient was removed last year and a computer exam was substituted, they utilize dentoforms for the fixed prosthodontic portion of the exam. Our students are prepared for this portion of the exam by the requirement that they prepare (with a passing grade) the same type crown preps on the same set of teeth in manikins in the same timed setting. They must pass in order to be certified to take the SRTA exam.

UTSA: Our students have completed the clinical and didactic training by the end of April. WREB is at UTHSCSA in early May.

2001: 4 Fail
2002: 83 Pass 6 Fail
2003: 80 Pass 10 Fail
2004: 72 Pass 8 Fail
2005: 68 Pass 15 Fail (Two eventually are passed on appeal of a time penalty)
2006: 74 Pass 6 Fail (Two are endodontics only)
2007: 76 Pass 6 Fail (Two endodontics only and one periodontics only)

In 2005 two students were unsuccessful on the second attempt. They both passed on the third attempt. By my records all other candidates have been successful on the second attempt. In the history of the school my best historian thinks that one student never passed a state board. To the best of his knowledge that is the one and only one that did not receive a license somewhere eventually.

UTH: Our students participate in National Boards, parts 1 & 2. They are also prepared for the Western Regional Examining Board clinical examination. Our school is not specifically preparing our students for other examinations. *Point of information:* Our students take the WREB after completion of the four years of dental school, yet just prior to graduation. Our students are required to pass National Boards to graduate, but not required to pass WREB (or other) to graduate. Our pass rate for National Boards is 100% (~98% at first attempt), and is 100% for WREB (most at first attempt).

III. Dual-arch Impressions

Dual-arch impressions are a very popular technique, but some faculty are reluctant to use this technique although literature supports the usage. Is your school using dual-arch impressions (triple tray) for single tooth restorations, quadrant trays or full-arch? What type of dual-arch impression trays are used? What departments/sections utilize this technique? If dual-arch impression trays are used, what guidelines are recommended?

BAY: Baylor is using full arch trays for single tooth restorations. In the third year students are required to make custom trays. In the fourth year,

students usually make custom trays but do use prefabricated perforated trays on occasion. D-3 Operative Lecture 8220 introduces the students to dual arch impressions. This includes discussion of advantages, disadvantages, appropriate case selection, tray requirements and tray selection, pitfalls, techniques, and troubleshooting. This is an information only lecture since dual arch impression trays are not used clinically at BCD.

LSU: Yes, we are using them, but under certain specifications. They are not the norm. We prefer the full arch impression and also require a bite registration for most cases for all indirect restorations.

We are utilizing the impression trays manufacturer by Discus Dental. Our requirements are that the tray frame is rigid causing minimal to no distortion when placed or removed from the mouth. The sides should support the impression material but not be so large they create difficulty when the patient closes into occlusion. All indirect restorations are covered by both the Prosthodontic Dept and our Comprehensive Dentistry Departments. Dual arch impression technique is only taught by the Comprehensive Dentistry Department. They can utilize this technique if they meet these guidelines:

1. Single units only
2. Cannot be for survey restorations for RPD
3. Need to be an intact tooth mesial and distal to the tooth being prepared, cannot be for the most distal tooth in that quadrant
4. Lab work must be done properly for this technique. Both sides must be poured and mounted on an articulator (quadrant type) before stone is separated. Cannot separate and reuse the impression as a bite record.
5. Impression material must be fluid when inserted into mouth to the teeth meet little to no force in closing. Upon setting the material should be rigid enough so not to be distorted when stone is placed in impression. The impression material we are using is Aquisil Rigid for the putty phase and Aquisil LV for the wash phase.

MISS: We use full arch only for all indirect restorations.

OKU: Yes, dual arch trays are used in some situations. The Fixed Prosthodontics department uses the Coe rigid metal check bite trays for dual arch impressions. They utilize these trays on a limited basis. Dual arch impression trays are limited to:

- Fourth year dental students only.
- Students who have completed at least 12 units of Fixed Pros work
- Single tooth restorations

- Not used for surveyed crowns or for crowns on the distal tooth of a quadrant.

TENN: Yes. Temrex (Wide metal trays); Fixed Pros/Removable Pros. Triple trays are limited to two units. The case cannot have missing teeth in the arch because of possible RPD's in the Tx. plan. Triple trays are also used to take impressions to retrofit a crown to an existing RPD. This method makes sure the RPD is fully seated.

UTSA: Dual arch impressions are used rarely if at all in the junior clinic. Triple trays are accepted and encouraged in the senior clinic when the occlusion and situation are favorable. The rules are single crowns only. They have a plastic (glued) hinge that can be used for teeth other than the terminal tooth. Metal bang-bang articulators are required for the terminal tooth in the arch crown impressions. Premier posterior (standard width) triple trays and Premier quadrant triple trays are available in the student clinic. The department of General Dentistry manages 95% of the senior impressions with prosthodontics and operative dentistry managing the other 5%.

UTH: Clinically, only full arch impression trays are utilized. Preclinically, in the Operative II course, dual-arch impression trays are utilized during the belleGlass inlay preparation, temporization, fabrication, and cementation projects. Triple Trays (Metamorphosis by L.A.K. Enterprises Inc.) are used within the Operative II course; Department of Restorative Dentistry and Biomaterials. None, since they are only used preclinically.

IV. Vital Pulp Therapy (Indirect/direct pulp capping)

(This topic is being revisited - refer to 1999 CODE Regional Reports)

Is your school policy accepted by all disciplines? Do you incorporate vital pulp therapy exercises in your preclinical operative curriculum? Are you in agreement with treatment approaches taught in Endodontics? Pedodontics? Prosthodontics?

BAY: For the most part, yes. Regarding indirect pulp capping procedures, on a tooth with no history of spontaneous pain and responding normally to vitality tests, a pulpal exposure should be avoided. To this end, carious dentin is removed except for the last increment of leathery carious dentin in close approximation to the pulp that if removed would expose the pulp. A calcium hydroxide liner is placed over the demineralized layer which all but eliminates any remaining bacteria and arrests the caries process when the tooth is restored with a well sealed restoration. A glass ionomer base is generally placed on top of the liner before the tooth is restored. Regarding direct pulp capping procedures, only if a small mechanical exposure occurs on an otherwise healthy pulp should a direct pulp cap be done and then only under ideal conditions. The ideal conditions are defined as having a rubber dam in place so that no bacterial contamination of the exposure site occurs and assuming that adequate hemostasis can be achieved. If these conditions are met, then a calcium hydroxide liner is

placed on the exposure covered by a glass ionomer base before sealing the tooth with the final restoration.

Yes, as much as possible using dentiform teeth with simulated caries. Yes, for the most part. The Endodontics Department, however, is not as inclined to perform indirect pulp capping procedures but does advocate the use of direct pulp capping procedures for small exposures if rubber dam is in place and hemostasis can be achieved. The Pedodontics Department is in agreement with vital pulp therapy procedures taught in Operative Dentistry. The Prosthodontics Department will place indirect pulp caps on teeth to be restored with single unit cast restorations and in some cases on an abutment tooth retaining a fixed partial denture, but does not advocate direct pulp caps under cast restorations of any kind. The Operative Department agrees with this protocol.

LSU: No. But it's not a black and white issue. The Endodontic department doesn't believe in indirect pulp capping. They don't want to leave caries in a tooth. If the procedure is utilized they insist you go back into the tooth at a later date to remove any caries before a permanent restoration is placed even if the tooth presents with a health response to pulp testing. From our discussions I felt they're under the impression we are leaving gross amounts of caries. We teach this technique only after leaving a minimal amount. As far as the technique for these procedures we are in agreement except on one point. We don't use ZOE in deep lesions, especially close to the pulp and will use a glass ionomer material in these areas. We are in agreement on our criteria for when we would utilize these techniques. Attached is a copy of our protocol for both pulp capping procedures.

The Prosthodontic department is in agreement with our policy for these techniques. Under our criteria, if the tooth needs to be restored with multiple crowns, or is an abutment for a fixed bridge or an RPD, we refer to endodontic treatment before these restorations are started. We feel these techniques are not 100% successful and the consequences of this treatment must be considered.

The Pedodontic Department agrees with our philosophy of not having to re-enter the preparation to check if caries is still present. However; they are still utilizing zinc oxide eugenol products in their treatment. Vital pulp therapy is taught in the first year Introduction to Operative Dentistry course, and is revisited in the second and third year clinical courses. (See discussion above.)

Vital Pulp Therapy Protocols 2007

Conditions favoring Direct or Indirect Pulp Cap

- Vital tooth with no history of spontaneous pain
- No lingering pain on thermal stimulus – ie: EndoIce
- No periapical pathology on radiograph
- Must be able to seal bacteria from exposure site

VITAL PULP THERAPY STEPS

- CaOH (Dycal) – thin, small layer placed over exposure
- Resin Modified Glass Ionomer Base (Vitrebond) – Thin layer placed covering and extending beyond the CaOH (SEAL)
- Adhesive System (SBMP) – etch, prime and bond (SEAL)
- Place restoration – composite or amalgam

Direct Pulp Cap Considerations

- Bacterial Contamination
- “small mechanical exposure of otherwise healthy pulp.”
- Bleeding – most important – increased bleeding = decreased success
- Age of patient – older patient = less success
- CaOH – Bacteriocidal, Stimulate Dentin? No
- Must Seal, Seal, Seal, SEAL!!!

Indirect Pulp Cap Considerations

- Deep caries approaching the pulp
- No history of spontaneous pain
- Normal radiographic apex and response to vitality tests
- ALWAYS preferred over a direct pulp cap (DPC)
- Pulp exposure **must** be avoided
- Caries removal with spoon excavator or large round bur at **very slow speed**
- Leave thin layer of dentin over pulp horn but remove all caries away from pulp
- Caries Removal – SLOW SPEED HANDPIECE!
- **IF** the carious dentin is wet and soft it must be removed
- Leave a thin layer of dry, fibrous dentin
- In all areas away from the pulp remove all caries to hard, sound dentin
- **Remember pulp anatomy!** The danger areas for pulp exposure are not always in the middle of the tooth.
- Fractured tooth – long term exposed pulp
- Remove coronal 2mm of exposed pulp with sterile round dia. – bleeding stopped
- Place CaOH over the stump
- V-bond and restore
- 94-100% Success Rate!!

VITAL PULP THERAPY (Using partial pulpotomy technique and CaOH)

| Author | Success |
|--|-------------------------|
| DeBlanco, OOO, 82:564,1996 | 100%, 1-8 yrs, 64 teeth |
| Fuks. Endo Dent Traumatol, 3:100, 1987 | 98%, 31 mths, 60 teeth |
| Cvek, JOE, 4:232,1978 | 94%, 2 yrs, 63 teeth |

Modification of VPT for Direct Exposures

- Clinical study comparing Dycal to Mineral Trioxide Aggregate
- Both FDA approved for Pulp Capping procedures
- Will evaluate both for direct and indirect pulp caps
- Instructor will place the pulp cap (MTA or Dycal)
- You will place V-Bond, SBMP and restore
- Patients will be recalled for evaluation

MISS: Yes. We have a caries control exercise in our alloy course on an extracted tooth in which calcium hydroxide and IRM are used as a liner and intermediate restoration. Endodontic faculty introduce students to clinical concepts of pulpal inflammation and pulpal response in operative dentistry courses. They follow same philosophy, but direct pulp caps in primary teeth are more likely to be treated with a pulpotomy. Same department.

OKU: Our overall our philosophies for vital pulp therapy are generally in agreement with other departments at our school, with some incongruities with the Endodontic department's philosophies. We do not have a set guideline for all departments to follow within the school in regard to vital pulp therapy.

Basic philosophy for vital pulp therapy:

Criteria for both direct or indirect pulp caps

1. No evidence of periapical lesions on radiographs
2. Tooth must be vital (pulp testing should be part of the pre-treatment diagnostic workup if a possible exposure is expected)
3. Tooth has no history of spontaneous pain
4. External stimuli (cold, hot, percussion) should elicit a normal response from the tooth. Any pain resulting from these stimuli should not remain not remain for an extended period of time.
5. Tooth will not be depended on in the future as an abutment for a fixed or removable partial denture. Most teeth that will require cast restorations will be treated endodontically rather than with a pulp cap.

Additional considerations:

In General:

- Good isolation of field (Rubber dam preferred)
- Age of patient will affect the prognosis
- Assure that a well sealed restoration is placed following pulpal therapy.

Direct Pulp Caps

- Pulpal exposure must be small
- Exhibits normal hemorrhage that is controlled with sterile cotton pellets and pressure

Indirect Pulp Caps

- all peripheral caries are removed

- estimated to be within 0.5mm of pulp

Materials used for pulp caps:

- Calcium hydroxide for direct and indirect pulp caps
- Resin modified glass ionomer liner over the calcium hydroxide

In the operative department courses, we have lectures on pulp therapy and some lab projects that involve placement of liner and basing materials that we use in the clinic. We usually try to simulate a pulp exposure on extracted teeth and/or typodont teeth and have the students treat it with the materials we use in our patient clinics. We also have had patient simulation preclinic projects that involve decision making and treatment concerning vital pulp therapy.

The Pedodontic department agrees in general with our vital pulp therapy protocols. They do not place pulp caps on primary teeth, but rather treat them with pulpotomies. The Endodontic department does not entirely agree with the operative department guidelines for vital pulp therapy.

- They feel that all caries should be removed from the tooth in older patients (30 and older).
- They believe that caries within 0.5mm of the pulp has caused irreversible damage to the pulp and should be treated endodontically.
- Indirect pulp caps should be used only on younger patients with the overriding prerequisite being to maintain pulp vitality for tooth development or maturation.
- Most direct pulp exposure should be endodontically treated, and no carious direct exposures should ever be considered for a direct pulp cap.

The Fixed Department agrees with our protocol for vital pulp therapy. In most cases, prefer endodontic treatment instead of pulp cap for any tooth that will require a cast restoration.

TENN: We do not have a school wide policy on vital pulp capping. When clinical faculty in disciplines other than endodontics (excepting pedo) find themselves in the situation, according to their professional judgment, to provide a pulp cap they generally get a consultation from the endodontic division as to the success of a pulp cap and then supervise that procedure with the student. Because in the fixed prosthodontic area, castings are being placed, there is less likely hood that pulp caps will be performed in the more questionable situations.

UTSA: We have an Indirect pulp cap protocol that was a result of work by Dr. Summitt with all the above departments input. Acceptance of the idea of leaving soft dentin in areas near the pulp is encouraged by the Department of Restorative Dentistry but there is clearly some silent resistance from select faculty members on the clinic floor.

UTHSCSA STUDENT PROTOCOLS FOR INDIRECT AND DIRECT PULP CAPPING PROCEDURES

INDIRECT PULP CAPPING

INTRODUCTION - When there is a very deep caries lesion, encroaching on the pulp chamber (as determined radiographically or clinically), in a pulpally vital permanent or primary tooth, an indirect pulp capping (IPC) procedure should be considered. Indirect pulp capping is a procedure designed to prevent pulp exposure by leaving some carious dentin over the area immediately adjacent to the pulp chamber. This is intended to leave demineralized dentin, the removal of which would very likely bring about pulp exposure. A bacteriostatic or bactericidal dressing or liner is then placed over the remaining demineralized dentin to provide some seal as well as an antibacterial effect. A prerequisite of the IPC procedure is that the pulp must have been determined to be normally vital. Given the choice, an indirect pulp cap is greatly preferred to a direct pulp cap. There simply are no advantages to exposing a pulp which has the ability to protect itself. If pulp exposure occurs in a vital tooth with no history of spontaneous pain, it is considered an iatrogenic incident.

DIAGNOSIS - The preoperative status of the pulp and periradicular tissues should be carefully evaluated. The tooth should be considered a good candidate for an IPC procedure only if the following conditions exist:

- a. There is no history of spontaneous pulpal pain.
- b. There is no history of pain that lingers after the tooth has returned to mouth temperature following the application of a hot or cold stimulus.
- c. Pain elicited during pulp testing with a hot or cold stimulus does not linger after the tooth returns to mouth temperature.
- d. A periapical radiograph shows no evidence of a periradicular lesion of endodontic origin. Pulpal response to thermal or electrical tests is within normal limits.
- e. There is no percussion sensitivity.

TREATMENT PLANNING - An IPC will be accomplished at the restoration appointment if the tooth is to receive a direct restoration (bonded amalgam, resin composite, or glass ionomer); the restoration will be placed after the IPC procedure. If the tooth is to receive an indirect restoration, the supervising faculty member, in consultation with the student, will make a determination as to the amount of time that should elapse prior to definitive restoration, usually 4 to 8 months. If an amalgam or resin composite buildup is indicated, it should be performed at the time of the IPC, time permitting, and it should be bonded. Prior to definitive restoration, normal pulpal response must be determined. Supervising faculty in consultation with the student may determine that an endodontic procedure is indicated instead of an IPC.

TREATMENT - Indirect Pulp Capping Procedure:

- a. Isolation - After anesthesia, isolate the tooth with a rubber dam.
- b. Preparation - Prepare the tooth for a final restoration, leaving demineralized dentin (which has been air dried so that it has the appearance of the back side of a piece of leather) only in the area immediately adjacent to the pulp. Use a caries-detecting dye if necessary to assure complete carious dentin removal other than that immediately adjacent to the pulp. Multiple dye applications and carious dentin layer removals may be needed. Use a spoon excavator or a large round bur in a low speed handpiece, revolving at a very low speed and with very gentle, featherweight strokes in the demineralized dentin near the pulp. In other words, leave the demineralized dentin, the removal of which would likely bring about exposure of the pulp.
- c. Lining - Place a calcium hydroxide liner (Dycal) over the demineralized dentin. Additional cavity sealing is indicated, so a bonded restoration, using a dental bonding system such as

Amalgambond Plus with HPA or Scotchbond Multipurpose, should be placed. If, in the judgment of the instructor and student, additional protection of the liner is indicated, a stronger material such as an ionomer liner (Vitrebond), may be placed over the calcium hydroxide liner and onto surrounding sound dentin prior to application of the bonding material.

- d. Restoration -
- 1) Direct restorations – All direct restorations should be bonded (bonded amalgam, resin composite, glass ionomer), and the tooth should be restored with the definitive restoration immediately after the IPC procedure. If time does not allow for placement of a final restoration at the first appointment, an ionomer (Fuji II LC, Fuji IX) should be placed and the patient reappointed for the final restoration as soon as possible. The liner(s) placed during the indirect pulp capping procedure should not be disturbed during the subsequent restoration process.
 - 2) Indirect restorations - For indirect restorations (cast metal restorations, ceramic onlays or crowns), place a definitive buildup if time allows (bonded amalgam, performed. Delay the final restoration for a period of months, usually 4 - 8 months. Prior to proceeding with definitive restoration, assure normal vitality response of the pulp and absence of an apical lesion (periapical radiograph).

PRECAUTIONS DURING TREATMENT

- a. Assure no carious or demineralized dentin is left peripherally in the area of the DEJ.
- b. Avoid being aggressive in carious dentin removal in the area of the pulp in order to prevent accidental pulp exposure.
- c. For direct restorations or substructures (build-ups) for crowns of FPD retainers, bond the restoration to reduce initial leakage.
- d. If a temporary restoration has been previously placed over a liner placed during an IPC procedure and the tooth is reentered for a restorative procedure, do not remove the liner.

DIRECT PULP CAPPING

INTRODUCTION - The need for a direct pulp capping procedure (DPC) should be avoided by using an indirect pulp capping procedure when the caries lesion is deep in a tooth with a normally vital pulp. A direct pulp capping procedure may be indicated in the management of a mechanical exposure when the exposure is small, trauma to the pulp is minimal, and the history and preoperative evaluation indicate that the pulp is healthy. A mechanical exposure which occurs at the cervical level (such as in a Class 5 preparation) may not be suitable for direct pulp capping; pulp tissue coronal to the exposure could have its blood supply compromised by hemorrhage or inflammation caused by the exposure.

DIAGNOSIS - Diagnostic considerations for the direct pulp cap include those listed above for an indirect pulp capping procedure plus the following:

- a. The exposure is small.
- b. Rubber dam isolation is complete, and there is no contamination with blood or saliva.
- c. Any bleeding from the exposure can be easily stopped.
- d. There is no sign of suppuration or necrotic pulp tissue.

TREATMENT -

- a. After hemostasis achieved with wet cotton pellet or pellet moistened with NaOCl, immediately place calcium hydroxide (Dycal) over the exposure. Be gentle and avoid pressure.

- b. Place a glass ionomer liner (Vitrebond) over the calcium hydroxide and onto a periphery of sound dentin around the calcium hydroxide.
- c. Complete the cavity preparation.
- d. Etch and use an appropriate dental bonding system.
- e. Complete the restoration with amalgam, resin composite, or ionomer.
- f. Reevaluate in 4 - 8 months. If the pulp is normally vital, the tooth is asymptomatic, and an indirect restoration is in the treatment plan, proceed with that restoration without disturbing the liner(s).

PATIENT CHART ANNOTATION - For both an indirect pulp capping procedure and a direct pulp capping procedure, enter the initial pulpal status of the tooth to be restored based on clinical and radiographic findings. Include the material used in the IPC/DPC procedure and that the patient was informed of the possibility of pulpal involvement. Recall or follow-up at six months should include a periapical radiograph.

(This protocol was developed by the Departments of Restorative Dentistry and Endodontics, and was coordinated with the Departments of Dental Diagnostic Science, General Dentistry, Pediatric Dentistry, and Prosthodontics, UTHSCSA Dental School, February 1991; revised October 1995, October 1999, July 2001, March 2003, and November 2004.)

UTH: In general, yes.

V. Restoration of Implants

What experiences are provided to your students in the restoration of implants?
 Do your students have the opportunities to PLACE implants (surgical phase) and/or do the second stage surgery to uncover them (after integration)?
 Who/what departments/sections are supervising the restoration of implants?
 What training is provided to the faculty?

BAY: Every D4 student will have at least one patient experience in restoring an implant. At the present time, approximately 25% of the D3 class has an implant patient assigned to them. At the present time, undergraduate dental students observe the surgical phase of implant placement. It is our plan that eventually the undergraduate student will have the opportunity to perform the surgical phase of the implant placement in selected cases. On most implant cases restored at the undergraduate level, healing caps are used on the implants. The second stage surgery to uncover the implant after integration is not necessary in these cases. Restoration of implants at the undergraduate level are supervised by D4 clinical faculty and the Fixed Prosthodontic faculty. The D4 General Dentistry faculty and the D3 Fixed Prosthodontic faculty attend six half-day training sessions and two half-day follow up seminars on implantology protocol and techniques used at Baylor College of Dentistry.

LSU: Sophomore dental students have an Introduction to Implant Dentistry preclinical course and laboratory which teaches them implant restorative basics, including abutment selection, open and closed tray impression techniques, and attachment pickup techniques. The junior dental student curriculum includes a course in Implants in Dentistry. They will work

with seniors dental students in their elective implant course this year in this multidisciplinary (multi-departmental) approach to implant restoration. Students will help restore single implant crowns and a double-implant overdenture. This year, senior dental students may choose a limited attendance elective course in implant restoration taught by the Department of Prosthodontics. Periodontal postgraduate doctors and senior dental students perform a case workup for each patient. Implants may be restored by each senior student, including single tooth replacements and overdenture abutments. In the 2006-2007 school year, 40 senior dental students restored 51 implants for single crowns and 42 implants for overdentures. Later this school year, 30 to 40 senior dental students will begin their elective course in implant restoration. Next year (2008-2009), implant courses will be incorporated in the general curriculum and in treatment planning for all students, so the electives need not exist. Students will experience implant supported single-crown restorations and double-implant overdentures with Locator or Dalbo or Dalro attachments. Oral Surgery and Periodontics post-graduate doctors are placing the implants at LSUSD. Senior students in the elective implant restorative course are required to assist during the surgical placement of the implants. They are also encouraged to be present at the uncovering stage as well. The Department of Prosthodontics supervises undergraduate restoration of implants. However, a restorative dentist in the Department of Periodontics is present to help its post-graduate doctors restore at least two of their cases. Currently, only the faculty in the Department of Prosthodontics is trained in implant restoration. Training was to be given to general dentists on faculty in the spring/summer of 2007, but due to numerous faculty changes, curriculum changes, and the return to the New Orleans campus, it was not provided. Some general dentist faculty have restored implants with their private patients. However, there are tentative plans for some faculty training to begin early in 2008.

MISS: Students identify, treatment plan, assist in surgical placement and restore single tooth implant and select mandibular removable cases. Implants are placed by oral maxio-facial surgery or periodontic faculty. Students work with a prosthodontist and faculty placing the implant in the treatment planning phase and assist the faculty in placement. Students are allowed to do the second stage surgery on a case by case basis, otherwise they assist in the procedure done by faculty who placed the implant. Prosthodontic faculty in the Department of Care Planning and Restorative Sciences supervise the restoration phase of the implant(s). Prosthodontic faculty have no additional training for implant placement.

OKU: Our undergraduate implant course has been very successful over the years. This past year it was awarded the ADEA/Zimmer Dental Implant Education Teaching Award. The undergraduate coursework consists of a 48 hour lecture/laboratory course taught in the Spring semester of the 3rd year, and a one week clinical rotation in the 4th year. Also during the senior year, dental students are allowed to treat implant patients. These

patients may be one of their assigned comprehensive dental care patients or a patient assigned for limited dental implant treatment.

The implant course provides hands-on laboratory experiences in the following areas:

Fabrication of Open and Closed trays with corresponding impression techniques

Fabrication of surgical stints

Fabrication of Hader bar and overdenture

Pick-up rings in a complete mandibular denture

Fixed detachable prosthesis/filling of access holes

Prepable abutment single tooth

UCLA abutment – single tooth, multiple teeth

Screw retention/Cementable restorations.

Undergraduate students do not surgically place implants. However, they have ample opportunities to observe and/or assist during this procedure. The Department of Oral Implantology directs the undergraduate courses, and the senior rotation is held in the Fall and Spring semesters. The Departments of Periodontics and Oral and Maxillofacial Surgery help with the screening of patients and the actual placement of the dental implants. Faculty outside of the department of implantology is offered CE courses on dental implants at various times. Faculty may also sit in on the implant course if they wish to.

TENN: Didactic (16hr. course) and preclinical laboratory(8hours). No clinical requirement, but we are trying to see that each student is provided at least one experience with an implant restoration. This can be either an implant supported removable or fixed restoration. Students work only as coplaner/observer/assistants for now. Restorative Dentistry/ Division of Prosthodontics (is supervising). We have a grant from one of the major companies that provides training and instructional materials for the faculty participating in the program.

UTSA: Students are allowed to restore implants in the pre-doctoral clinic. Most seniors in 2007 had done at least one implant crown prior to graduation. In 2008 every senior will be required to have restored at least one implant. Clinical implant skills are not a graded event at UTHSCSA so we never test their ability to manage an implant restoration independent of instructor input. Pre-doctoral students do not place implants at UTHSCSA nor do they do the second stage surgery. Periodontal and oral surgery residents place implants by prescription for the patients of record in the pre-doctoral clinic. Prosthodontics and General Dentistry both supervise the restoration of implants. The training for implant restorations has been either thorough the post-doctoral training of the instructors or individual training sought out on their own by the instructors. No formal effort has been by UTHSCSA to make to make every floor instructor implant competent.

UTH: All students receive 3 multi-disciplinary didactic implant dentistry courses. These are in Spring & Summer of their second year, and then in

Spring of their third year. At present, no students place or uncover implants. At present, approximately 50% of predoctoral students experience implant restoration. This is typically a single (if possible, a premolar) implant. It can also be an implant-supported complete denture. The goal is to have enough patients for each student to graduate competent in implant restoration & treatment planning. All implants are supervised by an implant “board”, composed of faculty members from Oral Surgery, Periodontics, Prosthodontics, and Restorative Dentistry & Biomaterials (and the post-doctoral general dentistry programs. The departments supervising the restoration of implants include: Prosthodontics, Restorative Dentistry & Biomaterials, and the 2 post-doctoral general dentistry programs. Faculty are offered periodic updates in the 3 chief implant systems used at our school (Zimmer, etc). Faculty who place or restore implants are required to apply for “credentials” to do this. A peer committee reviews and approves all clinical credentials (in all facets of dentistry).

VI. Electronic Patient Records

Does your school use an electronic patient record (EPR)?

If yes, which EPR system do you use?

Please list the pros and cons of your school’s EPR system.

Does your school use digital radiography as the primary radiographic imaging system?

(Expanded topic - refer to 2006 CODE Regional Reports)

If so, which software do you use for digital radiographs?

Is the digital radiographic system integrated into the EPR?

Please list the pros and cons of your experiences with digital radiography.

BAY: Yes we use Axiom as our EPR

EPR Pros:

1. No chart chasing/lost charts, they are always available at any computer
2. Multi discipline collaboration is easy as you can be on the phone with a referral doctor discussing the case and both see the record
3. You can always read the entries - no bad handwriting
4. Data mining for research purposes for all info except free text
5. Once familiar with system, data entry is faster than writing in a chart
6. Forms can be changed almost immediately. No need to "run out" of the old ones before a change can be made

EPR Cons:

1. At BCD, hybrid charts (paper records pre-June 6) - this will eventually fade away

2. Some are afraid of loss in power failure. The truth is, if the power goes out we all have to go home anyway. All systems are backed up every night so there would never be more than one day lost right now. We are working on getting a redundant server, so that if one goes down the other is already automatically running simultaneously.

axiUm Pros:

1. Robust system. Multiple features and modules that allow for managing clinical, financial, instruments, inventory, labs, appointments, assessments, student progress, patient tracking, etc.....
2. Ease of use. Windows based, user friendly interface.
3. Large company with good technical support.
4. Software changes are easily made to tailor the system to your individual needs.

axiUm Cons:

1. More difficult for some grad areas to adapt to. It forces you to do the right thing.

Yes, we use MiPacs as our digital radiography system. Yes, the digital radiography is integrated into the EPR.

Pros for MiPACS Digital Radiography:

1. Lower doses of radiation required for images

Pros for DiCOM:

1. DiCOM images are the standard in medicine and can be read with any DiCOM reader interface
2. More features for enhancement and image manipulation resulting in fewer retakes and ability to be used for different reasons with different manipulations

Cons:

1. The only downside of MiPACS is that the company is growing faster than they are able to provide tech support, so sometimes our "fixes" are a little slow in coming.
2. You can never provide enough training for all users. Case in point: Our students were complaining about not being able to accurately read the radiographs for decay even after several training sessions. Adding another short session on the subject addressed the specific problems and the students are much more comfortable now.

LSU:

Yes. AxiUm software from Exan Academic. (www.exanacademic.com). The initial outlay is \$500 per license for about 480 licenses. Renewals are \$50 per license annually. Updates to the software are provided about every 6 months, which include improvements and the most frequently requested program changes or additions. Each school may request enhancements which are customized for that school. Maintenance and support fees are about \$50,000 per year for the university.

Pros:

- No paper charts to lose or damage.
- Security of electronic records (password protected, student-provider only limited access, automatically dated, all changes are faculty only approval and recorded, automatic backup to central server).
- No entry is ever lost, even when deleted.
- Every entry is tracked—who, what, and when.
- HIPPA compliant—patient must sign consent before entries can be made.
- Swipe code (5 character keyboard code) is provided for faculty approval/changes to patient records.
- Remote access is allowed for students and faculty with secure login.
- Biometric-capable login—fingerprint identification—is not currently used.
- Data tabulation / reporting is easy (customizable reports by date, student, codes, and grade cards).
- Ability to integrate images into records (photographs, scanned documents). Integrated digital radiographs actually use the Schick CDR software which can be started while in axiUm with a built-in shortcut icon.
- There are multiple tabbed modules for organization, e.g., medical history, treatment planning, periodontal examination.
- Helps prepare students for the paperless office.

Cons:

- The axiUm software has a very long learning curve and frequent use is required for proficient use. It's not very user-friendly.
- Data entry and program navigation is somewhat slow and cumbersome, especially with clinic laptop computers with touchpads. It results in longer or multiple appointments needed for the initial diagnosis and treatment planning. Redundant entries of swipe codes are needed to accomplish a single task; however, this was designed to increase data security.
- Some unnecessary, redundant, or unused tabs/sections cannot be removed, which adds confusion to the system, particularly for new users.
- Imaging interface not used because patient information in Schick CDR software may be stored differently than in axiUm.
- The graphics are unsophisticated (box-style charting may be difficult for new students), abstract, and limited in customization. Not all conditions recorded are visible on the odontogram.
- Even though the software was reported to be very flexible, some requested enhancements could not be

done without a system-wide program change The Treatment Planning module needs to be more flexible or adaptable to each school's needs.

- Swipe codes can be stolen, swipe cards can be stolen or duplicated, even biometric fingerprint identification is reported not 100% foolproof.
- There is no interface for voice-activated periodontal examination programs. Infection control is a problem with laptops used in clinics—either by non-compliance of students with infection-control protocol or difficult laptop use with plastic protection barriers.

Yes, (we use digital radiography)exclusively. However, the Department of Dental Hygiene may train students in traditional film developing. Schick Technologies CDR (Computed Dental Radiography) software

Pros:

- Quick image viewing after radiographic exposure (approx. 3 sec.) is possible.
- Multiple digital image manipulations are available (zoom, reveal, colorize, reverse contrast, rotate) and can be stored in addition to the original, unchanged format.
- The original image is always retrievable in an unchanged DICOM format. Image transfer is easy (email for consultations, jpeg conversion for presentations).
- As an anti-theft deterrent, serial-numbered sensors can only be used with the designated school software set up by Schick.
- There is less radiation from a single exposure to the patient, student, and faculty.
- No developing chemicals are needed (no cost and disposal problems).
- No physical radiographs need to be stored.

Cons:

- There is difficulty in proper placement of wired, bulky intraoral sensors, resulting in inadequate images and missed tooth apices. Wireless sensors are available, but are even bulkier.
- The sensors are extremely expensive. (\$6000 to \$8000 each)
- True paralleling or true bisecting-angle techniques are not always possible resulting in distorted, inconsistent images.
- Plastic barriers over the sensors are ill-fitting and uncomfortable for patients, especially easy gaggers. The Rinn placement instruments for the digital sensors won't stick to the barriers when wet with saliva.

- The digital sensors cannot be autoclaved.
- The proper radiograph “mount” position must be selected at the time of exposure; otherwise, images must be swapped, rotated, or flipped for correct orientation.
- Students’ perceive mitigated radiation harm (stand closer, more retakes)
- The present image quality is still not as good as film. The digital panoramic x-ray image is often too grainy in appearance, partially distorted, out of focus, or too dark to read in some areas.

MISS: Yes and no. We are currently planning to implement GSD Academic patient electronic record (formerly Software of Excellence). Our faculty intramural practice began using the software in July 2007 and plans are to go live in January 2008 with the student program. We are currently installing hardware chairside in the clinics and working on the clinic specific forms for the software. Overall, it has worked well in the intramural practice. It has helped with some of the software glitches, but more will probably follow with the complexities created by the student program. However, billing, electronic filing, and financial allocation issues have been worked out.

Yes, we use Mediadent (for our digital radiography). We are not integrating the Digital radiography into the EPR at this time. We are planning to integrate it with the EPR when it goes into the student clinics in January 2008.

Pros:

The speed at which the films are available, the ability to play with the contrast of the film.

Cons:

Problems with the large files coming over a wireless system, student laptops functioning properly so that the radiographs can be viewed in the clinics.

OKU: No, we do not use electronic patient records at this time.
No, we do not use digital radiography as the primary radiographic imaging system.

TENN: Electronic Records: Yes. Axiom. Overall a good program. It isn’t perfect.

Primary advantages:

- Information that may be obtained about students, patients and faculty;
- May allow for safer patient treatment – with medical alerts, etc.;
- Allows for QA b/c faculty approvals, or lack thereof, may be located and ‘corrected’ within the program;
- Allows for searches for particular procedure codes – e.g. can find out how many ‘sealants’ are performed

and where, also may search for certain sites & surfaces;

- Allows for searches on particular words that appear in progress note entries, prescriptions, etc.
- Exam does offer support within the present program being used when they are available (likely will not see the support issue until the next day).

Primary disadvantages:

- Relatively expensive, hardware, software and maintenance;
- May take longer to review ‘forms’ – e.g. one may scan a paper page and immediately ‘spot’ an item of importance, while one has to move through screens on the computer (don’t forget that these may be ‘searched’ also);
- May take longer to make record entries;
- All information depends upon accurate ‘input;’
- Exanacademic may be in a different time zone, in case ‘support’ is needed;
- Changes or modifications in the program are difficult to get from Exan (probably what I think is a ‘simple’ change isn’t);
- May have to increase number of personnel to properly support the program.

Digital Radiography:

Yes. Digital radiography is the primary radiographic imaging system. All intraoral and extraoral imaging is digital. Adult intraoral images, with the exception of occlusal radiographs, are acquired by using the CCD-based solid-state sensors. Occlusal radiographs and pediatric intraoral radiography are accomplished by using photostimulable storage phosphor (PSP) plate imaging system. Picture Archiving and Communication System (PACS) is VixWin Platinum Enterprise (Gendex Dental Systems). Yes, the digital radiography system is fully integrated into the EPR. The digital radiography system has been configured in such a way that it could only be accessed through the EPR.

UTSA: The school has organized a committee to select a Clinical Information System. Over the last 18 months the school solicited bids from four corporations that offered integrated dental school information management systems. The committee has examined the proposals and requested demonstrations from the vendors. The recommendations of the committee have been compiled and a contract will be awarded to the vendor for implementation within the next calendar year. At this time, the winner of contract has not been announced. The system promises a level of management control that is not now possible. The product includes an EPR along with scheduling and grading functions. Infrastructure

upgrades will be required and a long period of training will proceed full implementation.

Yes, digital radiography is used as the primary radiographic imaging system. The software used is MiPacs. The digital radiography will be a part of the EPR.

Pros and Cons:

Instructors, on the whole, have not been happy with the images stored in MiPacs. There is a high degree of variation in the screens of the student's laptop computers. Connections are not always possible. Resolution is relatively poor. Even when viewed on high resolution monitors the diagnostic quality of the phosphor plate system used by UTHSCSA lacks diagnostic quality. The plates have degraded rapidly in the last year.

UTH: Yes. axiUm.

Pros:

- used by the school in marketing to prospective students
- provides the students with basic computer skills and the knowledge of how to apply those skills to the (electronic) documentation of health care services

Cons:

- somewhat cumbersome system (overall)
- the system programming requires numerous faculty approval steps (ID card "swipes") for each patient visit, procedure, and/or record entry - further, due to the numerous approval steps, faculty, at times, lose focus on the actual content of the record, focusing instead on simply working through the system
- programming does not yet allow the typical reports one would expect from a dental practice management software program

Yes, MiPACS (is our digital radiography) and yes (it is integrated into the EPR)

Pros:

- ability to enhance images (zoom, contrast, and so forth)
- less radiation to the patient ... this may result in the return to a "full mouth series" of radiographs for each patient; the diagnostic and documentation procedure of choice for most of the restorative faculty

Cons:

- due to "artifacts," many do not feel as comfortable diagnosing from these images in comparison to the images produced by traditional radiographic film
- perhaps due to "firewalls," etc., the MiPACS software "crashes" and shuts down during the clinical period (we have used it for < 1 year)
- the system is very slow to load (pull-up) images

Regional CODE Agenda

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

No responses noted

Suggestions for CODE.

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

- Other comments/suggestions?

No responses noted

CODE REGIONAL MEETING REPORT FORM

REGION: IV (Great Lakes)

LOCATION AND DATE OF MEETING:

Indiana University School of Dentistry

Indianapolis, IN

October 11-12, 2007

CHAIRPERSON:

Name: Dr. Ed DeSchepper

Phone #: (317) 274-5331

Address: Indiana University

Fax #: (317) 274-2419

School of Dentistry

E-mail : edschep@iupui.edu

Indianapolis, IN 46202

List of Attendees:

Please see reverse of this page for List of Attendees to 2007 Regional Meeting

Suggested Agenda Items for Next Year:

- What is your school's policy on rubber dam usage? Is it mandatory for certain procedures? If so, what procedures? How do you monitor whether it is enforced by both students and faculty? How did you get or keep faculty to comply with this policy?
- If rubber dam is either not used for certain procedures or when it is not possible to be used, what other materials of isolation are readily available to your students in the clinic? What is your experience with these methods?
- What is taught at your school about restoring lost tooth structure after endodontics before placing a crown?
- What are the licensing requirements for your full-time faculty Any special arrangements for foreign trained dentists hired as full-time faculty (teaching/academic license)

LOCATION & DATE OF NEXT REGIONAL MEETING:

Name: Dr. Andrew Nigra

Phone #: 412-648-8656

Address: University of Pittsburgh

Fax #: 412-383-7796

School of Dental Medicine

E-mail : abn3@dental.pitt.edu

Pittsburgh, PA 15261-1955

Date: **TBD**

Please return all completed enclosures to Dr. Larry D. Haisch, National Director, UNMC College of Dentistry;

40th and Holdrege Streets; Lincoln, NE 68583-0750.

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 |
|-------------------|------------|----------------|----------------|----------------------|
| Mary Ellen McLean | MICH | (734) 615-8353 | (734) 936-1597 | memclean@mich.edu |
| William Gray | UWO | (519) 661-2111 | (519) 661-3416 | William.gray@ |
| Gildo Santos | UWO | | (519) 661-3416 | |
| Cornel Dreissen | UWO | (519) 661-2111 | (519) 661-3416 | driessen@uwo.ca |
| Peter Triolo | Pitt | | | |
| Robert Rashid | OSU | (612) 292-3071 | (612) 292-9422 | Rashid1@osu.edu |
| Larry Abbott | UDM | (313) 494-6783 | (313) 494-6781 | abbottlj@udmercy.edu |
| Marco Tauil | UDM | | | |
| Ana Bedran-Russo | ILL | (312)-413-9581 | 312-996-3535 | bedran@uic.edu |
| James Hoddick | SUNY | (716) 692-4242 | (716) 694-5774 | jhoddick@pcom.net |
| Kenneth Lee | SUNY | | | |
| David Brown | SUNY | (716) 829-2862 | (716) 829-2440 | dhbrown@buffalo.edu |
| Edward | IUSD | (317) 274-5331 | (317) 274-2419 | edeschep@iupui.edu |
| Paul Reifeis | IUSD | (317) 278-1858 | (317) 274-2419 | pereifei@iupui.edu |
| Lisa Willis | IUSD | (317) 278-3162 | (317) 274-2419 | lhwillis@iupui.edu |
| Tim Carlson | IUSD | (317) 274-5327 | (317) 274-2419 | tcarlson@iupui.edu |
| Sopanis Cho | IUSD | (317) 278-7514 | (317) 274-2419 | sdhanvar@iupui.edu |
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**2007 NATIONAL CODE AGENDA
REGION IV
SUMMARY RESPONSES TO NATIONAL AGENDA**

(Editor note: Questions condensed for printing purposes)

I. Teaching Dental Biomaterials in North American Dental Schools

In Region IV, about half of the schools have a Department or Division of Biomaterials while the others do not.

The full-time faculty that teach DBM in the region schools varies from 0-4. Full-time that co-teach range from 0-8. Part-time that co-teach range from 0-2.

Most DBM teaching occurs in the first two years, with some type of follow-up, review or practical application courses in years 3 and 4.

Most schools had some form of Combination courses with a couple schools having only a DBM course.

Most schools using O'Brien; Restorative Dental Materials, 11th edition, Craig, R. J., and Powers, J. M. as a textbook. Most schools have lecture with laboratory applications in other restorative courses e.g. Operative Lab.

Most schools except one, that underwent a curricular revision, saw an increase in the status of DBM.

Efforts at integration were made at most schools, but success rate was mixed. Most integration was tried via other restorative courses like Operative, Fixed and Removable Prosthodontics.

Most schools were not satisfied, with the exception of three schools that were.

Most wanted more integration.

II. National Testing Agency for Licensure and Credentialing.

All schools were participating. Pass rates were higher than before. Most schools employed some type of Mock Board in preparation of the real Board. SUNY repeated the exercises a dozen times.

III. Dual-arch Impressions

Most schools do not teach the technique. Those that do generally have the following Guidelines:

- Posterior restorations only (no anterior)
- Single tooth restorations only (no multiple unit)
- Contraindicated for most distal tooth in the arch
- Normal occlusion (no crossbites, etc)
- Room to fit distal part of tray behind the most posterior tooth

IV. Vital Pulp Therapy (Indirect/direct pulp capping)

Most schools did not have an "official" school-wide policy. Many taught the technique in Operative lectures, but only a few had laboratory exercises. Most agreed that if a tooth was to serve as an abutment or was to be crowned, pulp exposures would most likely be treated endodontically.

V. Restoration of Implants

Most schools taught implants and allowed undergraduate students to restore them. Only one school taught placement under the supervision of Oral Surgery or Periodontics. Restorative Departments oversee the restoration of most implants.

VI. Electronic Patient Records

Most schools used EPR or were in the process of implementing EPR. Most schools were using Axium or were going with Axium. Other software used were Picasso and Windent, About a third of the schools are using digital radiography routinely and are using Emago, Optitine and Mipacs. Those that are using these software packages are integrated into their EPR.

Pros of the system include:

- A system that records almost all aspects of patient treatment, clinical grading and teaching, billing, etc.
- A universal chart used in all clinics, so that all dental school staff, faculty and clinical students are familiar with its use throughout the entire Indiana University School of Dentistry system
- A universal billing system
- Rapid submission for insurance
- Rapid data access for all authorized staff, students and faculty
- Does away with pens and pencils in the clinical setting
- Axium is custom designed for use at a dental school vs. other systems designed for private practice
- Handling of paper charts has its own difficulties such as storage, loss, HIPAA violations etc.
- Accessing certain data by date, patient name, procedure code etc. is much faster electronically.
- These type of programs are designed to grow as the dental school grow and easier to make changes or modifications in daily activity/evaluation and other forms.
- Extensive reporting and information manager tools.
- Research capabilities are limitless. Potential for automated/programmed computer chart audits of all charts and transfer of data to a QA database.

Cons of the system include:

- Requires an extensive and committed educational program
- A record that includes so many functions is more difficult to navigate. Sometimes difficult to find sought information
- Daily check outs require a number of card swipes from a faculty member to make sure all material has been correctly entered. If information not entered correctly or completely, system controls will stop progress until information entry is corrected. This can become frustrating when hunting for the incorrect entry. The system usually prompts where the error is, but not always.
- When network crashes (and it does occasionally, wireless goes out, etc.), system is shut down. If it is for a long period of time, we have to revert to paper records and record items into digital system later.
- Even though we have not lost data, and the system is routinely backed-up, the potential still exists for catastrophic data loss. However, same is true for paper records (fire, flood, etc.).

- The fact that it is almost too customizable makes implementation daunting.
- It has a long learning curve, requires many hours of faculty, staff and student training. Development of the program to fit our own needs is a challenge.
- Slowing the daily activities at early stages as a beginner due to data entry.
- Little room for error, every action is recorded immediately, difficult to correct an activity if approved incorrectly. Forensically, the odontogram is medico-legally inadequate. Very difficult to navigate. No directions at nodes or written instructions. QA chart audits will require considerably more time.

2007 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. Teaching Dental Biomaterials in North American Dental Schools

The following questions were provided by the ADEA Section on Operative Dentistry and Biomaterials. The responses will be presented as part of this section's program at the 2008 ADEA Meeting in Dallas. Be as specific as possible although multiple answers may be appropriate in some cases. Please add appropriate comments to further explain your answers as needed for clarity or elaboration.

A. Does your school have a distinct academic entity known as Dental Biomaterials (DBM) or other similar title for this subject (*Dental Materials, etc.*)?

- Yes or No
- If yes, what is it called?
- If yes, classify it per your school's organizational scheme - Department, Division, Section, Other (*explain*).
- If it is a subset of another department, identify the department.

CWRU: No responses noted

UDM: Yes, the school has a distinct academic entity. Dental materials is a division of the Restorative Dentistry Department. It is called the Division of Dental Materials. It is a subset of the Restorative Dentistry Department.

UIC: The division of Biomaterials is part of the Department of Restorative Dentistry

IUSD: Yes, it is known as the Division of Biomaterials and is a division within the mega Department of Restorative Dentistry. Other divisions include Operative Dentistry and Prosthodontics.

MICH: Yes, Department of Biologic and Materials Science

OSU: No. It is part of the Division of Restorative and Prosthetic Dentistry

- PITT:** No, at Pitt it is in Prosthodontics
- SUNY:** No.
- WVU:** No responses noted
- UWO:** Yes. Division of Biomaterials (will become a section under Division of Restorative Dentistry)

B. How many full-time faculty teach DBM at your school as their primary teaching responsibility?

- CWRU:** No responses noted
- UDM:** One full-time faculty member teaches DBM as their primary teaching responsibility. Seven full-time faculty co-teach DBM as part of their teaching responsibility
- UIC:** Two
- IUSD:** Originally three, but one recently retired. Do not know at this time if he will be replaced
- MICH:** 3 from Biomaterials dept
- OSU:** 4 FT faculty (William Brantley, Isabelle Denry, William Johnston and Scott Schricker)
- PITT:** 0 dedicated FT. Previously taught by a full time faculty who has retired. It is currently assigned to a Part Time faculty.
- SUNY:** One (Mira Edgerton)
- WVU:** No responses noted
- UWO:** None; however, we have a few in prosthodontics and operative dentistry who are involved in dental material research as part of their scholarly activities

How many full-time faculty co-teach DBM at your school as part of their teaching responsibility?

- CWRU:** No responses noted
- UDM:** Seven
- UIC:** Two

- IUSD:** None at this time. But the various module directors of restorative courses reinforce concepts as needed
- MICH:** 8 (approximately) as part of other preclinical courses
- OSU:** 2 main FT faculty (Ron Kerby and Robert Seghi) co-teach. Other course directors also give handling and some materials within the context of the preparation/restoration technique courses
- PITT:** 0 dedicated FT. Previously taught by a full time faculty who has retired. It is currently assigned to a Part Time faculty.
- SUNY:** Three (Fadi Ayoub, Violet Harasthy, Davis Garlapo)
- WVU:** No responses noted
- UWO:** None

How many part-time faculty teach or co-teach DBM at your school?

- CWRU:** No responses noted
- UDM:** None
- UIC:** None
- IUSD:** None at this time
- MICH:** None
- OSU:** None
- PITT:** One
- SUNY:** Two (Gina Stefan and John Maggio.)
- WVU:** No responses noted
- UWO:** One half time. Engineering faculty member is assigned to dentistry half-time

C. When in the curriculum is DBM taught?

(Indicate all that apply if taught in more than one year.)

- **Freshman year**
- **Sophomore year**
- **Junior year**
- **Senior year**

CWRU: No responses noted

UDM: Freshman year: Combination
Sophomore year: Part
Junior year: Part
Senior year: Part

UIC: Freshman year
Sophomore year
Junior year

IUSD: Primarily in the Freshman and Sophomore years, but re-inforced in year three (Advanced Operative and Prosthodontics).

MICH: Freshman year – yes (primary course and in other courses)
Sophomore year – yes (in other courses)
Junior year – yes (in other courses)

OSU: Freshman, Sophomore and Senior years all have materials presented

PITT: Fall first year; and fall fourth year

SUNY: We have a freshman year course entitled “Biomaterials,” which runs both fall and spring semesters. We do include biomaterials concepts into our lectures to both the sophomore and junior students

WVU: No responses noted

UWO: In first year (freshman) for both undergrads and the Internationally Trained Dentists (ITD’s) program

D. How is DBM (*specifically*) taught at your school?

- Separate Course(s) only
- Part of another Course or Courses only
- Combination (*Both as a separate introductory course, AND as part of other courses e.g. Operative Dentistry, and/or Prosthodontics, and/or Bio-clinical Seminars*)
- Other (*Describe*)

CWRU: No responses noted

- UDM:** The basic DBM course is taught in the Freshman year; however, other courses throughout the curriculum teach DBM. Specifically DBM related courses are taught freshman year (4 courses), sophomore year (4 courses), junior year (2 courses), and senior year (2 courses)
- UIC:** Other (Combination as part of the Operative and Fixed Prosthodontics comprehensive care courses for D1 and D2 classes. Also it is taught as a separate course for the D3 students – Advances in Dental Materials)
- IUSD:** Combination of a one semester introductory materials science courses AND then part of Operative and Prosthodontic courses
- MICH:** Combination (Both as a separate introductory course, AND as part of other courses e.g. Operative Dentistry, and/or Prosthodontics) – yes
- OSU:** Combination - Within preparation courses in first two years with a senior lecture course
- PITT:** Separate course(s)
- SUNY:** Separate course only
- WVU:** No responses noted
- UWO:** DBM is taught as a separate course; however, a brief review of clinically significant properties is gone over in each restorative course

E. What format, setting and method is used to teach DBM at your school?

(Indicate all that apply if a combination of formats is used.)

- Lecture (*whole class*)
- Laboratory (*hands-on*)
- Clinic (*with patients present*)
- Seminar (*small groups, ≥10 students*)
- Individual or very small groups (*1-5 students*) with an instructor
- Individual (*Self-instructional learning via CD or DVD*)
- Individual (*Self-instructional learning via web-based program*)
- Textbook (*Provide the name of the book*)
- School-produced DBM Manual

CWRU: No responses noted

UDM: The basic DBM course is provided as a Lecture course, with no laboratory; however, six other courses have Laboratory instruction of DBM. The text book used in the basic DBM course is Dental Materials and Their Selection, O'Brien.

- UIC:** Lecture (whole class):
Laboratory (hands-on) simulated clinic sessions Seminar (small groups, \$10 students) and group discussion (8-100)
Individual (Self-instructional learning via web-based program) - Blackboard
Textbook (Restorative Dental Materials, Craig & Powers)
- IUSD:** Lecture primarily with practical applications in the various restorative classes like Operative Dentistry, Prosthodontics, Orthodontics, Pedodontics and Endodontics, Textbook: Craig's Restorative Dental Materials
- MICH:** Lecture (whole class) - yes
Laboratory (hands-on) – yes (as part of other operative and prosthodontic preclinical courses)
Textbook – O'Brien/ Dental Materials and Their Selection
- OSU:** Lecture, Laboratory (no testing, just basic handling) with course texts (Rosenstiel and Sturdevant) and the O'Brien "Dental Materials and Their Selection" texts.
- PITT:** First year, lecture and hands on; fourth year lecture
- SUNY:** Phillips' Science of Dental Materials, 11th edition; Dental Materials and their Selection, 2nd edition, O'Brien; Restorative Dental Materials, 11th edition, Craig, R. J., and Powers, J. M.
- WVU:** No responses noted
- UWO:** The present format is a lecture to the whole class with no hands-on lab component. 15 years ago we had a lecture component and a lab component where students had the opportunity to mix and test materials they were hearing about in lectures. With an ongoing curriculum renewal we are planning to teach this subject using subject modules (materials being taught in sync. with the clinical lectures), labs, and hopefully seminars. Lecture materials are now being offered through web-sites (Web CT, etc). The textbook is "Restorative Dental Materials" 12th. edition by Craig

F. Did your school experience a curricular revision during the last 7 years? If yes, on a scale of 1 to 5 (1 is less important and 5 is highly important) rate the level of importance given to DBM SINCE the curricular revision at your school. Was this rating an increase or decrease compared to DBM's status before the revision?

CWRU: No responses noted

UDM: We have undergone minor curricular revisions in the last seven years. The importance of DBM would have to be rated 5 (highly important). Dental materials was equally important before the curricular revisions

- UIC:** Yes;4; It has been an increase, but efforts have been made to improve even more the courses in DBM.
- IUSD:** Major revision in the last 10 years. The importance of DBM increased as a result of this revision in the undergraduate curriculum
- MICH:** Yes, 4, increase
- OSU:** No. Ours was about 10-12 years ago. At that time we decided upon the integration with the final senior level (review) course.
- PITT:** < 1, same as previous years
- SUNY:** No, but we had a faculty retreat last fall to decide if we should go forward with a major curriculum revision. Folks from UCSF came and shared their experiences with us. It was agreed that we should go forward with a curricular revision (currently in its very early stages)
- WVU:** No responses noted
- UWO:** Yes, 3 years ago we once again had a faculty member (albeit only half- time due to his commitments to the faculty of engineering) so the curriculum went to being taught by course directors to someone who was totally responsible for DBM. I would rate the level of importance as a 3. This was actually an increase in the DBM status.

G. Does your school make a specific effort to integrate the science of DBM into the clinical curriculum? If yes, please describe how you try to accomplish this?

- CWRU:** No responses noted
- UDM:** Yes and here is a continuum between the science of DBM taught in our basic DBM course and the other courses that teach more applied aspects of DBM. Later courses emphasize practical DBM aspects over biomaterials science
- UIC:** YES. DBM is part of the restorative disciplines (Operative Dentistry and Fixed Prosthodontics), which are a division of the comprehensive care courses. The lectures are given concomitant to the technique lectures, thus while the students learn about different restorative procedures and technique, they understand what the materials are and their properties. We believe that teaching Dental Materials in this matter is more clinically relevant and simple for the students to understand the concepts.
- IUSD:** The attempt at integration is that the dental materials faculty give other lectures (besides the materials science course) within the other restorative courses as the different materials are used in the lab. For example, when

amalgam and resins are introduced in the Operative courses, the dental materials faculty give one to two lectures on the material before they are used in the laboratory.

- MICH:** Probably not – this is an area that could be improved
- OSU:** Not really. We try but not in any organized fashion. Materials taught in the pre-clinic portion are the ones that we use clinically (we try to introduce all materials in the pre-clinic and have a committee to oversee that process)
- PITT:** Yes, it is integral to the discussion of restorative materials
- SUNY:** Yes. All of the lectures are coordinated with hands on experience in the first year pre-clinical course
- WVU:** No responses noted
- UWO:** Yes, to a degree. We attempt to have both the dental materials lectures and the clinical lectures scheduled as close to each other as possible, with the dental materials lectures preceding the clinical lectures by a few days/week where possible.
- H. Are you satisfied with the overall time and effort allotted to teaching DBM at your school? Yes/No. If not, what would you change if you could?**
- CWRU:** No responses noted
- UDM:** We are not entirely satisfied. We are considering two additional DBM courses or course components; a laboratory component and a refresher course later in the curriculum.
- UIC:** Yes, we are satisfied but working to make additional improvements. We have expanded the DBM content and time devoted to teaching during the transitional period of our curriculum change and hope to make additional improvements when changes are finalized beginning in 2009
- IUSD:** We are quite pleased with the amount of material and time allotted to Dental Materials. By the time the program is complete, our undergraduates have had as much didactic work as our graduate students. We would rate it as one of the top undergraduate DBM programs in the country for undergraduate students in terms of the amount and quality of instruction.
- MICH:** No, Improve linking of the science part to the clinical aspects
- OSU:** Overall yes. The students enter the senior year with a fairly good background according to the senior course director. However, they have not historically had stellar performances on the National Boards.

- PITT:** No, increase relevance, because the students are becoming technicians and not dentists
- SUNY:** No, not satisfied. The course director would like to see (at a minimum) an additional ½ semester course (probably senior year) that deals with clinical selection of materials
- WVU:** No responses noted
- UWO:** NO!! Although we do not need the students to have a PhD level of knowledge they should be very knowledgeable about the materials from a clinical perspective. This includes physical properties and clinical handling. We hope to improve this aspect by introducing a hands-on lab component soon

I. *Please provide any other comments or thoughts about this issue.*

- UDM:** Our school respects the importance of DBM for clinical dentistry and will continue to provide extensive DBM instruction to our student.

II. **National Testing Agency for Licensure and Credentialing.**

There is an increased utilization of a national testing agency for licensure and credentialing. Do your students take this exam while they are still students? When are these exams given? What are your outcomes in terms of passing and failures? Are these results better than previous exams? What is the level of involvement of your school with this exam? Most of the exams utilize dentoforms as part of the testing. Is your school preparing your students to pass this exam? If yes, how?

- CWRU:** No responses noted

- UDM:** These exams (NERB - Integrated Format) are given during their Senior year. Simulated Part (Endodontics/Prosthodontics) is offered in October, Patient Part (Operative/Periodontology) in February-March. Greater than %98 pass rate within the annual exam cycle, which is better than performance on other exams. We provide the site. A number of our faculty members are directly involved as. Our school has done a tremendous job organizing simulation of NERB exam as MOCK Boards. These exams are offered twice a year. Department of Restorative Dentistry requires these exams as students' competencies in order to graduate. Prior to taking the exam multiple orientations are given and outcomes are discussed with the students and the faculty for improvement. Exit interviews reflect highly appreciation of our students as they perform comfortably during the real licensure exams after passing their MOCK Boards. These practice exams are accurate replica of licensure exams where they identify cases to treat under similar conditions by using the paperwork and criteria that NERB requires. They are also tested in the typondont sections as required by NERB. Our grading standards are comparable or higher than the licensing exam requires which actually prepares our students for more difficult scenarios. They also need to

self evaluate their performance during the exam. These results are then compared by our floor examiners and grading faculty and communicated with the students for them to correct their errors.

UIC: Yes, at UIC COD almost all students take the integrated format of the CRDTS exam. Manikin based exam procedures are completed in Fall Semester of the fourth year (October). Patient based exam procedures are scheduled in Spring Semester of the fourth year (March). The computer based exam can be taken any time between October to May of the senior year. UIC COD has had the integrated format for the Class of 2007 and the upcoming Class of 2008. However if the Managing Partner feels that the students is not progressing well toward graduation, He/she may inform Academic Affairs that the student should not take the integrated exam, and wait for the traditional format exam in May. This does not happen often, in the past two years only two students were withheld from taking the exam. The Class of 2006 had the traditional format exam – all parts were taken in Spring Semester of the 4th year (March) The years to compare for the CRDTS exam are for the Classes of 2006, 2007. Prior years had a completely different exam which was scored differently.

| Component | Pass Rate Class of 2007 integrated | Pass Rate Class of 2006 traditional |
|-----------------|--|---|
| Computer | 98.8% | 95.0 |
| Pros: (manikin) | 96.6% | 91.5 |
| Endo: (manikin) | 91.3% | 98.8 |
| Operative | 94.3% | 93.9 |
| Perio | 95.4% | 98.8 |

Level of involvement:

For the manikin based exam procedures (pros and endo): at least 3 hours (total) review “lectures” given to students. A full mock board for manikin procedures (whole day exam – 4 hours for pros procedures, 3 hours for endo procedures using the criteria forms from CRDTS). There is remediation for students who fail the mock exam. Although no formal practice sessions are scheduled during regular clinic hours, if students have a patient failure, they are allowed to practice typodont procedures in the clinic. For the Class of 2007, 4 Saturday morning practice sessions were available (with a faculty member present for feedback). This was primarily to provide feedback for students on extramural rotations, but if space was available the session was open to all students taking the exam.

For the patient based exam parts:

Approximately 7 hours of review sessions were scheduled before the mock patient board. These sessions reviewed: patient selection, Class II, Class III and perioboard criteria, evaluation and scoring, common problems reviewed from past mock boards and all of the paperwork and protocol of the CRDTS exam. Fortunately the actual paperwork for the CRDTS exam is available. The mock board is a full mock board for the patient procedures, following the exact protocol of the exam (including using 3 examiners for evaluation/ grading). This is a full day exam (8:00 am until 5:00pm). Following the mock patient board is a 2 hour debriefing / review.

In addition faculty help to find and select patients for the exams – both the mock and real CRDTS exam. Lunchtime and Saturday screenings are organized by students but monitored and supervised by faculty. This helps to find patients for students who can not find appropriate patients in their own patient list. The college’s patient pool does not usually supply sufficient appropriate patients for the exam.

- IUSD:** Our students take the exam in the Fall semester of their senior year. Our pass rate last year (which was our first year) was ~97%. These results are much higher than previous exams (Indiana State Board). The school is heavily committed to this exam format. The school has purchased our own dentofoms, which are loaned out ahead of time to let the students practice. A mock board, which must be passed is given ahead of the real board. Students are required to keep taking the mock board until they pass.
- MICH:** NERB Manikin portion – September of senior year
 NERB Clinical portion – March of senior year
 Manikin portion ~ 4% failure rate for 1st try/ ~ 100% passing rate by graduation
 Clinical portion – results given to Dean for Clinical Affairs. Unable to obtain results at this time.
 Manikin portion ~ 4% failure rate for 1st try/ ~ 100% passing rate by graduation
 Clinical portion – results given to Dean for Clinical Affairs. Unable to obtain results at this time
 Manikin exercises are incorporated into preclinical courses as well as an optional 4 day review/practice session (“NERB bootcamp”) prior to the exam. A clinical operative mock board exam is required as one of the clinical competencies in the senior year
- OSU:** Our students participate in NERB (ADLEX OR ADEX) and WREB exams. The majority of students (almost 90%) take NERB. Almost 20% take WREB (Some students obviously take both). The NERB exam uses the CIF format, starting with the typodont exam in Oct. Approximate pass rates for the last 2 years have been between 90-95%. However, WREB rates have usually been at 100% for quite a few years. I believe that pass rates have improved when compared to 10 years ago. We provide mock exams for both the typodont and clinical exam portions. Specifically, one of our competencies basically reproduces the typodont portion approximately 2-3 months prior to the exam. Remediation focuses on those students not performing to our school standards which are more stringent than the NERB standards. We use the same typodonts and test teeth. Grading standards utilize the NERB standards, but we are more stringent and discuss this with the students.
- PITT:** NERB: fall and spring
 WREB spring
 Outcomes: NERB does not share the results with the school, WREB does
 Involvement: We emphasize it to them; Former Chair of restorative does a presentation on the patient segment.
 Manikin: One of the Prosthodontic instructors does a summer course which has them do the NERB exercise five or so times; and then one more the week just before the exam.

SUNY: Approximately 45 out of our 85 seniors take the exam. This is less than before because of PGY-1. The manikin (fixed and endo) portion is given in early October, and the clinical portion is given in February. We have fewer failures with the Curriculum Integrated Program. We have also noticed that this program is better when the treatment of the patient is concerned: treatment is more timely (lesions are not “held” until May) and there is a better follow-up of these patients. We have a NERB “project” which consists of the following:

1. A full gold crown prep on #19 and a PFM crown prep on #21.
2. An all ceramic crown prep on #9
3. Endodontic therapy on #8
4. Endo access only on #3

is “project” is completed in the clinic, with a NERB time frame. The students must satisfactorily pass this “project” twelve times. Each student cuts a total of 60 preps. Our students also take two mock boards with the typodont exercises. Each is taken in the clinic, on Saturdays, with the typodont on the manikin, with a five hour time limit to complete (the real NERB gives seven hours). If a student fails any of the five portions of the exam, he/she must redo it at his/her convenience, and have the supervising faculty member OK it.

WVU: No responses noted

UWO: Our students (Canadian) may take the “National Board” exams in the spring of their graduating year. The exams are also given several other times throughout the year and in different locations. The outcomes are about an average mark of about 80% - only a few fail and have to re-write at a future date. If they pass just their school final exams they may practice in the provinces that support their particular school without being examined any further. If they want to practice in another area of Canada they must have both a pass in their school exams as well as the National Boards examination (written and OSCE). School exams consist of both written and clinical competencies. The National Board written exam is a 300 question multiple choice exam covering all disciplines (no dentofom work) plus an OSCE (station based with 2 questions at each station). Exams are offered three times per year in Canadian and at USA locations (if numbers of applicants and available facilities make it feasible).

Canadian Schools do not get involved much with preparing their students for the National Board exams since most students don’t need their National Boards to practice if they practice in their own province.

All students/dentists applying for a license in Ontario must also write an exam in Ethics and Jurisprudence which is administered by the Royal College of Dental Surgeons of Ontario. Each graduating student from anyone of the 10 Canadian schools must exhibit “competency” in 47 listed areas. This has been arrived at through collaboration between the schools and accreditation authorities.

III. Dual-arch Impressions

Dual-arch impressions are a very popular technique, but some faculty are reluctant to use this technique although literature supports the usage. Is your school using dual-arch impressions (triple tray) for single tooth restorations, quadrant trays or full-arch? What type of dual-arch impression trays are used? What departments/sections utilize this technique? If dual-arch impression trays are used, what guidelines are recommended?

CWRU: No responses noted

UDM: Our school uses full arch custom trays for routine fixed prosthodontic/operative impressions. Dual arch trays are available at the dispensary for faculty check out on certain occasions. We use Exacta Triple tray. Department of Restorative Dentistry teaches this technique as an alternative but recommends students to fabricate two full arch custom trays and receive a faculty check prior to impression appointment. Our departmental policies clearly states as follows:

Posterior triple trays may be used for a single unit when:

1. a full complement of teeth is present in both opposing quadrants
2. the student has had previous experience with the custom tray technique
3. the tray fits the patient allowing full closure into ICP
4. the prepared tooth is not the most distal tooth in the arch
5. the prepared tooth is not an abutment for a removable partial denture
6. the prepared tooth is not one of the 6 anterior teeth

UIC: NO. Information regarding options for impression tray is provided during Fixed Prosthodontics course to the D2 class. The school's restorative philosophy believes that the students should use full arch impression for every indirect procedure. The technique is not encouraged in patient care, and if used, should only be indicated for single crown, inlay and onlay when patient has no significant slide from CR to MI and also has a canine rise.

IUSD: Dual arch impression techniques are taught at the school as well as full arch impressions. Dual arch trays are used primarily for single tooth crowns in the posterior quadrants. The technique is used primarily for Operative Dentistry as the Prosthodontic Division handles multiple unit cases. Guidelines for usage include single unit crowns that are not the last tooth in the arch. They are not used for anterior crowns. Crowns that are the last tooth in the arch are taken with full arch trays only, even if it is a single unit.

MICH: Students use full arch impressions for fabricating single tooth restorations in preclinical courses, however, triple trays are used in the student clinic for some posterior restorations.

Posterior quadrant; Prosthodontics and restorative

Posterior restorations only (no anterior)

- Single tooth restorations only (no multiple unit)
- Contraindicated for most distal tooth in the arch
- Normal occlusion (no crossbites, etc)

-Room to fit distal part of tray behind the most posterior tooth

- OSU:** We do not teach in the pre-doctoral program, but use in the Faculty Practice area. The main reason is that we still teach comprehensive treatment requiring full arch impressions and full articulator mounting. The decision was whether to teach both techniques (dual-arch and separate full arch) or to focus on teaching one. The latter was our choice. If we were to limit clinical treatment, I suspect we would then teach the dual-arch technique.
- PITT:** No, they are frowned upon for general usage. Some individual instructors may allow it to be used in certain circumstances.
- SUNY:** No, we do not use dual arch impressions at all. We use stock trays (a very recent change) for single units and custom trays for multiple units and FPDs.
- WVU:** No responses noted
- UWO:** Full arch custom tray impressions are the normally used for final PVS impressions. Commercial stock trays (Spacer Trays, etc.) are also used from time-to-time. No dual-arch technique is taught.

IV. Vital Pulp Therapy (Indirect/direct pulp capping)

(This topic is being revisited - refer to 1999 CODE Regional Reports)

Is your school policy accepted by all disciplines? Do you incorporate vital pulp therapy exercises in your preclinical operative curriculum? Are you in agreement with treatment approaches taught in Endodontics? Pedodontics? Prosthodontics?

- CWRU:** No responses noted
- UDM:** Clinically yes, based on Department of Endodontics recommendation. No real school-wide policy. Nor is it discussed in pre-clinical lecture. Clinical judgment is used to determine appropriateness for “indirect pulp caps” the clinic. The classical technique is used. “Most” caries is removed. Ca(OH)₂ is placed, and then the tooth is sealed temporarily with IRM or RMGI. If asymptomatic after several weeks or a few months, the temporary is removed, the dentin inspected, and if appropriate a new liner placed followed by a definitive restoration. Depending upon clinical judgment and circumstances, the definitive restoration may be placed immediately at the initial appointment. Pedo defers to endo’s judgment. endo recommends all direct pulp caps be treated endodontically. In an institutional situation, we agree. We are not comfortable with crown and bridge placed in either direct or indirect pulp caps and almost always require RCT before the crown or retainer fabrication.
- UIC:** We believe that we are consistent in our teaching between disciplines: restorative, pediatric dentistry, and endodontics. Our current effort is to integrate the three in our comprehensive care courses to address topics such

as this simultaneously and to allow us to verify our agreement. The old discipline based curriculum opens the possibility that students receive contradictory information from various disciplines. The current approach makes an effort to present a multi-disciplinary approach with input from all areas at the same point in the curriculum.

- IUSD:** We teach vital tooth treatment at the school. We do not incorporate actual vital pulp therapy in our laboratory exercises, but the technique is taught in lecture. For the most part we are in agreement in the various departments, but there are some differences. If the tooth is to be crowned, or serve as an abutment, most of us would prefer to do endo in most cases, prior to restoration. Direct restorations would be the primary indication for attempting to do a direct pulp cap.
- MICH:** There is no school policy but there has been a policy decided upon by the restorative department approximately 8 years ago. A subcommittee from the restorative department is currently meeting to review recent literature and current policy to determine if any revisions should be made and to come to a consensus on policy. Yes. Students learn mixing and placement of calcium hydroxide and glass ionomer liners following caries removal exercises on extracted teeth. Not all clinical scenarios are ideal but there is an effort to simulate deep preparations that would require liner placement.
Treatment approaches taught in :
Endodontics? Current policy in revision, but endo faculty are on committee
Pedodontics? Under review
Prosthodontics? Not specifically taught
- OSU:** Overall, yes. There is really only one area where there is a 'rule'. If there is a pulp exposure (indirect or direct) and the tooth is scheduled to receive a cast restoration, then endodontics is to be done.
- PITT:** In general the policy is accepted by all disciplines. Yes, we cover both direct and indirect in the Operative curriculum. Endo and Operative are both in the Department of Restorative Dentistry and they have reached a consensus.
- SUNY:** We really don't have a unified school policy. The Endodontics Department recommends the use of MTA (Mineral Trioxide Aggregate) as a pulp capping material for direct pulp caps. There is good evidence in the literature that MTA should be the pulp capping agent of choice. This is not being used regularly on our clinic floors. Calcium Hydroxide is often used when Endo is not involved in the pulp capping decision. Two carious typodont teeth are used in a caries removal/Ca (OH)₂ preclinical project. The Department of Restorative Dentistry point of view - we will pulp cap if the tooth is asymptomatic, well isolated, and shows minimal bleeding. We place the definitive restoration at the same visit as the pulp capping procedure. We are much more likely to go ahead begin endodontic therapy on a tooth if it is a

very strategic tooth in the overall treatment plan (to receive a crown, an abutment for FPD or RPD, etc.)

WVU: No responses noted

UWO: Indirect/direct pulp therapy is taught and practiced in operative dentistry starting in year two in the preclinical lab, but not in any great depth – no exercises. A one hour lecture is presented to the 3rd. years students early in the year. Operative dentistry philosophy differs from endo – our endodontists want pulpectomies done for all direct pulp exposures. This difference no doubt is both confusing and frustrating to our students but since endodontists won't change their mind we are at an impasse

V. Restoration of Implants

What experiences are provided to your students in the restoration of implants?
Do your students have the opportunities to PLACE implants (surgical phase) and/or do the second stage surgery to uncover them (after integration)?
Who/what departments/sections are supervising the restoration of implants?
What training is provided to the faculty?

CWRU: No responses noted

UDM: Over ten years a selected group senior students are involved in a limited elective implant restorative program. These students are allowed to restore previously placed implants under one prosthetic faculty's supervision. It is supported by a didactic course including a hands-on session. Department of Restorative Dentistry are taking the measures to start a new program to integrate entire senior/junior class in restoring certain implant cases from their own patient pool. Students do not have the opportunity to place implants. The Department of restorative dentistry oversees restoration of the implants. Faculty are not currently trained. For the new undergraduate program, clinical faculty specifically restorative, surgery, radiology and oral diagnosis faculty will be offered multiple structured training programs including hands-on and didactic sessions.

UIC: The students are enrolled in a pre-clinical courses that covers restoration of completely edentulous mandibles and single missing teeth. During the course they learn how to treatment plan, fabricate surgical guide and fabrication of provisional crown. They place implant on model with help of instructors and implant company. In clinic, students are involved with treatment planning and restorative procedures (temporary and final)for both completely and partially edentulous patients. The school established a Comprehensive Dental Implant center (CDIC), in which affordable implants can be placed for eligible patients. There is a undergraduate program component at the center.Implants are placed by Oral surgery, Periodontics and Prosthodontics residents,Restorative Dentistry handles the restoration of implants. Faculty received a 2 days hands-on training.

- IUSD:** Students are allowed to restore implants in the clinic. They must work with a designated prosthodontic faculty member. The students take an implant course in their junior year that includes lecture, literature review, and laboratory exercises. This course is primarily geared to treatment planning (determining feasibility), directions to the surgeon for location and subsequent restoration of the implant. They are not taught to surgically place the implants or uncover them. Interested faculty have been allowed to do a rotation through the course and serve as laboratory bench instructors. They are required to attend the same lectures with the students prior to the lab.
- MICH:** All students attend a 6-week didactic course and a lab course (6 hours). All students are allowed to restore implants if they have a case. Experience is limited by case availability. Approximately 25% of students complete a clinical case. Students are allowed to place implants under the guidance of perio and oral surgery faculty. The faculty receive the same training that is provided to the students.
- OSU:** Our Periodontal and Oral Surgery sections place implants. I believe the students can be involved (assist) but do not place or actively participate in second stage surgery. Students are able to be involved in the restoration of these implants through supervision in the Implant Clinic directed by Ed McGlumphy. In addition to lectures to the pre-doctoral students, there is an elective rotation for a few seniors in the implant clinic. Ed has provided many CE courses available at low cost or free to the faculty.
- PITT:** All predocs rotate through the implant clinic and at the very least, assist in the implant placement surgery. Likewise, each assists a Prosth grad in the restoration of an implant. Some students have the opportunity to actually restore an implant – it all depends upon the needs of their own patient family.
- SUNY:** Minimal exposure to implants. A very few seniors will restore single unit implants this year, if their patients require it, and time permits. The implants are surgically placed by either post grad perio, or AEGD residents. Senior students may observe placement of the implants. Students do not place implants. Our goal is to have each senior restore one implant, either a premolar or a molar. The plan is ready to be put in place: all we need is an implant person to get the program going. The search for that person will begin very soon. Our current junior class has received one lecture on implant restoration, and they have been told what our plans are for the future. The department of restorative dentistry oversees the restoration of implants. Faculty receive no formal training. Faculty who currently restore implants will be allowed to supervise.
- WVU:** No responses noted
- UWO:** We attempt to give each student is two single implants to restore. They do not do the surgical component but take part in the treatment planning stage and

assist with the implant placement and any bone grafting procedures required. Prosthodontic Section faculty supervise implant restoration. There is no training given to faculty by the school as such; however, several have taken courses on their own (most junior faculty with specialty training had implant training as part of their graduate work). Several have taken courses offered to faculty by implant companies. Up until now most implants for school patients have been placed by maxillofacial surgeons who teach at the school. This has been done on a “fee for service” basis but the fee is half the normal fee. Lately some prosth. faculty have starting doing the surgical phase in addition to the surgeons due to a backlog of cases.

VI. Electronic Patient Records

Does your school use an electronic patient record (EPR)?

If yes, which EPR system do you use?

Please list the pros and cons of your school’s EPR system.

Does your school use digital radiography as the primary radiographic imaging system?

(Expanded topic - refer to 2006 CODE Regional Reports)

If so, which software do you use for digital radiographs?

Is the digital radiographic system integrated into the EPR?

Please list the pros and cons of your experiences with digital radiography.

CWRU: No responses noted

UDM: Yes, our school uses Axium.

Pros:

Handling of paper charts has its own difficulties such as storage, loss, HIPAA violations etc.

Accessing certain data by date, patient name, procedure code etc. is much faster electronically.

It eliminates the need to have multiple software applications operating in different areas the dental school by incorporating all of the features required into one software application using a single database.

These type of programs are designed to grow as the dental school grow and easier to make changes or modifications in daily activity/evaluation and other forms.

Extensive reporting and information manager tools.

Research capabilities are limitless. Potential for automated/programmed computer chart audits of all charts and transfer of data to a QA database.

Cons:

It has a long learning curve, requires many hours of faculty, staff and student training. Development of the program to fit our own needs is a challenge.

Slowing the daily activities at early stages as a beginner due to data entry.

Little room for error, every action is recorded immediately, difficult to correct an activity if approved incorrectly. Forensically, the odontogram is medico-legally inadequate. Very difficult to navigate. No directions at nodes or written instructions. QA chart audits will require considerably more time.

We use Emago for digital radiology software and it is integrated into Axium

Pros.

UIC: Yes, we use Axiom. Great capability, customizable, user friendly, safe, facilitate data collection. No cons. We do not use a digital radiology system, but are looking into some.

IUSD: The school is heavily committed to the EPR. Faculty, staff and students went through an extensive pre-implementation program. On the job training immediately followed and familiarity with the system was rather rapid and complete. The change occurred in a relatively seamless manner. We currently use Axiom in all dental treatment facilities in the Dental School system including hospital-based programs. We use all functions of the software except radiographs, because we do not currently have enough digital radiographic units. The software can handle digital radiographs if/when we can go to that system. We use Axiom for recording existing conditions, pathology, for all disciplines, caries risk forms, medical forms, treatment planning, scheduling, grading, patient treatment notes, billing, insurance forms, medical consult forms, referral forms, HIPPA forms, insurance forms, integral e-mail and messenger system, etc. ; essentially everything you would use with a paper record and even more functions are included. Student “sign in” and “sign out” is accomplished with a card reader and a personalized faculty ID card.

Pros of the system include:

- A system that records almost all aspects of patient treatment, clinical grading and teaching, billing, etc.
- A universal chart used in all clinics, so that all dental school staff, faculty and clinical students are familiar with its use throughout the entire Indiana University School of Dentistry system.
- A universal billing system
- Rapid submission for insurance
- Rapid data access for all authorized staff, students and faculty
- Does away with pens and pencils in the clinical setting

Cons of the system include:

- Requires an extensive and committed educational program
- A record that includes so many functions is more difficult to navigate. Sometimes difficult to find sought information
- Daily check outs require a number of card swipes from a faculty member to make sure all material has been correctly entered.
- If information not entered correctly or completely, system controls will stop progress until information entry is corrected. This can become frustrating when hunting for the incorrect entry. The system usually prompts where the error is, but not always.
- When network crashes (and it does occasionally, wireless goes out, etc.), system is shut down. If it is for a long period of time, we have to revert to paper records and record items into digital system later.
- Even though we have not lost data, and the system is routinely backed-up, the potential still exists for catastrophic data loss. However, same is true for paper records (fire, flood, etc.).

MICH: Only in orthodontics. The rest of the school is not there yet, but is working toward implementing Axiom. Biggest pro: Axiom is custom designed for use at a dental school vs. other systems designed for private practice. Biggest con: The fact that it is almost too customizable makes implementation daunting.

Our school does not use digital radiography as the primary radiographic imaging system. It is currently only used in ortho and endo. The software we use for digital radiographs is Optitine for endo. The digital radiographic system is integrated into the EPR.

OSU: No EPR. We use Windent and have not implemented the EPR sections. Grad Perio. is looking to have EPR and may have moved to a different system to get it. Digital radiography is only done in Grad Endo, Ortho and Surgery. Students get a little experience in the x-ray clinic (1x) using an older system.

PITT: We will be implementing the EPR beginning in the summer of 2008. We will use axiUm by Exan Academic. The cons are the incredible amount of time required to set up the system, train all users and tweak and/or debug the system. The positive aspects will be the availability of the patient information to all users at all times, the ability to query multiple fields of data for outcomes and research purposes. The ability to force policies and procedures and send “automatic” alerts and warnings.

We will also be using digital radiography beginning in the summer of 2008. We utilize MiPACS software by Medcore. This program is interfaced with axiUm. We have not yet set up the software or hardware for digital radiography so we do not have specific positive or negative examples. However, we believe that there will be similar positive aspects to digital imaging as there is to EPR, in particular, the availability of the patient information to all users at all times and the elimination of films being lost from the charts.

SUNY: Yes and no. We have a partial electronic patient record. We plan to have a complete EPR within the next couple of years. We are missing big chunks right now—progress notes, medical history, dental history. We still are using charts chair side. We are using Picasso.

Pros—the system we are currently using is completely customizable for our school and our needs.

Cons—we are completely reliant on our internal staff (this is an argument to purchase a new system rather than “tweak” the system currently in place) MiPACS—for digital radiology. It is open ended, not vendor specific, and it has strong ties to the Picasso EPR we’re currently using.

Pros—great educational tool, instant feedback, can experiment with different scanner settings (we’re in the midst of doing this now) to improve diagnostic quality

Cons—still much debate among clinical faculty regarding diagnostic quality of BWs (primarily). Also, we’re currently printing all of our digital films because we have no chair side monitors. It would be better to be able to

display the images on a monitor. Currently, two of our four clinical groups still use conventional radiographs routinely.

WVU: No responses noted

UWO: No, the University of Western Ontario does not use electronic patient records. We are looking into doing this in the future and would like to evaluate several systems. (Casenote Software [http://www.movedigital.com/go/rderosso/76724/casenote software](http://www.movedigital.com/go/rderosso/76724/casenote%20software))

Regional CODE Agenda

Suggested Regional CODE ITEMS (CAMBRA related)

I. What caries prevention strategies are taught in various schools?

CWRU: No responses noted

UDM: No responses noted

UIC: No responses noted

IUSD: We teach prevention through fluoride treatments, and oral hygiene as determined by caries activity and future caries risk.

MICH: In general, the school follows a conservative and minimally invasive philosophy towards caries management and treatment. Non-surgical management, including diet counseling and modification, oral hygiene instructions, topical fluorides, fluoride varnish, high fluoride dentifrice, sealants and monitoring of incipient carious lesions not yet into the dentin are heavily stressed and routinely employed. Other methods such as bacteriological testing, xylitol gum, and chlorhexidine rinses are recommended for high risk cases. In situations where non-surgical management is either not feasible or has not been effective and operative intervention is required, the lesion should be managed with the most conservative preparation design possible, preserving healthy tooth structure where possible.

OSU: We teach caries prevention in the D1 lecture series of operative dentistry. Other information (microbiology) is taught in basic sciences and pediatric dentistry. We try to teach from a "Medical to Surgical" intervention in the caries process.

PITT: No responses noted

SUNY: No responses noted

WVU: No responses noted

UWO: We teach the normal oral hygiene procedures, fluoride applications, and stress regular dental examinations in the clinical component of our courses

II. Do you have a specific Preventive Department or do all disciplines teach prevention?

CWRU: No responses noted

UDM: No responses noted

UIC: No responses noted

IUSD: We have a Preventive Department

MICH: No

OSU: No responses noted

PITT: No responses noted

SUNY: No responses noted

WVU: No responses noted

UWO: We do not have a Preventive Department. Both caries and prevention are covered by several disciplines – biochemistry, oral pathology, paedodontics, and operative dentistry. In operative dentistry we cover the basics to make sure students know the basics in order to better understand what they are doing in preparing and restoring teeth. Until about 10 years ago we had a Division of Community Dentistry which was responsible for caries and prevention. This division was changed to the Division of Practice Administration with the running of a private practice, legal matters, and ethics being the primary focus. Paedodontics now has most of the responsibility for caries and prevention teaching.

III. Is there a preventive presence (specific preventive faculty) in the clinic?

CWRU: No responses noted

UDM: No responses noted

UIC: No responses noted

IUSD: There is a preventive faculty presence on the clinic floor.

MICH: No

OSU: There is no specific prevention presence in the clinic (ignoring hygiene).

PITT: No responses noted

SUNY: No responses noted

WVU: No responses noted

UWO: No

IV. What methods of caries detection are taught in schools (eg. Explorer (how used), visual, Diagnodent, transillumination, fluorescence, etc.) ?

CWRU: No responses noted

UDM: No responses noted

UIC: No responses noted

IUSD: Visual inspection, radiographs, Diagnodent is used primarily for research purposes and not on the clinic floor.

MICH: Visual detection of dry tooth with magnification when possible – staining, shadowing Explorer – as an adjunct to visualization, especially proximally and subgingivally
Radiographs – for proximal lesions
Transillumination – for anterior proximal lesions.
Diagnodent is presented in lecture but not used clinically.

OSU: We primarily use radiographic and visual inspection for caries identification.

PITT: No responses noted

SUNY: No responses noted

WVU: No responses noted

UWO: At UWO we teach students to thoroughly dry the teeth, use both visual signs, and light tactile touch with a sharp explorer. We discuss transillumination, fluorescence and the Diagnodent as well; however, of these three only transillumination is stressed for proximal caries.

IV. Is standardized caries risk determination part of the routine diagnostic phase of dentate patient treatment?

CWRU: No responses noted

UDM: No responses noted

UIC: No responses noted

IUSD: Caries risk forms on Axium are to be filled out on every dentate patient.

MICH: Yes

OSU: There is currently no formal policy dealing with the non-surgical treatment of patients or the treatment of patients with significant caries experiences. We are in the process of developing such policies and will be trying to involve pre-clinical and clinical faculty in training before teaching pre-clinically and mandating in the clinic.

PITT: No responses noted

SUNY: No responses noted

WVU: No responses noted

UWO: No

VI. Is the caries risk determination process recorded in the patient record and does it influence further restorative treatment?

CWRU: No responses noted

UDM: No responses noted

UIC: No responses noted

IUSD: Recorded and does not affect treatment.

MICH: Yes. Note: Caries Risk Assessment was already discussed in detail back in 2003. (*Editor: Refer to CODE website for 2003 Regional Annual Report*)

OSU: No responses noted

PITT: No responses noted

SUNY: No responses noted

WVU: No responses noted

UWO: No

Suggestions for CODE.

What can the organization do to improve its effectiveness?

IUSD: Suggested this several times. Deans need to be educated as to the organization's mission, scope and importance to the discipline of operative dentistry. I find little support for this in my school in terms of the higher administration.

MICH: Same comment as last year... There seem to be a lot of repeat questions from recent years, such as implants, electronic records and digital radiography. We seem to be rehashing the same topics over and over. Let's stick with new subjects for discussion and let's keep them confined to operative dentistry.

UDM: May do some site visits to dental schools to present nationwide educational trends in Restorative Dentistry and/or analyze operative departments for improvement.

What is suggested to improve the Web site?

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

No responses noted

Other comments?

No responses noted

CODE REGIONAL MEETING REPORT FORM

REGION: V - Northeast

LOCATION AND DATE OF MEETING:

Columbia University

October 3-5, 2007

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 2007 Regional Meeting

Suggested Agenda Items for Next Year:

LOCATION & DATE OF NEXT REGIONAL MEETING:

Name: **TBA**

Phone #:

Address:

Fax #:

E-mail :

Date: **TBA**

Please return all completed enclosures to Dr. Larry D. Haisch, National Director,
UNMC College of Dentistry;
40th and Holdrege Streets; Lincoln, NE 68583-0750.
Deadline for return: 30 Days post-meeting
Office: 402 472-1290 Fax: 402 472-5290 E-mail: lhaisch@unmc.edu
Also send the information on a disk and via e-mail with all attachments.
Please indicate the software program and version utilized for your reports.

CODE Region V Attendees Form

| NAME | UNIVERSITY | PHONE # | FAX # | E-MAIL ADDRESS |
|---------------------|------------|-------------------|--------------|---------------------------------|
| Alice Urbankova | SUNY | 631-632-8937 | | alice,urbankova@stonybrook.edu |
| Andrew Schenkel | NYU | 212-998-9722 | 212-995-4306 | abs5@nyu.edu |
| Ann Nasti | SUNY | 631-444-2925 | | anastidmd.aol.com |
| Anna Jotkowitz, | Harvard | 617-432-4460 | 617-432-0901 | anna.jotkowski@hsdm.harvard.com |
| Arnold Ray | NYU | 212-998-9455 | 212-995-4889 | ar9@nyu.edu |
| Barnett Bucklan | NYU | 212-998-9617 | 212-995-4119 | bb23@nyu.edu |
| Bonnie Lipow | SUNY | 631-499-1800 | | lipowdds@msn.com |
| Cheryl Fryer | Howard | 202-806-0389 | 202-803-0352 | cfryer@howard.edu |
| Dan Boston | Temple | | | daniel.boston@temple.edu |
| David Newitter | CONN | 860-679-3749 | 860-679-1370 | newitter@ns02.uhc.edu |
| David Albert | Columbia | 212-342-8588 | 212-342-8558 | daal@columbia.edu |
| David Glotzer | NYU | 212-998-9265 | 212-995-4119 | dlg2@nyu.edu |
| Dorothy McComb | Toronto | 416-979-4934x4418 | 416-979-4936 | d.mccomb@utoronto.ca |
| Doug Foerth | SUNY | 631-632-8920 | | douglas.foerth@stonybrook.edu |
| Farhad Hadavi | Columbia | 212-305-4847 | | fh27@columbia.edu |
| Gardner Bassett | Tufts | 617-636-6828 | | |
| George Zwicker | Dalhousie | 902-494-1914 | 902-494-1662 | gzwicker@dal.ca |
| George Keleher | Boston | 617-638-4682 | 617-919-1061 | gkeleher@bu.edu |
| Gerard Kugel | Tufts | 617-636-0870 | 617-636-6511 | gerard.kugel@tufts.edu |
| Hiroe Ohyama | Harvard | 617-432-1790 | 617-432-0901 | restdent@hsdm.harvard.edu |
| Howard Strassler | Maryland | 410-706-7047 | 410-706-3028 | hstrssler@umaryland.edu |
| Iqbal Singh | Tufts | 617-636-3937 | 617-636-6583 | iqbal.singh@tufts.edu |
| James Kaim | NYU | 212-998-9720 | 212-995-4867 | jmk2@nyu.edu |
| James LoPresti | NYU | 212-998-9709 | 212-443-1331 | jtl1@nyu.edu |
| Janice Mercer | Howard | 202-806-0270 | 301-249-4604 | jmercer19@aol.com |
| Joan Gluch | Penn | 215-898-8429 | | gluchj@pobox.upenn.edu |
| John Calamia | NYU | 212-370-0012 | 516-797-5981 | jrcl@nyu.edu |
| Jon Meiers | Comm | 860-679-3095 | 860-679-1370 | meiers@ns02.uchc.edu |
| Kenneth Allen | NYU | 212-998-9426 | 212-995-4889 | kenneth.allen@nyu.edu |
| Kenneth Markowitz | New Jersey | 973-972-2444 | 973-972-2441 | |
| Klara Alperstein | Temple | 215-707-8360 | | kalperstein@dental.temple.edu |
| Marc Rosenblum | New Jersey | 973-972-8622 | 973-972-0370 | m.rosenblum@umdnj.edu |
| Margrit Maggio | Penn | 215-573-7847 | | mmaggio@dental.upenn.edu |
| Mark Wolff | NYU | 212-998-9666 | 212-995-4117 | Mark.wolff@nyu.edu |
| Mary Truhlar | SUNY | 631-632-8941 | 631-632-8971 | mary.truhlar@stonybrook.edu |
| Maureen McAndrew | NYU | 212-998-9333 | 212-998-4889 | mm154@nyu.edu |
| Omar El-Mowafy | Toronto | 416-979-4934x4572 | 416-979-4936 | oel.mowafy@utotonro.ca |
| Richard Lichtenthal | Columbia | 212-305-9898 | 212-305-8493 | rml1@columbia.edu |
| Robert Miller | McGill | 514-398-7203x7206 | 514-398-5134 | robert.miller3@mcgill.edu |
| Seth So-chin | Dalhousie | 902-494-1912 | 902-494-1662 | sachin.seth@dal.ca |
| Van Thompson | NYU | | 212-995-4244 | van.thompson@nyu.edu |

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

(Editor note: Questions condensed for printing purposes)

I. Teaching Dental Biomaterials in North American Dental Schools

There was little or no consensus in response to this topic. The Region V schools vary widely in their approach to the teaching of “Dental Materials”. The only consensus is that everyone would like to have more time in the curriculum.

II. National Testing Agency for Licensure and Credentialing.

There is little use of a national testing agency. Most schools continue to cooperate with regional testing agencies and prepare students for the individual components in each exam.

III. Dual-arch Impressions

Dual-arch (triple tray) impressions are generally not recommended except in a very limited context with specific guidelines.

IV. Vital Pulp Therapy (Indirect/direct pulp capping)

There is little or no consensus on this topic.

V. Restoration of Implants

All schools provide the students with an implant restoration experience. The experience varies slightly from school to school but it is usually limited to relatively simple single unit or three unit bridge and/or implant supported overdentures. Supervision for the restorative procedures varies between prosthodontic and generalist faculty who are trained in house.

VI. Electronic Patient Records

Most schools do not use the electronic patient record and/or digital radiography at this time.

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.

The regional CODE meeting was held on Wednesday, Thursday and Friday, October 3, 4, and 5, 2007 in New York City.

The first session on Wednesday was devoted to a presentation and discussion concerning Caries management by risk assessment (CaMBRA).

Participating were representatives from New York University, Columbia University, the University of Medicine and Dentistry of New Jersey, Indiana University, the University of Connecticut, Dalhousie University, Stonybrook, the University of Pennsylvania, Temple University, Boston University,

Howard University, the Northeast Regional Board of Dental Examiners and the Western Regional Board of Dental Examiners.

The presentations and discussion included the following topics:

1. Framing the problem: Why do our students have so much difficulty diagnosing the presence of caries?, led by Dr. Mark Wolff.
2. How NYU has incorporated CaMBRA into their Cariology program, led by Dr. James Kaim
3. Caries - from the WREB perspective; what needs to be removed (caries); how do the check and how examiners are calibrated, led by Dr. Bruce Horn.
4. Caries - from the NERB perspective ; what needs to be removed (caries); how do they check and how examiners are caliobrated, led by Dr. Peter Yaman.
5. A discussion between the WREB, NERB and Dental School faculty representatives regarding Caries identification, excavation, what is appropriate and what is recommended.
6. A discussion regarding the barriers to consensus and where the schools, profession and licensing agencies go from here.

A full report on the proceeding will be made available within the coming months.

Suggestions for CODE.

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

- 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 |

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. Teaching Dental Biomaterials in North American Dental Schools

The following questions were provided by the ADEA Section on Operative Dentistry and Biomaterials. The responses will be presented as part of this section's program at the 2008 ADEA Meeting in Dallas. Be as specific as possible although multiple answers may be appropriate in some cases. Please add appropriate comments to further explain your answers as needed for clarity or elaboration.

A. Does your school have a distinct academic entity known as Dental Biomaterials (DBM) or other similar title for this subject (*Dental Materials, etc.*)?

- Yes or No
- If yes, what is it called?
- If yes, classify it per your school's organizational scheme - Department, Division, Section, Other (*explain*).
- If it is a subset of another department, identify the department.

BU: No responses noted

CLMB: Columbia has a distinct course called Dental Materials and is a subset of courses taught by the Divisions of Operative Dentistry and Prosthodontics (Section of Adult Dentistry).

- CONN:** U. Conn has a distinct academic entity called "Biomaterials". It is classified as a Division and is a subset of the Department of Reconstructive Sciences.
- DAL:** Dalhousie has a distinct academic entity called "Dental Materials" and is a subset of the Department of Applied Oral Sciences.
- HARV:** No responses noted
- HOW:** No responses noted
- LAV:** No responses noted
- UMD:** No responses noted
- MCG:** No responses noted
- MTRL:** No responses noted
- UMNJ:** UMDNJ has a distinct academic entity called "Restorative Materials and Procedures". It is a Third year course in the General Dentistry Division of the Department of Restorative Dentistry.
- NYU:** NYU has a distinct academic entity called "Biomaterial and Biomimetics". It is classified as a Department.
- PENN:** U. Penn has a distinct academic entity called "Dental Materials". It is subset of the Department of Preventive and Restorative Sciences.
- SUNY:** StonyBrook has a distinct academic entity called "Dental Biomaterials" and is a subset of the Division of General Dentistry.
- TEMP:** Temple does not have a distinct academic entity in Dental Materials
- TORO:** Toronto has a distinct academic entity called "Biomaterials". It is classified as a "Discipline" and is a subset of "Biological Sciences" (Dentistry is a Department. All disciplines fit into either Clinical or Biological Sciences).
- TUFT:** No responses noted
- USN:** No responses noted
- B.** How many full-time faculty teach DBM at your school as their primary teaching responsibility?
 How many full-time faculty co-teach DBM at your school as part of their teaching responsibility?
 How many part-time faculty teach or co-teach DBM at your school?
- BU:** No responses noted

- CLMB:** Columbia has no full time faculty who have DBM as their primary responsibility. There are eight full time faculty and two part time faculty, from several disciplines, who co-teach Dental Materials as part of their academic responsibilities.
- CONN:** U.Conn has one full time faculty member who teaches DBM as their primary teaching responsibility and two full time faculty who co-teach DBM as part of their teaching responsibilities. There are no part time faculty teaching DBM
- DAL:** Dalhousie has three full time faculty that teach DBM as their primary responsibility and one part time faculty member that has DBM as their primary responsibility.
- HARV:** No responses noted
- HOW:** No responses noted
- LAV:** No responses noted
- UMD:** No responses noted
- MCG:** No responses noted
- MTRL:** No responses noted
- UMNJ:** UMDNJ has one full time faculty member that teaches DBM as their primary responsibility. There are no other full time or part time faculty that co-teach DBM.
- NYU:** NYU has five full time and two part time faculty devoted to DBM. Two teach in the predoctoral program and the others teach in the MS program.
- PENN:** U.Penn has one full time faculty member who teaches DBM as their primary teaching responsibility. They have several part time faculty who co-teach DBM periodically
- SUNY:** StonyBrook has no full time faculty who teach DBM as their primary responsibility and no full time faculty that co-teach DBM. They have two part time faculty who co-teach DBM
- TEMP:** Temple has two full time faculty that teach DBM as their primary teaching responsibility. There are no full or part time faculty who co-teach DBM.
- TORO:** Toronto has two full time faculty that teach DBM as their primary responsibility. There are no full time faculty "co-teaching DBM. There are 3 to 4 part time faculty that serve as sessional instructors for undergraduate course sessions in the laboratory portion of the course.
- TUFT:** No responses noted

USN: No responses noted

C. When in the curriculum is DBM taught?

(Indicate all that apply if taught in more than one year.)

- Freshman year
- Sophomore year
- Junior year
- Senior year

BU: No responses noted

CLMB: We teach DBM as part of all the preclinical courses in dentistry in years one and two.

CONN: We teach DBM in all four years.

DAL: Dalhousie teaches DBM in years two, three and four.

HARV: No responses noted

HOW: No responses noted

LAV: No responses noted

UMD: No responses noted

MCG: No responses noted

MTRL: No responses noted

UMNJ: UMDNJ teaches DBM in the third year as a combination of a separate course and as part of other courses.

NYU: NYU teaches DBM in each of the first three years.

PENN: U.Penn teaches DBM as a didactic component of the preclinical laboratory courses during the first and second years.

SUNY: Stonybrook teaches DBM in years two, three and four.

TEMP: Temple teaches DBM during all four years as a separate course and as a combination as part of other courses.

TORO: It is in the first year.

TUFT: No responses noted

USN: No responses noted

D. How is DBM (*specifically*) taught at your school?

- Separate Course(s) only
- Part of another Course or Courses only
- Combination (*Both as a separate introductory course, AND as part of other courses e.g. Operative Dentistry, and/or Prosthodontics, and/or Bio-clinical Seminars*)
- Other (*Describe*)

BU: No responses noted

CLMB: It is a separate course in years three and four.

CONN: It is taught as a combination , i.e., both as a separate course and as part of other courses.

DAL: DBM is taught as a combination course in years three and four and as a separate course in year two.

HARV: No responses noted

HOW: No responses noted

LAV: No responses noted

UMD: No responses noted

MCG: No responses noted

MTRL: No responses noted

UMNJ: Refer to previous question.

NYU: It is integrated into preclinical operative dentistry and preclinical prosthodontics in years one and two and as a separate course in year three.

PENN: DBM is taught as a combination. It begins as a separate introductory course in the first year preclinical course in operative dentistry and then as part of the preclinical courses in fixed and removable prosthodontics in the second year. During both years, the laboratory projects are correlated to the DBM lectures. In the third and fourth years DBM is covered clinically, in small group settings, in seminars and in case presentations.

SUNY: DBM is taught as three separate courses in years two, three and four. The clinical applications of dental materials are taught in the preclinical technique courses as well as on an individual basis on the clinic floor.

TEMP: Refer to previous question.

TORO: It is taught as a separate course.

TUFT: No responses noted

USN: No responses noted

E. What format, setting and method is used to teach DBM at your school?
(Indicate all that apply if a combination of formats is used.)

- Lecture (*whole class*)
- Laboratory (*hands-on*)
- Clinic (*with patients present*)
- Seminar (*small groups, ≥10 students*)
- Individual or very small groups (*1-5 students*) with an instructor
- Individual (*Self-instructional learning via CD or DVD*)
- Individual (*Self-instructional learning via web-based program*)
- Textbook (*Provide the name of the book*)
- School-produced DBM Manual

BU: No responses noted

CLMB: We use lecture and laboratory format, clinical instruction as well as web-based self instruction. Textbook used is Craig and a school produced DBM manual.

CONN: We use a lecture format (whole class). Textbook used is Phillips Science of Dental Materials and a school produced DBM manual.

DAL: We teach with a lecture, laboratory and seminar format.

HARV: No responses noted

HOW: No responses noted

LAV: No responses noted

UMD: No responses noted

MCG: No responses noted

MTRL: No responses noted

UMNJ: We teach with a lecture (whole class) and laboratory format with clinical instruction. The textbook used is Anusavice Science of Dental Materials.

NYU: We use lectures (whole class). Textbooks used are Craig and Anusavice.

PENN: We teach in a lecture setting (whole class) preclinically and clinically reinforced in small group seminars.

SUNY: We teach with a lecture (whole class) and laboratory format with clinical instruction. The textbook used is Anusavice Science of Dental Materials, 10th

edition.

TEMP: We teach in a lecture (whole class) and laboratory format and in clinic (with patients present). The textbook used is Craig's Restorative Dental Materials.

TORO: We use lecture and laboratory teaching (whole class). Textbooks used are - Phillips, Science of Dental Materials and Anusavice, 11th. edition.

TUFT: No responses noted

USN: No responses noted

F. Did your school experience a curricular revision during the last 7 years? If yes, on a scale of 1 to 5 (*1 is less important and 5 is highly important*) rate the level of importance given to DBM SINCE the curricular revision at your school. Was this rating an increase or decrease compared to DBM's status before the revision?

BU: No responses noted

CLMB: Yes and DBM is a 2 on a scale of 1-5 (unchanged).

CONN: Yes and DBM is a 3 on a scale of 1-5. The rating has stayed the same, just delivered in a different context.

DAL: No.

HARV: No responses noted

HOW: No responses noted

LAV: No responses noted

UMD: No responses noted

MCG: No responses noted

MTRL: No responses noted

UMNJ: Yes, and DBM is rated as a 4 on a scale of 1-5 (unchanged).

NYU: Yes, and DBM was ranked as a 3 on a scale of 1-5.

PENN: There have been no major curriculum revisions in the past seven years. The curriculum committee conducts minor reviews of all courses yearly and major reviews of all courses every two years. All courses are considered important during the review process

SUNY: No

TEMP: Yes and DBM is ranked as a 4 on a scale of 1-5. This represents an increase in status.

TORO: No.

TUFT: No responses noted

USN: No responses noted

G. Does your school make a specific effort to integrate the science of DBM into the clinical curriculum? If yes, please describe how you try to accomplish this?

BU: No responses noted

CLMB: Yes, and many of the DBM lectures and laboratory exercises are integrated into the pertinent preclinical courses, i.e., operative dentistry, prosthodontics, endodontics, etc.

CONN: Yes, materials that are specific to a particular discipline, i.e. operative dentistry (glass ionomer cements, resin composites, dental adhesives, etc.) are taught within that particular discipline when the clinical use of that material is presented.

DAL: Yes, in Years III and IV and in preclinical exercises in prosthodontics.

HARV: No responses noted

HOW: No responses noted

LAV: No responses noted

UMD: No responses noted

MCG: No responses noted

MTRL: No responses noted

UMNJ: Yes, with the use of “Factbooks” and questioning students on the clinic floor.

NYU: We consider integration important and the biomaterials faculty work with the Operative and Prosthodontics course directors for the best placement of lectures.

PENN: Dental Materials is introduced and integrated into the clinical setting through our treatment planning process. Dental materials and their selection is also presented and covered in the seminar venue, where small groups discuss clinical cases. In addition, each senior student is expected to successfully complete a treatment planning competency exam that includes a materials selection component.

SUNY: We try to integrate the science of DBM into the clinical curriculum by getting our clinical faculty involved in the teaching of the didactic courses and by keeping them abreast of recent advances in DBM.

TEMP: Yes, it is integrated into all restorative dentistry courses.

TORO: We have the clinical disciplines incorporate specific biomaterials lectures pertinent to their program, e.g, Operative -Composites, cements, metals, etc.; Orthodontics - wires, etc.

TUFT: No responses noted

USN: No responses noted

H. Are you satisfied with the overall time and effort allotted to teaching DBM at your school? Yes/No. If not, what would you change if you could?

BU: No responses noted

CLMB: No. We would like to increase the integrated lecture and laboratory time devoted to DBM in the curriculum in Years I and II. We would like to see the addition of a full time DBM "expert" to our restorative faculty whose primary responsibility would be the DBM curriculum.

CONN: No, we would like to have more time.

DAL: No, there is inadequate laboratory time.

HARV: No responses noted

HOW: No responses noted

LAV: No responses noted

UMD: No responses noted

MCG: No responses noted

MTRL: No responses noted

UMNJ: No, we would like to have more lab time.

NYU: No. We are attempting to increase the lecture time in third year devoted to DBM as the total hours in the curriculum dedicated to DBM is less than twenty-eight hours over four years. Comment - Overall, DBM is being taught on a practical basis in the crowded curriculum. The basic science aspect has been reduced to a bare minimum and many argue that the basic science portion should be eliminated.

- PENN:** No, the program could be strengthened by adding laboratory or small group seminar times that would allow physical manipulation of the materials and review of the proper techniques for the materials.
- SUNY:** No, we would like more time to devote to DBM but there is no room in the curriculum for additional time.
- TEMP:** Yes.
- TORO:** Yes.
- TUFT:** No responses noted
- USN:** No responses noted

I. *Please provide any other comments or thoughts about this issue.*

No responses noted

II. **National Testing Agency for Licensure and Credentialing.**

There is an increased utilization of a national testing agency for licensure and credentialing. Do your students take this exam while they are still students? When are these exams given? What are your outcomes in terms of passing and failures? Are these results better than previous exams? What is the level of involvement of your school with this exam? Most of the exams utilize dentoforms as part of the testing. Is your school preparing your students to pass this exam? If yes, how?

BU: No responses noted

CLMB: Seniors take the NERB CIF examination, the simulated exam in the fall and the clinical exam in the spring semester. 100% of our students have successfully passed the NERB examination by May of the senior year. This is significantly better than with the previous format. We are involved in the preparation of this examination to the extent that all schools participate in an educators meeting with the NERB annually. Many of our students also take the WREB examination in the spring semester and are very successful. Preparation for the licensing examinations is accomplished through the use of mock board examinations about a month before each section, which also serve as additional competency examinations in the technique/disciplines covered on the licensure exams. In spite of the change in the New York State law that requires a one year postdoctoral residency rather than the NERB examination, and the fact that nearly 100% of our students go on to postdoctoral programs, most of the seniors opt to participate in the NERB examination (for licensure in adjoining states).

- CONN:** Our students take the licensing examination in the fall and winter of the fourth year (ADEX) Most pass the fall typodont examination the first time and about 80% pass the winter clinical examination. Recently, more have failed the winter clinical exam than when the exam was given in the spring. We provide a mock clinical exam a month before the actual winter clinical examination. We have proficiency test cases that include the clinical procedures that our students are tested on during the ADEX examination. The prosthetic and endodontic divisions have proficiency test cases that the students need to pass that are similar to the exercises that they perform for the ADEX typodont examination.
- DAL:** Our students take the NDEB and the NERB. Students are using dentiforms for all four years of dental school. There are no formal classes set to address these exams, however, through clinical and preclinical competencies students are well prepared. Dalhousie has always been a test site for the NDEB and has recently started providing the NERB exam for our students. Involvement of the faculty is very limited in both of these examinations.
- HARV:** No responses noted
- HOW:** No responses noted
- LAV:** No responses noted
- UMD:** No responses noted
- MCG:** No responses noted
- MTRL:** No responses noted
- UMNJ:** Our students take the NERB examination. Sophomore students act as runners for the Mock Board examination and Juniors are given a manikin mock board with ivory teeth with a random amount of decay. Pictures are taken of all preparations and restorations and are reviewed with the students. Seniors are given patient mock boards one month prior to the NERB exam and must pass to qualify.
- NYU:** Seniors take the licensing examination when they are still students if they are certified by the Dean. They take the NERB, WREB and Florida Board Examinations. The Northeast Regional Board (NERB) is taken in the Curriculum Integrated Format (CIF), the WREB is given in March or April, Florida is given in March. Approximately 95% of our students have passed the NERB by May, 80% have passed the WREB, and 90% have passed the Florida Boards (Over the last two years). These outcomes have been approximately the same year to year. We provide an elective licensing examination prep course that meets on Fridays during senior students free time. All areas of the exam are reviewed. Dentiforms: Nerb uses Columbia models, WREB uses a model for the Endo natural tooth section (no C&B), Florida uses a Columbia model. All procedures are covered during the elective licensing course. In the summer prior to the senior year all students are given a mandatory manikin prep course geared for the NERB. It also provides a review for prosthodontics for the three unit bridge.

- PENN:** We participate in the ADEX exam for fixed prosthodontics and endodontics. Our students take this exam in the fall of their senior year. Last year we had a 1% failure rate. Our school takes an active part in preparing our students for this exam. Practice sessions are conducted during the spring of the students junior year on the mannikin head with dentoforms. During the summer between the junior and senior years, the fixed prosthodontic OSCE exam is given to students that were not successful during the clinical competency exam. The ADEX exam follows in early fall of the students senior year. For the restorative clinical component of the exam, the students are encouraged to practice on their own and need to perform and pass a clinical competency exam for the amalgam and composite on a patient prior to the examination. Formal practice or "mock board exam" is currently not being done.
- SUNY:** Is there an increased utilization of national testing ? We have not changed our usage of Part I and Part II of the National Boards. The utilization of the NERB exam may decrease if students elect to do residencies.
- TEMP:** We participate in the National Boards, NERB and WREB. There is preparation for all except the WREB. The curriculum integrated format has produced better results than the previous format. We prepare the students through lectures and mock exams.
- TORO:** The National Dental Examining Board (NDEP) of Canada is taken within three months of graduation (generally in March). You cannot receive a Canadian License without passing this examination. There is no involvement by the schools except all participate in providing expertise for the exam development. The examination has two parts, a multiple choice exam and an OSCE examination (No clinical practical, no dentiform). We provide no specific preparation for students and the specific outcomes for schools are not provided
- TUFT:** No responses noted
- USN:** No responses noted

III. Dual-arch Impressions

Dual-arch impressions are a very popular technique, but some faculty are reluctant to use this technique although literature supports the usage. Is your school using dual-arch impressions (triple tray) for single tooth restorations, quadrant trays or full-arch? What type of dual-arch impression trays are used? What departments/sections utilize this technique? If dual-arch impression trays are used, what guidelines are recommended?

- BU:** No responses noted
- CLMB:** Dual arch impressions are not used at our school. Quadrant trays with opposing quadrant impressions (mounted in a dilok tray) are used in operative

dentistry for indirect gold only restorations, for a single tooth in a fully dentate patient.

- CONN:** We use full arch and dual arch impressions. Prosthetics teaches full arch, operative teaches both full and dual arch techniques. We utilize dual arch impressions for single posterior crowns excluding the last tooth in the arch.
- DAL:** Dual arch impressions are used with single units and post/cores. There must be a terminal occlusal contact distal to the prepared unit. The lab technician pours the #1 die so as not to damage the impression surface. Students trim the #1 die and the lab technician pours and mounts/articulates the casts
- HARV:** No responses noted
- HOW:** No responses noted
- LAV:** No responses noted
- UMD:** No responses noted
- MCG:** No responses noted
- MTRL:** No responses noted
- UMNJ:** We only use full arch impressions.
- NYU:** Dual arch impressions are not used at our school.
- PENN:** The policy at the University of Pennsylvania is to use custom trays for all final impressions. Opposing arches may be in full arch stock trays. Dual impressions are not used in the clinic.
- SUNY:** Dual arch impressions are not advocated in our school, even for single units. This is universally accepted by our department.
- TEMP:** We do not use dual arch impressions with some exceptions. We will use a stock quadrant tray if a patient cannot tolerate a full arch impression. Full arch trays are used commonly in Operative and Prosthodontics.
- TORO:** We do not use dual arch impressions and no departments recommend this technique. We prefer full arch special trays.
- TUFT:** No responses noted
- USN:** No responses noted

IV. Vital Pulp Therapy (Indirect/direct pulp capping)
(This topic is being revisited - refer to 1999 CODE Regional Reports)

Is your school policy accepted by all disciplines? Do you incorporate vital pulp therapy exercises in your preclinical operative curriculum? Are you in agreement with treatment approaches taught in Endodontics? Pedodontics? Prosthodontics?

BU: No responses noted

CLMB: We teach direct pulp capping techniques on very small carious exposures on vital teeth. We do teach indirect pulp capping techniques in operative dentistry on vital asymptomatic carious lesions approaching the pulp. Pediatric dentistry does the same. No prosthodontic procedures are done on these teeth. There is not unanimity in this approach (endodontics). (The NERB examination accepts vital pulp therapy for small carious or mechanical exposures prior to placing the restoration.)

CONN: Vital pulp therapy is not incorporated into the operative curriculum. This policy is accepted by all disciplines, Pedodontics and Prosthodontics). We are not in agreement with all treatment approached taught in endodontics.

DAL: Vital pulp therapy is taught in the first and second year preclinical curriculum. This is not accepted by all disciplines. We do agree with treatment approaches taught in endodontics.

HARV: No responses noted

HOW: No responses noted

LAV: No responses noted

UMD: No responses noted

MCG: No responses noted

MTRL: No responses noted

UMNJ: We do incorporate vital pulp therapy in preclinical operative. This policy is not accepted by all disciplines and we do not agree with the treatment approaches taught by endodontics.

NYU: Direct pulp capping is not permitted except in certain circumstances in the pediatric dentistry clinic. Indirect pulp capping is permitted on asymptomatic vital teeth in the general clinic. This protocol is not well received by the Endodontic department.

PENN: Vital pulp therapy is covered didactically in the preclinical operative dentistry course. The treatment modality for a direct pulp cap is in agreement with other departments within the school. Currently, the protocol is that no caries is to be left in the tooth being restored. If caries is removed and a small mechanical exposure occurs in a good isolated field, direct pulp cap treatment may be done with the understanding that future endodontic therapy must be

discussed with the patient. Indirect pulp capping procedures are not currently being taught or done at our school

SUNY: We are fortunate that in our school vital pulp therapy is agreed upon by all disciplines (endo, oper, pedo, pros). The technique is taught in preclinical operative.

TEMP: Vital pulp capping therapy is taught only in lecture. This policy is accepted by all disciplines but prosthodontics would more likely do endodontics.

TORO: Vital pulp therapy is taught. Basically there is agreement. Prosthodontics does not teach this technique. The only contentious area is the tendency for endodontics to call all pulpitis irreversible.

TUFT: No responses noted

USN: No responses noted

V. Restoration of Implants

What experiences are provided to your students in the restoration of implants?

Do your students have the opportunities to PLACE implants (surgical phase) and/or do the second stage surgery to uncover them (after integration)?

Who/what departments/sections are supervising the restoration of implants?

What training is provided to the faculty?

BU: No responses noted

CLMB: Implant restorations are taught in the second year Prosthodontic preclinical simulation laboratory course. Lectures are given by Prosthodontics, Periodontics and Oral Surgery Faculty during the didactic phase. Implant restorative technique is simulated on dentofrom models that have the implant fixtures already imbedded. Students complete a single tooth implant restoration and an implant overdenture in the preclinical course. In the clinic students must identify, treatment plan, and work up two cases, a implant supported single tooth or a three unit bridge and an implant overdenture case. In senior year students must complete at least one implant overdenture and one implant supported single tooth or three unit bridge as part of required implant competencies and be present to assist in the surgical phase. Surgical procedures are completed in postdoctoral periodontics or postdoctoral oral surgery. Cases are managed by generalist and prosthodontic faculty in the third and fourth year clinics. Faculty are trained in weekly lunch and learn seminars conducted by the prosthodontic, periodontic and OMFS faculty.

CONN: Students can restore single tooth implants (can assist in the surgical placement) and are allowed to provide implant supported lower complete dentures. The periodontics department supervises the restoration of implants. The faculty are provided no separate training.

- DAL:** Students receive training via implant placement and restoration lectures. They are supervised by the Department of Dental Clinical Sciences, full and part time faculty. Faculty training is received from Nobel Biocare.
- HARV:** No responses noted
- HOW:** No responses noted
- LAV:** No responses noted
- UMD:** No responses noted
- MCG:** No responses noted
- MTRL:** No responses noted
- UMNJ:** There is a one month sophomore lab course, and a twelve hour didactic course in the junior year. There is a one restoration minimum requirement for graduation, supervised by the prosthodontic faculty. Prosthodontic faculty have been trained at various places including Nobel Biocare.
- NYU:** Simulation training: students are taught single tooth implants in the prosthetics simulation lab and overdenture implants in the complete denture simulation lab. Students receive Columbia Dentoform models with the implants already inserted for both the single tooth and the overdenture exercise. This is followed by required clinical experiences. There are two types of implant experiences that every student is expected to complete. At least one single tooth implant using the Nobel Biocare Replace Select System and a lower overdenture using Zest locator attachments. All surgical procedures are performed in either periodontics, oral surgery or the implant clinics. The restorative procedures are supervised in the general clinic with generalist faculty. Faculty training: several years ago the prosthetics department held numerous sessions through our Faculty Staff Development Committee. Faculty were standardized and calibrated. Yearly ongoing refreshers as well as a repeat of the initial training sessions are offered periodically to accommodate new faculty.
- PENN:** Students do have an opportunity to gain experience in implant restorations. Students do not have an opportunity to place or uncover implants. The Department of Preventive and Restorative Sciences is responsible for supervising the restoration of implants. Training for faculty occurs during lunch and learn sessions offered and also by continuing education courses offered.
- SUNY:** Our students receive experience in restoring dental implants. Every graduating student will have restored a single implant or simple overdenture. Our students are limited to single units, simple three unit bridges and simple overdentures. The Department of General Dentistry supervises the restoration of implants. In order to cover these restorations you need approval of the Department Chair.

TEMP: Introduction in the preclinical course is in a planning stage. Seniors get numerous lectures in advanced restorative dentistry and hands on laboratory exercises in implant restoration. In the clinic, cases by case, supervised by faculty who have experience in implant restoration. The Periodontics department has responsibility for supervision. Faculty are trained in a full day lecture/hands-on laboratory experience.

TORO: Implants are taught by Prosthodontics. There is a preclinical course in the second year. Approximately 50% of students restore implants clinically in the Comprehensive Care Program.

TUFT: No responses noted

USN: No responses noted

VI. Electronic Patient Records

Does your school use an electronic patient record (EPR)?
If yes, which EPR system do you use?
Please list the pros and cons of your school's EPR system.

BU: No responses noted

CLMB: We are in the very early planning phase of preparing for the transition to electronic patient records.

CONN: We do not use the electronic patient record.

DAL: We do not utilize the electronic patient record.

HARV: No responses noted

HOW: No responses noted

LAV: No responses noted

UMD: No responses noted

MCG: No responses noted

MTRL: No responses noted

UMNJ: We do not use the electronic patient record.

NYU: We do not use electronic patient records at this time.

PENN: Currently one clinic is using the electronic patient record system as a pilot study.

SUNY: Our school uses the Axium system which is totally paperless. Our experience has been favorable, however there is a difficult transition period which takes away from clinic time. Additional support staff is also required.

TEMP: The electronic patient record is used in the Periodontic and AEGD clinics. The Axium system is used. The system is new and there are no available outcomes reports as yet.

TORO: Yes. Axium is used. A pilot program was used initially for one term with one group of eight students. This helped us identify potential problems and prevented them from being multiplied. The benefits of the system are that supervisors are readily identified, all are readable and the staff can access patient records from the office

TUFT: No responses noted

USN: No responses noted

Does your school use digital radiography as the primary radiographic imaging system?
(*Expanded topic - refer to 2006 CODE Regional Reports*)
If so, which software do you use for digital radiographs?
Is the digital radiographic system integrated into the EPR?
Please list the pros and cons of your experiences with digital radiography.

BU: No responses noted

CLMB: We do not use digital radiology as our main system. It is utilized in the postdoctoral Endodontics clinic and the images are available only within that system.

CONN: No responses noted

DAL: No responses noted

HARV: No responses noted

HOW: No responses noted

LAV: No responses noted

UMD: No responses noted

MCG: No responses noted

MTRL: No responses noted

UMNJ: No responses noted

NYU: No responses noted

PENN: We do not use digital radiology as our primary imaging system.

SUNY: No responses noted

TEMP: Digital radiology is not utilized as the primary imaging system

TORO: No responses noted

TUFT: No responses noted

USN: No responses noted

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.

The regional CODE meeting was held on Wednesday, Thursday and Friday, October 3, 4, and 5, 2007 in New York City.

The first session on Wednesday was devoted to a presentation and discussion concerning Caries management by risk assessment (CaMBRA).

Participating were representatives from New York University, Columbia University, the University of Medicine and Dentistry of New Jersey, Indiana University, the University of Connecticut, Dalhousie University, Stonybrook, the University of Pennsylvania, Temple University, Boston University,

Howard University, the Northeast Regional Board of Dental Examiners and the Western Regional Board of Dental Examiners.

The presentations and discussion included the following topics:

1. Framing the problem: Why do our students have so much difficulty diagnosing the presence of caries?, led by Dr. Mark Wolff.
2. How NYU has incorporated CaMBRA into their Cariology program, led by Dr. James Kaim
3. Caries - from the WREB perspective; what needs to be removed (caries); how do the check and how examiners are calibrated, led by Dr. Bruce Horn.
4. Caries - from the NERB perspective ; what needs to be removed (caries); how do they check and how examiners are caliobrated, led by Dr. Peter Yaman.
5. A discussion between the WREB, NERB and Dental School faculty representatives regarding Caries identification, excavation, what is appropriate and what is recommended.
6. A discussion regarding the barriers to consensus and where the schools, profession and licensing agencies go from here.

A full report on the proceeding will be made available within the coming months.

Suggestions for CODE.

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

- Other comments/suggestions?

CODE REGIONAL MEETING REPORT FORM

REGION: VI (Southeast)

LOCATION AND DATE OF MEETING:

Condado Plaza Hotel
San Juan, Puerto Rico

November 7-9, 2007

CHAIRPERSON:

Name: Dr. Jose Matos

Phone #: 787-785-2525x2389

Address: University of Puerto Rico

Fax #: 787-771-9551

San Juan, Puerto Rico 00936-5067

E-mail: jmatos@rcm.upr.edu

List of Attendees:

Please see reverse of this page for List of Attendees to 2007 Regional Meeting

Suggested Agenda Items for Next Year:

To be provided later

LOCATION & DATE OF NEXT REGIONAL MEETING:

Name: Dr. Kevin Frazier

Phone #: 706-721-2881

Address: Medical College of Georgia

Fax #: 706-721-8349

School of Dentistry

E-mail : kfrazier@mail.mcg.edu

Augusta, Georgia 30912-1260

Date: October 22-24, 2008

Please return all completed enclosures to Dr. Larry D. Haisch, National Director, UNMC College of Dentistry;

40th and Holdrege Streets; Lincoln, NE 68583-0750.

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 |
|--------------------|-------------------|-----------------------|--------------|-----------------------------|
| Paul Blaser | Florida | 352-273-5850 | 352-846-1643 | pblaser@dental.ufl.edu |
| Mark Davis | Florida | 352-273-5844 | 352-846-1643 | medavis@dental.ufl.edu |
| Marc Ottenga | Florida | 352-273-5854 | 352-846-1643 | mottenga@dental.ufl.edu |
| Henry L. Young, Jr | Meharry | 615-327-6082 | 615-327-6113 | hyoung@mmc.edu |
| Kevin Frazier | MCG | 706-721-2881 | 706-721-8349 | kfrazier@mcg.edu |
| Jane Casada | Louisville | 502-852-1247 | 502-852-1220 | jpcasa01@louisville.edu |
| Gary Crim | Louisville | 502-852-1303 | 502-852-3364 | gacrim01@louisvill.edu |
| Michael Yacko | Meharry | 615-327-5321 | 615-231-6339 | michael.yacko@med.va.gov |
| Juan Agosto | Puerto Rico | 787-758-2525 x1150 | 787-751-9551 | jagosto@rcm.upr.edu |
| Jose Matos | Puerto Rico | 787-758-2525 x2201 | 787-751-9551 | jamtos@rem.upr.edu |
| Phyllis Filker | NOVA | 954-262-1628 | 954-262-1782 | filker@nova.edu |
| James S. Knight | South Carolina | 843-792-3763 | 843-792-2847 | knightjs@musc.edu |
| Vincent Sawicki | VCU | 804-828-2977 | 804-828-3159 | sawickiva@vcu.edu |
| Lee Boushell | North Carolina | 919-966-2776 | 919-966-5660 | Boushelle@dentistry.unc.edu |
| Richard S. Callan | MCG | 706-721-2811 | 706-721-8349 | rcallan@mcg.edu |
| Robert Kovarik | Kentucky | 859-257-5995 | 859-323-9136 | rekova2@uky.edu |
| Don Antonson | NOVA | 954-262-1752 | 954-262-1782 | antonson@nova.edu |
| Marianna Pasciuta | NOVA | 954-262-7383 | 954-262-1782 | pasciuta@nova.edu |
| Larry D. Haisch | National Director | 402-472-1290 | 402-472-5290 | lhaisch@unmc.edu |
| Divya Colon | Puerto Rica | 787-758-2525 x1150 | 787-771-9551 | dcolon@rcm.upr.edu |
| Arnaldo Guzman | Puerto Rica | 787-758-2525 2386 | 787-771-9551 | ajguzman@rcm.upr.edu |
| Darrell Hillman | Puerto Rico | 787-758-2525 x1150 | 787-771-9551 | dhillman@rcm.upr.edu |
| Lorna Rodriguez | Puerto Rico | 787-758-2525 x2201 | 787-771-9551 | lornarodriguez@rcm.upr.edu |
| Salvador Salivia | Puerto Rico | 787-758-2525 c1150 | 787-771-9551 | ssalivia@rcm.upr.edu |
| Arlene Sanchez | Puerto Rico | 787-758-2525 x1010 | 787-754-4446 | arsanchez@rcm.upr.edu |
| Erika Sachno | VCU | 804-828-2977 | 804-828-3159 | easachno@vcu.edu |

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

(Editor note: Questions condensed for printing purposes)

I. Teaching Dental Biomaterials in North American Dental Schools

- Six out of 10 responding schools have a department or division of a department dedicated to teaching Dental Materials, Dental Biomaterials, or Material Science. Two are separate departments; the other 4 are part of restorative, operative, or fixed prosthodontics.
- Nine of 10 responding schools have one full-time faculty in their DBM department / section. Most have other full-time faculty and some part-time faculty assist with teaching.
- DBM is taught on some level during all four years at most schools. The emphasis for teaching appears to occur in the third year.
- The most common scenario is for DBM to be taught as part of other courses (e.g. restorative and prosthodontics in addition to being taught in a separate course.
- Six of 10 schools claimed a curriculum revision and the importance level remained approximately the same overall with an average of 3/5.
- Seven of ten responding schools attempt to make an effort to integrate DBM in the clinical curriculum during patient appointments by individual faculty interactions and with manufacturer seminars.
- Six of 10 responding schools were satisfied with the time / effort for teaching DBM. The changes recommended included- more time, earlier exposure, more clinical correlation, and the creation of a separate course.

II. National Testing Agency for Licensure and Credentialing.

Not all of our state dental boards use ADEX or even one of the large regional testing agencies for credentialing. For example North Carolina and Florida offer their own state dental board exams. Other regional agencies that test in our CODE Region include SRTA, WREB, NERB, and CITA. ADEX is the only exam recognized by Georgia. All states report that students take the exam while still in school when it is an option. The results with ADEX in Georgia are about the same as they were with SRTA. All schools have Mock Boards and other board preparation courses.

III. Dual-arch Impressions

Currently, the two Florida schools are the only ones that use a dual-arch impression technique for single crowns as a standard alternative to full-arch impressions. Other schools describe exceptions but they are rare. One school is just beginning to use them.

IV. Vital Pulp Therapy (Indirect/direct pulp capping)

Most schools have a pulp-capping exercise in their pre-clinical curriculum and most are in agreement with the treatment approach used in other disciplines with some exceptions that are described (e.g. an Endodontic Department that does not agree with indirect pulp caps and a Prosthodontic Department that recommends root canal treatment when there is pulpal encroachment).

V. Restoration of Implants

While most schools do not have opportunities for pre-doctoral students to place implants surgically, most do allow or require their students to restore them (in Prosthodontics).

VI. Electronic Patient Records

Four schools do not use EPR's at this time, four schools use Axium, and two schools use something else. The pros include uniformity, ready record access at multiple locations and the incorporation of digital radiographs. Cons include expense, occasional down-times for server maintenance, poorly detailed odontograms for charting, and training required. Digital radiographs are used in all schools with EPR's and the most common complaint is concerned with decreased diagnostic quality compared to conventional techniques.

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. 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 (7/11) described various changes affecting their operative curricula as follows- Adding: CEREC, a new caries risk assessment program, more pre-clinical exercises on natural teeth, clinical student self-evaluations, single castings, and Virtual Reality simulators. Deleting: hours in biomaterials and esthetics, gold foil and castings, a traditional operative textbook, and Virtual Reality simulators. No consensus opinion is evident here except that Operative has a unique identity and purpose in our schools.

- 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?**

The time gap range is one month to one year with an average delay of approximately one semester between pre-clinic and clinic. There is a general concern about the erosion of knowledge and skills with self-study and manikin practice being used to preserve their pre-

clinical training.

3. **When a student is doing an operative procedure on a patient and has a question concerning material selection or technique protocol, do they have ready access to an independent reference for the information such as a clinic procedure manual? If you have such a reference, what is its format- printed, clinic computer work station, web-based, or contained on a student's PDA or i-Pod type device? Does the independent reference help standardize your student clinic practice considering that some schools have a wide range of faculty providing clinical operative supervision (Full-time, Part-time, faculty from other departments)?**

Most of our schools (7/11) do not have a specific clinic procedure manual for Operative procedures and protocols. Of those that do, the manuals are available in hard and electronic versions. Due to the low numbers, limited information is available on their usefulness as a faculty training or standardization tool.

4. **Does your school have Bio-clinical or Problem-based learning seminars for the students? What department(s) is/are responsible for them? If these activities are not directed by operative or restorative faculty, do any of your operative or restorative faculty regularly participate in them as part of an interdisciplinary teaching team?**

About half (6/11) schools have PBL seminars and they are both interdisciplinary and operative/restorative directed.

5. **How many continuing education courses sponsored by your school are DIRECTED by operative / restorative faculty? What percentage of your operative / restorative faculty regularly participate (at least once every 2 years) in CE courses as PROVIDERS?**

All schools reported that that operative faculty provide CE. The range is 1 to 25 courses given/directed by operative/restorative faculty with percentage involvement ranging from less than 10% to 50%.

6. **Describe any "faculty development" practices or initiatives that your school or department uses or have recently implemented to enhance the abilities, effectiveness, and /or morale of your faculty.**

All schools reported some development practices including: retreats, lectures, lunch-n-learns, study clubs, travel funding, informal mentorships, promotion and tenure counseling, and formal development programs.

Suggestions for CODE.

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

- Other comments/suggestions?

2007 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 |

2007 NATIONAL CODE AGENDA

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

I. Teaching Dental Biomaterials in North American Dental Schools

The following questions were provided by the ADEA Section on Operative Dentistry and Biomaterials. The responses will be presented as part of this section's program at the 2008 ADEA Meeting in Dallas. Be as specific as possible although multiple answers may be appropriate in some cases. Please add appropriate comments to further explain your answers as needed for clarity or elaboration.

- A. Does your school have a distinct academic entity known as Dental Biomaterials (DBM) or other similar title for this subject (*Dental Materials, etc.*)?
- Yes or No
 - If yes, what is it called?
 - If yes, classify it per your school's organizational scheme - Department, Division, Section, Other (*explain*).
 - If it is a subset of another department, identify the department.

UAB: No responses noted

UFL: We have a distinct department level entity known as the "Department of Dental Biomechanics."

MCG: Yes. Dental Materials. Department - Section. Oral Rehabilitation

UKY: No. The single dental biomaterials faculty member is a member of the Division of Restorative Dentistry, Department of Oral Health Practice.

ULVL: No.

- MMC:** Yes. Dental material. Department of Restorative Dentistry.
- UNC:** Yes, it is called Dental Materials. Organizational scheme - Department of Operative Dentistry.
- NOVA:** We have a Dental Biomaterials program which is a division of Fixed Prosthodontics.
- UPR:** No.
- MUSC:** Yes, Materials Science Department.
- VCU:** No

- B. How many full-time faculty teach DBM at your school as their primary teaching responsibility?
 How many full-time faculty co-teach DBM at your school as part of their teaching responsibility?
 How many part-time faculty teach or co-teach DBM at your school?

- UAB:** No responses noted
- UFL:** The Department is made up of three full-time faculty members that are Tenure Full Professors.
- MCG:** 1 FT faculty; 10 co-teach.
- UKY:** 1 FT, 4 co-teach, 1 PT.
- ULVL:** 1 FT, 1 co-teach.
- MMC:** 1 FT, 12 co-teach.
- UNC:** 1 full time instructor who is called the section head for biomaterials. No co-teach, no part-time.
- NOVA:** The Dental Biomaterials Division is headed by a full time director. The Dental Biomaterials director oversees 7 full time and 2 part-time co-instructors.
- UPR:** 1 FT, 2 co-teach, no PT.
- MUSC:** One full – time and one part–time, 3-5 full time faculty, 3-5 adjunct faculty
- VCU:** 1 FT

- C. When in the curriculum is DBM taught?
(Indicate all that apply if taught in more than one year.)

- Freshman year
- Sophomore year
- Junior year
- Senior year

UAB: No responses noted

UFL: The DBM curriculum is taught in all four years of the pre-doctoral program.

MCG: Freshman year – Yes (part of Operative)
 Sophomore year – Yes (part of Prosthodontics)
 Junior year – Yes as Separate Course (fall)
 Senior Year – Yes, 2 lectures seminar course (light – curing and resins)

UKY: Freshman year – small sections of multiple courses
 Sophomore year – small sections of multiple courses
 The main dental materials course is taught in the 3rd year curriculum,
 however dental materials is also taught in each restorative course as needed in
 all years

ULVL: Freshman year – Yes
 Sophomore year – Yes
 Junior year – Yes
 Senior year – Yes

MMC: Freshman year – Yes
 Sophomore year – Yes
 Junior year – Yes
 Senior year – Yes

UNC: Freshman year – Yes
 Sophomore year – Yes
 Junior year – Yes
 Senior year – Yes
 Graduate Level also

NOVA: Freshman year – Yes
 Sophomore year – Yes
 Junior year – Yes
 Senior year – Yes

UPR: It is taught throughout the four years.

MUSC: Freshman year – MATSC I – Foundation
 Junior year – MATSC II – Theory / Testing
 Senior year – MATCS III – Clinical Applications

VCU: In all four years, in some fashion or another.

D. How is DBM (*specifically*) taught at your school?

- Separate Course(s) only

- Part of another Course or Courses only
- Combination (*Both as a separate introductory course, AND as part of other courses e.g. Operative Dentistry, and/or Prosthodontics, and/or Bio-clinical Seminars*)
- Other (*Describe*)

- UAB:** No responses noted
- UFL:** The material for 1st and 2nd year students is integrated into courses taught by the Operative and Prosthodontic Departments. In the 3rd year, one-on-one sessions are provided. In the 4th year small seminar group sessions are offered.
- MCG:** Separate Course only – No
Part of another Course or Courses only – No
Combination (*Both as a separate introductory course, AND as part of other courses e.g. Operative Dentistry, and/or Prosthodontics, and/or Bio-clinical Seminars*) – Yes, described above.
- UKY:** It is taught as a combination as part of other courses and as a separate course.
- ULVL:** Separate Course only – No
Part of another Course or Courses only – Yes
Combination - No
- MMC:** Combination (*Both as a separate introductory course, AND as part of other courses e.g. Operative Dentistry, and/or Prosthodontics, and/or Bio-clinical Seminars*)
- UNC:** Separate Course only – During the freshman year
Part of another Course or Courses only – Part of Conservative Operative Dentistry Course (Department of Operative Dentistry) and Fixed Prosthodontics Course (Department of Prosthodontics)
Combination – Taught in concert with Clinical Conferences with Senior Dental students.
Other – Graduate Operative and Graduate Prosthodontics
- NOVA:** The DBM curriculum is taught in both the freshman and sophomore years.
- UPR:** It is taught as part of other courses e.g. Anatomy and Occlusion, Operative Dentistry, Removable and Fixed Prosthodontics among others.
- MUSC:** Combination (*Both as separate courses listed above, AND some dental materials instruction is included as part of other courses e.g. Operative Dentistry, and/or Prosthodontics, and/or Bio-clinical Seminars*)
- VCU:** It is a part of several courses.

- E. What format, setting and method is used to teach DBM at your school?
(Indicate all that apply if a combination of formats is used.)
- Lecture (*whole class*)
 - Laboratory (*hands-on*)
 - Clinic (*with patients present*)
 - Seminar (*small groups, ≥10 students*)
 - Individual or very small groups (*1-5 students*) with an instructor
 - Individual (*Self-instructional learning via CD or DVD*)
 - Individual (*Self-instructional learning via web-based program*)
 - Textbook (*Provide the name of the book*)
 - School-produced DBM Manual

UAB: No responses noted

UFL: The following formats are used to teach DBM:
Lectures (whole class) for freshman and sophomore years; Laboratory (hands-on) for Junior one-on-one sessions; Seminar (small groups – 10 students) for seniors; Individual (the one-on-one sessions previously mentioned); Individual web –based material is integrated into other offerings. The textbook used is “Phillips Science of Dental Materials” by Anusavice (Chairman of DBM).

MCG: Lecture: yes; Laboratory: Yes; Clinic: No; Hands-on Lab includes mini-seminars as well; No individual instruction; We provide our own course manual that is updated yearly.

UKY: The course is a lecture-type course and uses a school – produced DBM manual. The course is on the web via the Blackboard platform. All handouts and slides can be accessed via Blackboard. Quizzes are taken on Blackboard.

ULVL: Lectures: yes; No labs, clinics, seminars or individual instruction. The textbook is Craig’s Restorative Dental Materials. We do not use a school produced DBM manual.

MMC: Lectures: whole class; Laboratory: hands-on; Clinical with patients present; Small group (a0 students) seminars; Individual or very small groups (1-5 students) with an instructor.

UNC: Lectures: yes, Dental Hygiene Students; Laboratory: graduate students; Clinic: yes; No seminars; web-based materials available for self-study; We use journal articles for textbook use. We do not use a school-produced DBM manual.

NOVA: The format for the DBM courses in both freshman and sophomore years are one hour of lecture and then small group seminars in the laboratory with a hands-on component.

UPR: Is taught by means of Lectures, Laboratories, Clinics, Textbooks, Individual or Small Group Seminars, CD or DVD’s, web based programs. Textbook: “Phillips Science of Dental Materials” by Anusavice.

MUSC: Lecture: yes; Laboratory: working on implementing this; Clinic: No; Seminars: yes; Textbook: "Dental Materials and their Selection," - William O'Brien.

VCU: Lecture, laboratory, seminars.

F. Did your school experience a curricular revision during the last 7 years? If yes, on a scale of 1 to 5 (*1 is less important and 5 is highly important*) rate the level of importance given to DBM SINCE the curricular revision at your school. Was this rating an increase or decrease compared to DBM's status before the revision?

UAB: No responses noted

UFL: Seven years ago our school underwent a major clinical revision, migrating to a "Stream Methodology" for the 1st and 2nd year curriculum. The importance of DBM is very important at the 4-5 level. The importance was essentially unchanged from the previous curriculum model.

MCG: No.

UKY: No. A curriculum revision that would have decreased the hours given the 3rd year course by approximately one-third has been proposed. It is not clear whether that revision is going forward.

ULVL: No.

MMC: Yes. +3.

UNC: No.

NOVA: The DBM curriculum was totally revised in the last 7 years giving it a separate division and basically taking it from a level 1 in importance to a level 5.

UPR: Yes. 1, decrease (less time).

MUSC: Yes. 5, increase.

VCU: Yes, we are undergoing a curricular revision at the present. Was at level 3, will probably remain at 3 or slip to 2. I can't see it increasing in importance. However we are in the process of adding a new wing to the school which will contain a new center for research. Speculation is that DBM will have a front seat.

G. Does your school make a specific effort to integrate the science of DBM into the clinical curriculum? If yes, please describe how you try to accomplish this?

UAB: No responses noted

- UFL:** Though efforts were made in the past, our school does not make a specific effort to integrate DBM into the clinical curriculum at this time.
- MCG:** No. Junior Operative Dentistry course covers materials/techniques used in the clinic concurrent with the student's entering the clinical experience.
- UKY:** Yes. Clinical faculty reinforce dental materials concepts during preclinical and clinical courses. The dental materials faculty member updates clinical faculty on recent advances in materials via email, sharing of articles, conversations, and presentations during staff meetings. Several clinical faculty have advanced training that includes dental biomaterials. The dental biomaterials faculty member rates the full-time faculty as very knowledgeable and reasonably up-to-date on dental biomaterials. He does not have a good sense on whether part-time faculty are up-to-date.
- ULVL:** Yes. Junior Operative Dentistry course covers materials/techniques used in the clinic concurrent with the student's entering the clinical experience.
- MMC:** Yes. During patient treatment on clinic floors.
- UNC:** Yes, via lecture/lab and discussions during procedures.
- NOVA:** The integration of DBM into clinical curriculum is done on an individual basis with instructors quizzing students on all aspects of dental materials relevant to their procedures.
- UPR:** No.
- MUSC:** Yes. Trying to increase the quantity and quality of DBM instruction. New department chairman hired and dental research laboratory completely remodeled and improved.
- VCU:** DBM is a part of the clinical curriculum through ongoing seminars and presentations. Part-time faculty frequently introduce topics concerning DBM. Manufacturers are also frequently giving seminars regarding DBM.
- H. Are you satisfied with the overall time and effort allotted to teaching DBM at your school? Yes/No. If not, what would you change if you could?
- UAB:** No responses noted
- UFL:** Most faculty are satisfied with the overall time and effort devoted to DBM.
- MCG:** No. More time.
- UKY:** Yes. The current dental biomaterials faculty member is not a dentist. He feels that a dentist who is well-trained in materials science would more credibly deliver most of the dental biomaterials curriculum UK's current dental biomaterials faculty member will retire in 5-6 years. He believes that several of his clinical colleagues are capable of stepping into his teaching

role. Perhaps the optimum combination would be two individuals: 1) a clinical faculty member with materials science training and 2) a PhD biomaterial scientist. The latter would have some teaching responsibilities, but his major role would be to conduct, advise, and direct research on biomaterials.

ULVL: Yes

MMC: Yes

UNC: No, need early exposure to materials, structure and handling.

NOVA: The DBM division has been rallying for more lecture time. They would like to have two hours per week for lecture time rather than one.

UPR: No. Re-structure the curriculum by means of adding a separate DBM course.

MUSC: Yes.

VCU: Yes.

I. *Please provide any other comments or thoughts about this issue.*

UAB: No responses noted

UFL: I felt by some faculty, that efforts should be made to integrate DBM into the clinical curriculum, and into clinical faculty calibration and enrichment programs. This could be accomplished through seminars, lunch-in-learns, podcasts and web-based programs.

MCG: There needs to be much more communication among pre-clinical, clinical, and DBM course directors related to the specific materials used at our school. Consensus is needed to improve consistency throughout a student's education so they will not get confused about a product being used "here" but not "there".

UKY: Biomaterials research priorities at the NICDR have moved away from synthetic materials and towards biological biomaterials. The biomaterials scientist at UK believes that this swing in priorities, while appropriate to some extent, has gone too far. If greater priority is not given to synthetic biomaterials, the future of the type of biomaterials research that has the greatest relevance to clinical dentistry is dim. In his judgment, it will be synthetic biomaterials, not biological biomaterials that will continue to be most used in clinical dentistry for at least the next 20 years. Decisions by Colleges of Dentistry to hire Ph.D. biomaterials scientists into teaching positions need to be made in the context of the funding policies at NICDR. Clinical faculty need to make their voices heard on behalf of research priorities relevant to the needs of clinical dentistry.

ULVL: No responses noted.

MMC: No responses noted.

UNC: There is a great need for clinical faculty to engage students in the analysis/understanding of the materials they are using while treating their patients. Therefore, clinical faculty must have an accurate working knowledge of materials. Faculty calibration is essential.

NOVA: No responses noted.

UPR: No responses noted.

MUSC: No responses noted.

VCU: No responses noted.

II. National Testing Agency for Licensure and Credentialing.

There is an increased utilization of a national testing agency for licensure and credentialing. Do your students take this exam while they are still students? When are these exams given? What are your outcomes in terms of passing and failures? Are these results better than previous exams? What is the level of involvement of your school with this exam? Most of the exams utilize dentofoms as part of the testing. Is your school preparing your students to pass this exam? If yes, how?

UAB: No responses noted.

UFL: Florida has a State Agency administered examination for licensure and does not participate in any regional or national testing programs. Our school prepares our students for the Florida Licensure Examination with a “Mock Board Examination” in each of the Junior and Senior years. Our passing rate is near 100%.

MCG: We are part of ADEX. The test is administered at MCG by CRDTS since 2005-06. Our students take the Curriculum Integrated Format so testing begins in the Fall Semester of the senior year with crown preps on a dentoform and continues in the spring with the patient-based portion (Operative & Perio). Students take the computer-based portion on their own during their senior year as part of the CIF protocols. Our outcomes are about the same as they were with SRTA (90+% first-time pass). ADEX is the only test our seniors can take for licensure so we are completely involved with this exam. We start preparing the students for the test in the junior year with specific clinical competency exams on ADEX content (Class II Amalgam, etc.) followed by a year-long Mock Board Prep Course in the senior year with manikins and patients. We concentrate on the dentoform crown preps in the fall and on Operative & Perio in the spring (patient-based).

UKY: To our knowledge, there is no national testing agency for licensure. The ADEX exam was developed to be a national exam but “political squabbles” caused it not to be accepted in all states. Our students take SRTA and WREB

with a few Florida exam takers each year. Occasionally we have a student who wants to go to Georgia and they would have to take ADEX because that is the only exam they accept (last time I checked). Our students take the WREB exam in March or April depending on when we offer it. The SRTA is given in a two part format with the non-patient portion usually offered the last Saturday of January. Our pass rate ranges from 80 to 100% depending on the exam and the year. There has been no significant change in the pass rate due to the time of year it is given. We have staff and faculty who interact with the regional boards to help facilitate the exam when the examiners are in town and have also attended a few calibration exercises given by the testing agency (SRTA) in the past. Dentoforms are used on WREB for the endodontic portion of the exam and on SRTA for the fixed pros portion of the exam. We prepare students by a mandatory board preparation course, seminars on managing the paper work and time during the board exams, and a Mock Board Exam in November.

- ULVL:** N/A. We use SRTA and WREB exams, neither of which are national testing agencies.
- MMC:** No.
- UNC:** North Carolina has its own dental board of examiners and therefore we don't use any national testing agency. However, use of standardized exams have been incorporated in the curriculum because of the need to demonstrate to accreditation agencies that our students are capable of practicing independently by the time they graduate. UNC uses a written; case based Objective Standardized Clinical Exam (OSCE) that all students must pass. Those who do not pass are remediated until they can pass the exam. The exam is given in the 4th year and is designed to simulate an "average day in the office of a general dentist". All departments of the school approve the exam content and grading is on a curve. The results of the exam are used for core curriculum feedback
- NOVA:** No responses noted.
- UPR:** Yes, last year our students took the CITA examination. Our students take it during their first and second semester of their senior year. Outcomes are the same as with the previous examination. The School provides the facilities and personnel for the examination. Students are prepared for the exam by means of mock boards during the pre-clinical and clinical years.
- MUSC:** Our students take the regional licensure exams while they are still students. In 2006 the SRTA and ADEX exams were given at our school.
When are these exams given?
SRTA: Simulation exam – January 2008, Clinical exam – March 2008
ADEX: February 29 – March 2, 2008.
In 2006: SRTA 97% pass; 100% pass on first re-take.
ADEX 60% pass; 100% pass on first re-take.
SRTA: better than previous exams
ADEX: about the same as previous exams
Use school facilities. We provide ancillary help (runners, etc.). We provide

manikins and instruments. We actively participate as educators on SRTA advisory committee. Sometimes participate as observers during SRTA exam. Most of the exams utilize dentofoms as part of the testing. Yes. Mock board examination.

VCU: We are not yet involved with a national testing agency. Most of our students take the WREB and/or SRTA, some the NERB.

III. Dual-arch Impressions

Dual-arch impressions are a very popular technique, but some faculty are reluctant to use this technique although literature supports the usage. Is your school using dual-arch impressions (triple tray) for single tooth restorations, quadrant trays or full-arch? What type of dual-arch impression trays are used? What departments/sections utilize this technique? If dual-arch impression trays are used, what guidelines are recommended?

UAB: No responses noted.

UFL: Dual-arch impressions are used by the Department of Operative Dentistry for single tooth restorations. Quadrant trays are used. If two teeth in a quadrant are to be restored simultaneously, a full arch impression is made of both arches and a separate bite registration record is taken. The Pros. Department does not use dual-arch impressions.

MCG: Technically, we do not use Dual-arch impressions (aka Triple trays). We use quadrant and full-arch impression tray techniques exclusively. A “dual arch” technique is only used to mount quadrant impression-generated models.

Quadrant impressions are primarily indicated:

- for single posterior tooth crowns
- for single anterior tooth crowns without guidance present or needed
- when there are enough other teeth present to allow stable articulation,
- when the patient has canine guidance without balancing contacts.

Multiple single crowns, anterior crowns, and FPD’s require full-arch impressions.

UKY: We currently use only full arch impressions for crown and bridge procedures. A new policy for this academic year, allows students to use stock metal trays instead of custom trays as long as this has been approved in advance in the treatment sequencing conference (Treatment Sequencing 5C Form – meeting held with student in advance). Triple trays are used for an occasional single unit crown only at the request of an individual faculty member covering the student in clinic.

Here is the current UKCD policy:

Second Year Students

- All fixed prosthodontic (crowns and fixed partial dentures) impressions will be made with a custom tray. Students must have 2 custom trays for the arch.

Third & Fourth Year Students

- Impressions for survey crowns will be made with custom trays. Students must have 2 custom trays for the arch.
- Extension of trays should include relevant anatomical structures (i.e., retromolar pads, tuberosities) and extend gingivally at least 3 mm beyond the gingival margin.
- Impressions for fixed partial dentures will be made with custom trays. Students must have 2 custom trays for the arch.
- Impressions for up to 4 single units per arch may be made with a stock tray unless the 5C has specified a custom tray for the impression.
- Previous 5C’s routinely included language indicating a custom tray, so

until the new policy is reflected in subsequent 5C's, the team leader or covering restorative faculty member who reviews the 5C will make a final determination and write a note on the 5C accompanied by his/her signature.

- Impressions for implant-supported crowns are made with a metal stock tray.
- Metal stock trays are mandatory; plastic stock trays are not acceptable at this time.

ULVL: We use full-arch impressions, See accompanying literature.

MMC: No.

UNC: UNC Prosthodontics: The students have a preclinical lecture on dual arch impressions and have access in the student clinics for use when indicated.
UNC Operative Dentistry: There is no preclinical or clinical teaching of this technique.

NOVA: We are teaching the use of dual arch trays for single unit indirect restorations only (metal ceramic, onlays and inlays) in the Department of Prosthodontics. The requirements are that the tooth must be in occlusion with the opposing tooth and have both proximal teeth present. I believe we are using Clinicians Choice Quad Tray. It is the one that has aluminum reinforced rims. Seniors may use the triple tray after they have completed their requirements of at least 4 crowns or if a patient is difficult and it will increase the chances of a successful outcome.

UPR: No, we use full arch impressions on all cases.

MUSC: Use Full Arch. Used to use dual-arch trays for single units, but the lab did not handle them well and didn't like them. When they worked as intended, they were great. Some students did not handle them well and we saw cases that did not fit due to distortion.

VCU: We have just begun to use dual-arch impression techniques in the undergraduate clinic. The General Practice department spearheads this initiative, as prosthodontics recoils at the concept. Metal reinforced are preferred by some, but we are looking at a variety of possibilities. A standard guideline has not yet been established, but tooth position and Function will play a large role in this determination.

IV. Vital Pulp Therapy (Indirect/direct pulp capping)

(This topic is being revisited - refer to 1999 CODE Regional Reports)

Is your school policy accepted by all disciplines? Do you incorporate vital pulp therapy exercises in your preclinical operative curriculum? Are you in agreement with treatment approaches taught in Endodontics? Pedodontics? Prosthodontics?

- UAB:** No responses noted.
- UFL:** Our department policy is to employ indirect pulp caps on vital asymptomatic teeth, and direct pulp caps on vital asymptomatic teeth with small non-carious exposures. We have a vital pulp therapy exercise in preclinic. This policy is in agreement with treatment approaches taught in Pedodontics. The Department of Endodontics signed-off on our protocol, but is at odds with the procedure. The Department of Prosthodontics does not have an agreement among their faculty and has not signed-off on our protocol.
- MCG:** Yes to all parts of question.
- UKY:** Yes to all parts of question.
- ULVL:** Yes. Operative and Endo both teach that direct pulp capping should be done only with a mechanical exposure and that the success rate of direct pulp caps on carious exposures is not good. Calcium hydroxide is preferred over etching and bonding directly over the exposure. We note that there is a controversy and point out the disadvantage of calcium hydroxide, as it disappears over time and leaves a void. Indirect pulp therapy: Calcium hydroxide over a small remnant of caries directly over the pulp. Remove all other caries. Re-enter in 6-8 weeks and remove the remnant of decay and restore.
- MMC:** Yes to all parts of question.
- UNC:** Prosthodontics: Instruction leans toward RCT when there is pulpal encroachment. Success rates are in favor of RCT, however, current aggressive endo techniques compromise ability to restore and vital pulp therapy is being reconsidered.
 UNC Operative Dentistry: Lecture on indirect/direct pulp capping; however there are no preclinical exercises with this technique. Instructors teach on an individual basis in clinical setting.
 UNC Pediatric Dentistry: Vital Pulp Therapy is taught in lecture and clinic at pre-DDS and post-DDS levels. There are no pre-clinical exercises.
 UNC Endodontics: Vital Pulp Therapy is taught in principle, but do not have vital pulp therapy exercises. As for indirect pulp capping, our current stance is that, while this procedure may be performed for other reasons, there is no biological rationale for performing an indirect pulp cap (i.e. leaving infected or affected dentin).
- NOVA:** *At this time the operative curriculum includes a lecture on indirect and direct pulp capping.* We have incorporated a natural tooth exercise in preclinic which allows students to excavate deep decay and place bases. The Cariology and Restorative Department utilizes the following protocol for direct and indirect pulp capping. Treatment planning for these procedures is done on an individual basis. Pedodontics accepts the same policy but uses glass ionomer as the capping material.
- INDIRECT PULP CAPPING PROCEDURE:**
- Rubber dam isolation

- Enter the tooth initially with high speed hand piece. Remove all caries around the walls.
- Remove the infected dentin from the close proximity of pulp using a large round bur on a low speed hand piece or with a spoon excavator.
- Apply a thin layer of calcium hydroxide over the deepest area and light cure.
- Place glass ionomer lining over calcium hydroxide light cure.
- Complete the restoration with composite or amalgam.

DIRECT PULP CAPPING PROCEDURE:

- Rubber dam isolation
- Enter the tooth initially with high speed hand piece. Remove all caries around the walls.
- Remove the infected dentin from the close proximity of pulp using a large round bur on a low speed hand piece. Try to avoid pulp exposure.
- If the pulp is exposed and the exposure is less than 1 mm, then evaluate the condition of pulp.
- Wash the exposed site with sterile saline solution.
- Stop the bleeding with a sterile wet cotton pellet.
- Once bleeding is stopped, apply a layer of light cure calcium hydroxide over the exposed pulp and light cure.
- Place a layer of light cure glass ionomer over the calcium hydroxide and light cure.
- Complete the restoration with composite or amalgam.

DON'TS

- When using a low speed hand piece, work intermittently so that the pulp will not be over heated.
- When using a spoon excavator, move your instrument from the periphery to the center of the lesion.
- Don't do pulp capping when the exposure is more than 1mm.
- Don't do pulp capping on an inflamed pulp.
- Stop the bleeding completely. Never place calcium hydroxide on a bleeding pulp.
- Apply the calcium hydroxide gently. Don't condense the material over the exposed pulp, but make sure that the material is in contact with the pulp.
- Don't use calcium hydroxide powder for pulp capping. Powder is for endodontic use.

UPR: Yes, our school policy is accepted by all disciplines.
 Yes, we incorporate vital pulp therapy exercises in your preclinical operative curriculum.
 Yes, we are in agreement with treatment approaches taught in Endodontics/
 Pedodontics/Prosthodontics.

MUSC: Yes, a pulp capping procedure is done in the simulation lab on both typodont teeth and extracted natural teeth.

Presently, there are some similarities and some variations among the different disciplines at our school.

VCU: Vital pulp therapy is taught in the GP curriculum and is reinforced by the Endodontic Department in cooperation with GP.

V. Restoration of Implants

What experiences are provided to your students in the restoration of implants?
Do your students have the opportunities to PLACE implants (surgical phase) and/or do the second stage surgery to uncover them (after integration)?
Who/what departments/sections are supervising the restoration of implants?
What training is provided to the faculty?

UAB: No responses noted.

UFL: Our students receive an extensive preclinical curriculum in implant case selection, placement and restoration which consists of lectures and laboratory exercises. They have opportunities to observe implant placement and restoration on patients, and at least 50% of the class has the opportunity to restore at least one single implant. The teaching units that supervise the restoration of implants are “The Center for Implant Dentistry” (an independent implant enterprise associated with the OMFS Department) and the Graduate Prosthodontic Program.

MCG: Yes, last year 5 students placed implants (surgery) and several did the second stage surgery. All students have the opportunity to assist faculty or residents with both of these surgeries when the students’ own patients are involved. Virtually every student has the opportunity to restore them and we averaged greater than one implant restored per senior last year. All students receive didactic and hands-on training (in lecture and lab) for both the surgical and restorative phases of implants. Department of Oral Rehabilitation has 2 sessions devoted to restoring the single tooth implant in an Advanced Pros. Course in the fall of the junior year (lecture and lab). Department of Periodontics runs an interdisciplinary course that meets once per week during the spring of the junior year that covers all phases from diagnosis and treatment planning, to surgery, to restorative. (lectures and labs). Faculty can attend any of the student lectures or they can rotate through the General Practice Residency during the implant training course for residents that occurs during the first month of the residency.

UKY: Students are required to restore at least 4 implants during their predoctoral experience. Two are single tooth implants with fixed restorations. Two are restored as an implant retained denture using O-ring abutments/joints. Students do have the opportunity to place implants on their patients, however this is not a requirement. A student may elect to have his patient’s implants placed by a resident in either periodontics or oral and maxillofacial surgery; however he must assist if this is the route he chooses. The General Dentistry Department and the Restorative Department (operative, fixed, and removable). Several years ago had a series of lecture and hands on courses on the ITI implant system attended by all faculty. New faculty over the past 7 years, get

individual training from other faculty so as to be familiar with the system and be able to supervise in clinics.

- ULVL:** No, assist only. Students receive didactic and hands-on training (in lecture and lab) as to how to restore implants. Not all of our students have an implant experience with restoration - but this experience is growing year by year. Most do have experiences in treatment planning dental implants. Department of Diagnostic Sciences, Prosthodontics, and Restorative Dentistry.
Two years ago in-house training was provided on choosing implants and implant parts. In depth training is provided to one faculty member / year. This faculty is known as the "implant apprentice" and attends the lecture course (1 hr / wk) in the fall and the lab (4 hours / wk) in the spring. This faculty member is assigned to the implant clinic to shadow more experienced faculty in order gain experience in treatment planning and restoring dental implants.
- MMC:** Pre-clinical course. No. Restorative Dentistry. C.E. Courses
- UNC:** UNC Prosthodontics has a preclinical lecture series in implant related topics. The students are involved with treatment planning specific patients, are assigned a periodontal or oral/maxillofacial surgery resident and assist in the placement/uncovering of the implant(s). The patients are treated in a clinic specifically devoted to implant treatment. Prosthodontists with advanced training in implantology supervise all phases of implant therapy for each individual patient & student.
- NOVA:** We provide a formal course in Implant Dentistry in the D3 year. The course is a formal lecture and seminar including a hands-on lab. The course emphasizes the treatment planning sequence, diagnostic cast and a fundamental wax up before treatment is presented to the patient.

There is an emphasis on the three companies that we have affiliations with in particular AStra -Zeneca, Nobel -Biocare and Straumann. The students must restore 2 implants as one of their prosthodontic requirements. Most students do more than this since each company is providing each student with two free implants and abutments. Once the student has treatment planned the implant restoration with the Department of Prosthodontics, the patient is assigned to have the implant placed by the Periodontics, Prosthodontics or Oral and Maxillofacial Surgery residents in the postgraduate area. After adequate healing, the patient returns to the predoctoral clinic where the predoctoral student will restore the implant under the supervision of the Department of Prosthodontic faculty.

The predoctoral students assist the graduate students in the placement of the implants in the Periodontic, Prosthodontics or Oral and Maxillofacial Surgery clinic. They must provide the surgical stent that is made from the diagnostic wax up.

The Prosthodontic Department supervises the restoration of dental Implants.

Calibration proceeds throughout the year and biweekly at the departmental meeting if an issue arises.

UPR: They have to restore at least one single unit implant and they assist during the surgery and sometimes have the chance to place them. The Restorative Sciences Department is responsible for the restoration phase of the implants. Seminars and lectures are provided to the faculty by the manufacturers and others.

MUSC: Students treat their regularly assigned patients as needed in the implant prosthodontic clinic. In this clinic the students are able to restore 1-3 units of fixed implant restorations or mandibular locator overdentures on 2 mandibular implants. No. Our students make a surgical template and then observe a resident place the implants and the uncovering. The division of implant prosthodontics in the restorative department. Currently there is no training provided for faculty outside of the division of implant prosthodontics. Within the division the faculty are provided with opportunities and encouraged to attend continuing education seminars.

VCU: Our students do not yet place implants. They do uncover and restore them, working under the guidance of the implant clinic (run by Prosthodontics) or working with the residents in the AEGD program.

VI. Electronic Patient Records

Does your school use an electronic patient record (EPR)?
If yes, which EPR system do you use?
Please list the pros and cons of your school's EPR system.

UAB: No responses noted.

UFL: Our school uses "Quick Recovery" a product currently supported by Software of Excellence of New Zealand. We primarily use the financial modules, and continue to keep charting, data collection, progress notes and other miscellaneous records in a paper chart. There is general dissatisfaction with this system.

MCG: Yes, we went on-line full time as of September 2006. Axium.

Pros:

- Clinical research using the stored records data
- Clinic activity data readily available for managing clinical courses
- Uniformity in record keeping
- Charts available at multiple sites and at any time of day
- Eventually the chart room will be eliminated or dramatically down-sized
- Incorporation of digital radiographs into the EPR

Cons:

- Financial commitment to start and maintain the system
- Occasional down times for server maintenance
- Training periods for faculty, staff, and students

- The charting program is not specific for restoration size. A small, localized occlusal pit restoration can not be distinguished from an extensive/wide one.

UKY: No. No.

The UK College of Dentistry is currently in a very early implementation phase of introducing electronic patient records and digital radiography. UKCD has selected AxiUm as its software choice for EHR and MIPACS software as its digital radiography software. These two programs are from different vendors but are compatible and function as an integrated package. The projected online date for both EHR and digital radiography are August, 2008 however some thoughts are that the digital radiography may be delayed somewhat due to equipment costs and budget concerns. The college will begin piloting the EHR and digital radiography in its GPR program starting in February, 2008. Assuming all goes well, then full implementation to the predoctoral program will occur in August, 2008.

ULVL: Yes, just implemented in Fall 2007. AxiUm

Pros:

- Research
- No physical storage space required
- Standardization of forms, data
- Charts available at multiple locations

Cons:

- Start-up costs
- Maintenance costs
- Training
- Difficult for faculty; easier for students
- Delay of patient care

MMC: Yes. Axium. Have not had time to determine the pros and cons. Just started October 1, 2007.

UNC: UNCSOD has developed its own EPR system that integrates health histories, charting, treatment planning, progress notes, digital x-rays, drug search and prescription functions, scheduling, recall, patient financial information, student evaluation and quality control functions.

Pros: Access to everything needed for treatment decisions, off site Access to treatment records for study/treatment plan development, ability to attached digital images to radiology module.

Cons: Paper chart is still required in that case of network/server/workstation. Access to critical information may be delayed in an emergency situation.

NOVA: Yes. Axium. Axium.

Pros:

- Easy access to patient records (no more missing charts!)
- Records are readable and include readable student and instructor names.
- Excellent reporting capabilities
- Potential for data mining for QA, research, etc
- Extremely flexible, customizable to our procedures/protocols
- Allows for variable access based on "need-to-know" - HIPPA compliant

- Excellent customer support from Exan
- Platform independent when run via terminal services so can be used on PCs or Macs
- High degree of reliability (runs without glitches >95% of the time).
- Integration with HPD's software system (NexGen) so that patients are able to one time register for any clinic served by NSU's Health Professions Division (Medicine, Optometry, Podiatry, Psychology, Speech and Occupational Therapy, etc.).

Cons:

- Non-intuitive; multiple training sessions required for basic proficiency
- Multiple ways to do same thing, makes implementation extremely complex and easy to miss a "Back door"
- Because of flexibility (see (4) above) manuals have to be created from scratch - skimpy documentation provided by software company
- Odontogram crude and non-representative of clinical presentation (especially for those used to paper charting)
- Treatment Planning module not integrated with odontogram
- Difficult to integrate treatment additions/changes into a sequenced treatment plan (no drag & drop -- additions or changes require manual renumbering of subsequent items.
- Not easy to change user (log off requires quitting and restarting program) so users have a tendency not to log off when appropriate to prevent unwanted access on shared computers
- Software we currently use for management of digital images (Mediadent) stores the images as compressed jpegs rather than Dicom standard and so diagnostic quality of images is degraded.
- Unable to view the clinical chart and radiographs simultaneously.

Pros and cons on NSU's implementation of the system

Pros: Terminal services (remote desktop) allows for easier upgrades to the software

Cons: Due to NSU's interpretation of HIPPA, many useful aspects of the program are unavailable.

Examples: PDA access not allowed; students must be on campus to access so cannot make electronic appointment requests or changes from home after hours; patient records cannot be accessed for after hours emergency calls. Radiographs are not easily retrievable for use in lectures or other teaching purposes such as clinical case presentations. Electronic capture of patient signatures for informed consent was not allowed--our Compliance Dept mandated actual patient initials and signature on paper which created a scanning nightmare.

- Conflicts between competing computer support departments (NSU's OIT vs. HPD's Computer Services) makes technical support often problematic.
- Remote desktop requires second set of user login/password which are frequently forgotten and not easily obtained/reset due to (2) above.
- Inadequate training of users and unavailable support staff in the early months of implementation, rush to implementation and lack of foresight in personnel and equipment needs made for a very difficult transition.

On the other hand, our previous system (QR) was essentially unusable due to network and software issues so that we had little choice but to jump ship. We have a lot of underpaid and overworked but very dedicated professionals

(faculty and staff) who care a lot and are making this work.

UPR: No. But it is taught at the Radiology Section.

MUSC: No.

VCU: We are currently working out the details for both EPR and digital radiography.

Does your school use digital radiography as the primary radiographic imaging system?
(*Expanded topic - refer to 2006 CODE Regional Reports*)

If so, which software do you use for digital radiographs?

Is the digital radiographic system integrated into the EPR?

Please list the pros and cons of your experiences with digital radiography.

UAB: No responses noted.

UFL: Digital radiography is our primary imaging system. We use MIPACS which is integrated into Quick Recovery. We are generally satisfied with digital. We are using a phosphor plate system, and some faculty are dissatisfied with artifacts caused by scratches and adhesive residue (from the infection control envelopes). Some unwanted variation in density may be attributed to exposure errors due to student operator error or machine calibration/timer error.

MCG: Yes. MiPACs. Yes
Diagnostic quality is variable however the ability to manipulate and capture the images is a big advantage over conventional radiographs. The use of digital radiography is cumbersome for board exams although we have worked out a protocol with CRDTS to use print-outs instead of having the examiners open the EPR to see the radiographs in the scoring area. Accessing the patient record may compromise the anonymity of the exam since the student-of-record is clearly indicated in the electronic chart

UKY: Refer to previous question for statement.

ULVL: No. N/A. N/A. We do not have digital pans. Diagnostic quality seems to be less than film pans.

MMC: No.

UNC: Yes. Vixwin. Yes. Digital manipulation of images can help in disease detection. Use of radiographs for teaching purposes easily accomplished. However, radiograph display is dependent of the quality/resolution of the monitor of the workstation.

NOVA: Mediadent. Yes.

Pros:

- Reduced radiation burden with direct sensors
- Ability to work away from computer with SP

- Film-like patient acceptability of SP plates
- No chemical processing; no darkroom
- Instant images with direct sensors
- Image storage, retrieval, and transmission
- Image post-processing capabilities
- Image annotation capabilities
- 3D capabilities
- DICOM conformance

Cons:

- Higher retake rate with direct sensors
- High initial cost of direct sensors
- Higher replacement costs with intraoral SP plates
- Intolerance of some patients to direct sensors
- Film holder incompatibility
- Monitor and software image degradation
- Present imaging software program limitations
- Infection control procedures more rigorous
- Smaller acquisition area of direct sensors
- DICOM non-conformance of vendors and software

UPR: Sirona Software

MUSC: No.

VCU: Refer to previous question for statement.

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.

I. 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 Answer

UFL: We have made minor changes in the Curriculum such as introducing CEREC restorations (pre-clinic and clinic), segmented matrix bands with clip retainers for Class II composites, and a new caries risk assessment program. Major changes are on the horizon with plans initially for a cooperative effort with the Department of Prosthodontics for single crown restorations in the Spring semester; to be followed by a complete reorganization of the clinical curriculum and clinic configuration to a multidisciplinary team clinic model in the Fall of 2008. Positive and negative outcomes will be reported at CODE 2009.

MCG: No, other than changing course directors. Added more exercises on natural teeth than previous years. Too soon to tell if it will have any impact.

UKY: The college is currently looking at potential major curriculum reform. The

college is attempting to reduce redundancy and improve sequencing of the educational program. At this point, the restorative division has agreed in principle to reduce hours in dental biomaterials and in esthetics. That said, there has not been any significant change over the past 5 years. The 2 biggest changes that we have made were the introduction of implants into the curriculum (~ 8 years ago) and an advanced esthetic curriculum (about ~8 years ago) and over the past few years we have been making tweaks to those areas of our curriculum.

ULVL: No

MMC: No

UNC: We have recently started a 4th year mentoring process using 4 (2 general dentists, 2 prosthodontists) to provide better supervision/control over treatment plan development and implementation. The Department of Operative Dentistry is now solely responsible for 1st, 2nd & 3rd year DDS student development. It is too early to evaluate the positive or negative outcomes, however, the faculty are in the clinic 6 ½ days per week and are each individually responsible for 20 senior DDS students and their patients. They must receive support/remuneration accordingly. There is an early sense that there needs to be 8 faculty devoted to this process.

NOVA: In the pre- clinical curriculum we have changed the text book for the 2007-2008 year. We will now be using Fundamentals of Operative Dentistry, Summitt, Robbins et. al. We deleted Sturdevants's Art and Science of Operative Dentistry and Alber's Tooth Colored Restoratives. We will continue with the VitalSource Bookshelf which is touted as the most advanced e-book software in the world. VitalSource has had mixed feedback from students. Many still would rather have hard copy books to study from. In 2007 we deleted the Virtual Reality Lab from the pre-clinical curriculum. The units were becoming a service nightmare. The company was not giving the support we needed to maintain the units on a daily basis. We have not noticed any negative effects in regards to the student's Operative skills and stopping Virtual Reality.

Last year we extended the Operative Dentistry course through the summer and organized it into learning units beginning with the amalgam unit and ending with posterior composite resins. This has resulted in very positive outcomes related to student performance.

Clinically we have added self evaluations to the clinical competencies to be standardized with the pre-clinical curriculum. Incorporating AxiUm computer software into the program has become the most challenging aspect of the clinical curriculum. We are using the program for both the financial records and the electronic health records. We also are totally digital at this time in radiology. Treatment planning is done by appointment times with individual instructors in their offices. The instructors can easily access the patient's records through their computers.

This year we opened a Predoctoral clinic in North Miami Beach where seniors are given the opportunity to enhance their skills with a group leader philosophy while treating patients.

UPR: Yes, the administration enforced a reduction of around 20 % off the pre-clinical course. The pre-clinical course suffered the elimination of learning things like gold foil, and the actual casting and cementing of indirect restorations due to the changes made to accommodate the new curriculum. We believe there has been a negative impact, most noticeable, on matters related to laboratory procedures/activities.

MUSC: No. N/A. N/A.

VCU: There have been very significant changes in our pre-clinical curriculum. Basically, the operative curriculum has changed from three semesters to two semesters. Of course, the content that we must teach has remained the same and we have no additional faculty resources. The first semester has a large component on the DentSim virtual reality simulators (of which we have 20). The students then move into the new simulation lab where there are 108 units. The changes were made at the direction of the administration. We have not yet been able to discern any negative or positive outcomes.

II. 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 Answer

UFL: Operative pre-clinic ends mid-December, and clinic for rising Juniors begins in May (a one semester hiatus). In 2008 a curriculum change is planned to move the last pre-clinical course "Introduction to Diagnosis and Treatment Planning" to the Fall Semester in order to start the Juniors in clinic earlier beginning in 2009. Though there is some anxiety felt by the students in starting clinic after a four month break from operative technique exercises, prosthodontic pre-clinic is continued during that period, and significant skill erosion has not been a problem. Presently our operative curriculum consists of two years of pre-clinic technique and two years of discipline based clinic attendance. As previously mentioned, the College is considering going to a 2+2 program of two years discipline based pre-clinic followed by two years of multidisciplinary team clinics combining Pros, Operative and Perio. Clinical Endo, Surgery, Pedo, and Ortho will be offered as block rotations. This is still in the planning stage.

MCG: 1 Semester: Summer between Freshman Spring and Sophomore Fall. Freshman pre-clinic, sophomore block clinic rotation- Operative experience every third week, Junior Clinics supervised by Operative & Fixed faculty, Senior Comprehensive Care / General Dentistry Clinic.

Yes, some erosion of knowledge and skills takes place during the first summer semester and the sophomore experience is highly variable between students.

Both the technical and conceptual portions are subject to erosion from the time lag. Last year the Sophomore Block rotation occurred in the Senior Comp Care Clinics and the experiences were inconsistent and generally poor in quantity. This year we took back the Sophomore Operative Clinic in order to improve the deficiencies noted above.

UKY: Freshman year, 1st semester: Dental anatomy and occlusion, basic operative (cariology, fundamentals of operative, and direct restorative materials)
Freshman year, 2nd semester: Basic operative (cariology, direct restorative materials)
Sophomore year, 1st semester: Patient assignments in the comprehensive care clinic, single unit indirect operative procedures
Sophomore year, 2nd semester: Patient care, single unit indirect operative procedures, principles of occlusion, dental materials
Junior year, 1st semester: Patient care, fixed prosthodontics
Junior year, 2nd semester: Patient care, advanced esthetic procedures
Senior year: Patient care.

The college has recently moved initial patient contact for our students to an earlier point in the curriculum. Students are in clinic on a limited basis in late 1st year, but get their initial patient assignments at the beginning of the second year. This means that operative patient care follows soon after the 1st year operative courses are complete – something we were trying to accomplish. There have been some issues however in that we have a comprehensive patient care program for all classes. The early second year students, while ready for operative procedures, are often not ready for other procedures and therefore our team leaders have had extra burden on them to assign simple cases to second year or be prepared to scramble for patients that require more advanced treatment.

ULVL: 2 Semesters
Freshman pre-clinic and Junior-Senior Comprehensive Care General Dentistry clinics.
Yes
Preparation design and execution; knowledge and use of materials.
Dentoform exercises were inserted into the sophomore Introduction to Clinical Dentistry II course last year.

MMC: There is no gap.
Freshman – Introduction to operative. Sophomore- Pre- clinical operative, Junior & Senior - Restorative Clinic.
No

UNC: Minimum of 3 months, up to nine months time delay before first operative procedure.

DDS1 (preclinical):
Dental Anatomy (Lecture/Lab)/Conservative Operative Dentistry

(Lecture/Lab)/Intro to Occlusion.

DDS2:

Clinical Operative Dentistry (Fall 2 half days/week, Spring 3 half days/week).

DDS3:

Advanced Operative Dentistry (Lecture/Lab)/Clinical Operative Dentistry (Fall 5 half days per week, Spring 6 half days per week)/Summer off site rotations (4 weeks in length). Clinic Times Include Treatment Planning, Radiology, Endo, Perio, Oral Surgery, Fixed & Removable, Pedo, Ortho.

DDS4:

Clinical Operative Dentistry (Fall & Spring 10 half days per week) Clinic times Include Treatment Planning, Radiology, Endo, Perio, Oral Surgery, Fixed & Removable, Pedo, Ortho.

Yes.

All areas suffer knowledge/skill erosion, from treatment plan design based on clinical presentation to preparation design based on material selection.

Increased use of part time faculty makes instructional continuity difficult.

Yearly weekend seminars given during an event to demonstrate appreciation for part time faculty are designed to help standardize instructional content.

Part time faculty are given a copy of the current text book (Art & Science of Operative Dentistry) and encouraged to review content.

NOVA: We typically have about a year gap between pre-clinical operative and the start of clinical operative experiences. We have always been very concerned over this issue and the erosion of skill level is very evident. In order to rectify this problem we have a D2 review module in the summer after the D2 year, which the students have endearing named “Boot Camp”. The course is from 8:30 to 5 for 5 days and ends with a full day of competency exams and a cumulative written exam. Students are also given CDs for the written boards with practice questions to help with their review of the information.

Freshman: Our curriculum progression starts with Operative I in the second semester of the freshman year. This course is divided into two sections Operative IA and B with the corresponding IA and B Labs. This course runs for 7 months.

Sophomore: The D2 review course is given in May of the second year and must be passed in order to perform operative procedures in the clinic.

Operative II is a lecture series to enhance the clinical experience. A treatment planning course is provided to the students.

Junior: Comprehensive care in the CDM pre-doctoral clinic and rotations to the Caridad pediatric clinic in Boynton Beach. Treatment planning with individual instructors

Senior: Comprehensive care in the CDM pre- doctoral clinic and rotations to the Caridad Pediatric Clinic, the North Miami Dental Clinic and other local Nova clinics serving the community. Wednesday morning board review clinical course. Treatment planning one on one with restorative faculty members

UPR: The time gap is one semester.
Students start their preclinical Operative Dentistry course in the second semester of their freshman year and end on the second semester of their

sophomore year. Then the time gap (1 semester), occurs until their junior year when they start their clinical block rotation during the whole year. During their senior year, students take a single course named “Comprehensive Care Clinic” where they do works on all clinical disciplines, including operative dentistry. Students are responsible to do all work necessary to complete the patient’s treatment. Mostly, skills have not been affected but knowledge, especially in DBM has been affected by the reduction in time.

MUSC: Approximately five weeks.

Freshman Year (Fall) – Dental Morphology (also blocks in clinic as a chairside assistant)

Sophomore Year (Fall) – Operative I (also blocks in clinic as an assistant)

Sophomore Year (Spring) – Operative II (blocks in clinic as an assistant)

Junior Clinic & Senior Clinic

There is some concern about erosion of skills or knowledge during transition from preclinical to clinical. Because of this, we have students work on manikins during their first two sessions in Operative Clinic to reinforce the clinic protocols and allow them some “refresher” practice before their first live Operative patient. These sessions also serve as an orientation to the operative clinic environment and to infection control/OSHA procedures used in the clinic.

VCU: The rising sophomores (i.e. present freshman) will enter the clinic in October of the sophomore year. The progression follows: freshmen, pre-clinical operative; sophomores, block clinical rotations; juniors, skill development clinic; seniors, general practice groups, which act as independent units performing all general practice functions (including surgery, perio, pros, endo, but not pedo). There is a concern that the pre-clinical skills development will be insufficient to prepare the students for clinic situations, but we have not yet gotten to that point.

III. When a student is doing an operative procedure on a patient and has a question concerning material selection or technique protocol, do they have ready access to an independent reference for the information such as a clinic procedure manual? If you have such a reference, what is its format- printed, clinic computer work station, web-based, or contained on a student’s PDA or i-Pod type device? Does the independent reference help standardize your student clinic practice considering that some schools have a wide range of faculty providing clinical operative supervision (Full-time, Part-time, faculty from other departments)?

UAB: No answer.

UFL: No. Though there is a Clinic Procedure Manual in existence for all clinics which addresses issues such as Infection Control, Dress Code, Quality Assurance, etc. there is not an Operative Procedure Manual that specifies technique protocols and material selection. Our Dean of Clinical Affairs is addressing the problem of diversity among faculty treatment recommendations with “Faculty Calibration Sessions” This variation among treatment recommendations will be more of a problem in the future as we migrate to a multidisciplinary “Team” or “Generalist Clinic Model” So far

these sessions have been educational in nature without the adoption of definitive “Treatment Protocols” We also anticipate a need for standardization of materials in the “Team Clinics”

- MCG:** No. There is very limited information available for Operative, much more for Fixed and it is available in print and on the server. The plan is to have it on the school server and accessible from any terminal including those in clinics.
- UKY:** Yes. The restorative division has clinical procedure manuals for each year (2nd, 3rd, and 4th years) and there is also a more general “Patient Care Manual” that has a variety of clinical protocols in it for all disciplines. This Patient Care Manual is used by both students and faculty (especially part-time faculty). These are in printed format and are also posted on the web (clinic manuals for 2-4th years). In theory these manuals standardize our procedures better than if the manuals were not in place.
- ULVL:** No
- MMC:** No
- UNC:** No, students do not have a clinical manual. They are referred to the textbook.
- NOVA:** Yes. The Department of Cariology and Restorative Dentistry has a clinic manual designed for students and faculty members to be able to easily access both operative techniques and products used in the pre-doctoral clinic. This manual is both in hard copy and on a CD.
- UPR:** Yes. We do have a printed clinical manual however; each individual rotation course has its own description regarding the materials and/or procedures that may be performed. They also have access to the web in order to look for indications for different materials, or procedures to be carried out.
- MUSC:** Yes. We have a loose-leaf notebook in the clinic which contains printed treatment and policy protocols specific to the Operative Clinic. It is intended to serve as a reference for students in the clinic and to help calibrate part-time faculty. Each part-time and full-time faculty member is given their own personal copy of these clinic protocols.
- VCU:** The GP department does not have a standard reference manual for procedures nor materials. Each course syllabus acts as a procedures and materials manual. The students themselves, however, have developed their own manual, that is routinely revised. It is printed and sold, to any student wishing one. As far as materials are concerned, the student clinic uses the materials that are used in faculty practice. Any new materials are usually tried by the faculty before use in the clinic. Likewise the materials used in the pre-clinical courses follow this model.

IV. Does your school have Bio-clinical or Problem-based learning seminars for the students? What department(s) is/are responsible for them? If these activities are

not directed by operative or restorative faculty, do any of your operative or restorative faculty regularly participate in them as part of an interdisciplinary teaching team?

UAB: No answer

UFL: There are several courses that offer problem-based learning experiences. For example: Community Dentistry (Until recently a division of Operative) offers case-based seminars on ethical issues, Practice Management (housed in Operative Dentistry) offers case-based seminars utilizing standardized simulated employee interviews, Treatment Planning (also housed in Operative) conducts several case-based seminars and a Standardized Patient experience in the Harrell Professional Development and Assessment Center

MCG: Yes. Oral Biology coordinates them and faculty from a few other departments participate including Oral Rehabilitation.

UKY: No

ULVL: No

MMC: No

UNC: Yes, 4th year DDS students participate in small group (20 students) sessions with case-based problems. Small groups are lead by various faculty including generalists, prosthodontists and operative faculty. The DDS4 class as a whole has lectures to reinforce concepts in Dental Materials, Bonding, Composites, etc. These large group (80 students) lectures are given by operative faculty.

NOVA: Not at this time.

UPR: Yes, we have problem based learning seminars in an interdisciplinary approach where all departments in our school are involved. Faculty from the operative dentistry section and the prosthodontic section are represented.

MUSC: We have a Senior Case Presentation Seminar where seniors are required to present a patient case they have worked up and the treatment plan is discussed in a CPC format. The course director for this is from the Oral Diagnosis division, but it is attended by restorative faculty along with faculty from the other divisions. It is definitely multidisciplinary and incorporates a problem-based learning approach.

VCU: The general practice department runs a full course in PBL. It is given in the second semester junior year as part of the treatment planning course.

V. How many continuing education courses sponsored by your school are DIRECTED by operative / restorative faculty? What percentage of your operative / restorative faculty regularly participate (at least once every 2 years) in CE courses as PROVIDERS?

- UAB:** No answer
- UFL:** Four CE courses are directed by our faculty: “License Renewal Seminar: Day of Required Courses” “Esthetics, Adhesive Dentistry & CEREC 3D: CEREC 3D Users Group Training” “Introduction to CEREC 3D CAD-CAM Technology” “Fabricating Provisional Crowns & Bridges: Certification Training” 30% of Operative faculty regularly participate in CE Courses as providers.
- MCG:** We average about 6-7 re-occurring courses on an annual basis, and another 2-3 that are offered as needed and occur about every 2 years. About $\frac{3}{4}$ of our faculty regularly participate in CE.
- UKY:** Approximately 5 courses per year. This varies year to year, however usually about 20% of the restorative faculty participate in presenting these courses.
- ULVL:** One. Less than 10%.
- MMC:** Two. 50%
- UNC:** 2 major CE courses per year given by Operative department in which 50-75% of faculty provide lectures on a rotating basis. Operative Dentistry sponsors one CE course each year which is given by well know speakers such as Gordon Christensen etc. Operative Dentistry provides 3 in-school courses for smaller groups each year in which 2-3 of 8 operative faculty lecture.
- NOVA:** 2-3 yearly Less than 5 percent
- UPR:** During the period from August 2006 - July 2007, CE courses sponsored by our School totaled 29 and 15 (aprox. 40%) faculty members participated as speakers/providers in some of those courses. During the period from August - December 2007, a total of 12 CE courses are scheduled of which 5 (aprox. 13%) faculty members from the Restorative Sciences Department will participate.
- MUSC:** Only a few. 20%
- VCU:** Approximately 25-30 CE courses are given by members of our GP department. About half of our faculty is active in giving courses.

VI. Describe any “faculty development” practices or initiatives that your school or department uses or have recently implemented to enhance the abilities, effectiveness, and / or morale of your faculty.

- UAB:** No Answer
- UFL:** Perhaps the greatest initiative our school has made towards improvement of faculty development and morale is the establishment this year of an Associate Dean for Faculty Affairs. His duties are still being enumerated, but one of the

areas he is initially addressing is faculty mentorship and the College P&T document – especially regarding Clinical Track Faculty promotion. The Dean’s Lecture Series sponsors scholarly speakers periodically, however they are required to have extensive publications, and are usually dental researchers with few clinicians participating. The Kaplan Scholarship is an endowed program that annually sponsors a weeklong visit by a distinguished dental scholar that on many occasions has been a world recognized clinician. The Education Department sponsors periodic lunch-n-learn faculty development seminars and retreats covering education subjects. Each year a Clinical and a Basic Science “Teacher of the Year” is selected by a student vote. Also a “Dental Educator of the Year” is selected by the local ASDA chapter. An endowed resident “Eminent Scholar” is sponsored by the College Alumni association. Each semester the University offers a variety of faculty development courses. The challenge is finding the time to attend them considering our heavy clinical load.

- MCG:** Fund/support travel expenses to national or regional meetings (particularly if you are on the program).
Restorative faculty study club started January 2007, with monthly meetings; meals provided most of the time. Meeting times 5:00 – 6:30 PM.
Faculty Retreats with a focus such as “Giving effective presentations”
Outside CE Speakers are brought into the school for faculty-oriented presentations.
Promote attendance at weekly seminars given by our faculty and residents
- UKY:** The college has a faculty development program that is run by our Executive-Associate Dean. This series is for all faculty and focuses on the promotion and tenure process. These seminars present on a variety of topics including: writing scientific papers, editing transcripts, web-based instruction, developing a well written CV, and other topics that related to faculty development. In addition, the division of restorative dentistry provides some faculty development. Currently we have a program in conjunction with the Oral Diagnosis/Oral Medicine division with a comprehensive review of “Dental Management of the Medically Compromised Patient”. We are also planning a series on radiographic interpretation in the near future.
- ULVL:** Pay all or some of travel expenses to national and regional meetings (ADEA primarily and Dawson course)...and a heart-felt thanks so much!
- MMC:** The School conducts four *Heritage Lectures* per year.
- UNC:** We are encouraged to attend seminars, provided by UNC Education, on teaching methods. We are encouraged to be actively involved in dental organizations and are provided access to funds each year to support these activities. We are also encouraged to be actively involved in original research and presentation of this at national and international meetings. We are encouraged to seek and develop mentorship relationships inside and outside the department
- NOVA:** The Cariology and Restorative Department holds weekly lunch meetings during which time a multitude of developmental issues are addressed. These

can range from evaluating class II preparations and grading standardization to computer (AxiUm) training. Each week a faculty member presents a literature review on a topic relevant to the teachings of the department. A restorative faculty retreat is held one per year at which time an entire day is set aside for development. The department chair works weekly with new faculty members to standardize and educate them on our curriculum.

UPR: Every year (July-August), the school organizes a retreat for faculty development where a diversity of issues are addressed. Skills on preparation of written exams, cultural competence issues, and ethics, among others are carried out. At the Restorative Sciences Department level, calibration lectures and exercises in disciplines such as operative dentistry, removable and fixed prosthodontics (including implants) are developed annually.

MUSC: We have an annual faculty “offsite retreat” dedicated to faculty development. This retreat is for a full day and usually features a speaker/facilitator from outside the College of Dental Medicine and sometimes from outside the university system. These retreats may be supplemented during the year by an occasional lunch hour lecture presentation dealing with faculty development or a short presentation during a faculty meeting.

VCU: School-wide there are usually two long (2-3 day) faculty development programs conducted. At the end of the school year we ordinarily go, as a faculty, to Virginia Beach for a three day faculty development. Recent budgetary constraints will probably obviate this year’s program.

Suggestions for CODE.

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

- Other comments/suggestions?