

SCHOOL OF DENTISTRY
Course Information

September 7, 2004

1. **Course identification**

Name of course:	Operative Dentistry IV: Current concepts in Operative Dentistry: An Evidence-Based Approach.	
Department:	Restorative Sciences	
Division:	Operative Dentistry	
Number:	Dent 6806	
Credits:	2	
Quarter and year:	Fall 2004	
Hours per week:	Lectures: 2	
Hours total:	Lectures: 21	
Course director:	Dr. Omar Zidan	zidano@umn.edu
Office address:	8-450 Moos Tower	
Phone:	612-626-0604	
Office hours:	By appointment	
Participating faculty:	Dr. Gary Hildebrandt	Gary.H.Hildebrandt-1@umn.edu
	Dr. Jorge Perdigo	perdi001@umn.edu
	Ingrid Benda	benda002@umn.edu
Participating staff:	Richard Ruth	ruthx008@umn.edu

2. **Course policy and grading**

Attendance: Required
E-mail to Dr. Zidan explaining the reason for the absence and how you would arrange for the evaluation of the session you will not attend.

Resources: Material presented in the class
Dental Journals: refereed: Reading room, Diehl Hall, Biomed e-journals
Internet: Medline/PubMed, Cochrane Library, refereed journals, e-journals, others.
General data bases, search engines: Google, AltaVista, Excite, Infoseek, Lycos, others.
Non- refereed magazines.
Human Expertise: Faculty, dentists, students, lab technicians, company representatives, patients, others

Assignments: The class will be divided into 9 sections, each section will be assigned a clinical topic to be researched and presented using an evidence-based approach.
The assignment has two components theoretical understanding and a clinical case.
Position Paper: A clinical question is posed to each group. The section will answer the clinical question following an evidence-based approach, using the resources outlined above. The section will search and evaluate different database of knowledge and prepare a position paper about their findings regarding the assigned clinical question. **The paper in a pdf. format should be emailed to Dr. Zidan zidano@umn.edu and delivered on a cd to Ingrid Benda at MoosT 8-450 before the dead line, check the dead line on the schedule. The paper will be published on the home page of the course @ http://www1.umn.edu/dental/courses/dent_6806fall04/index.html**
All students are required to attend all the lectures and read all the sections papers. **After each lecture and before each group presentation: Each student must publish at least one scientific statement on the home page of the course.** The statement should be related to the topic of the lecture or the section presentation. The statement should be based on a scientific publication. The publication must be referenced in your published statement. It should reflect an understanding, a position of agreement or disagreement, or a question related to the topic of the lecture or the section. The section will try to address the comments and questions during the presentation. **ONLY VALID COMMENTS WILL COUNT TOWARD YOUR FINAL GRADE.**
Clinical case: Each section should complete a clinical case. The clinical case should be an application of the section topic. The case must be documented showing the pre-treatment (examination, diagnosis), treatment, and post-treatment(out-come assessment) phases.
Dr. Zidan or other faculty could assist upon the section request in preparing the clinical case for your presentation.
Section presentation: Each section will research, prepare and publish their position paper on the home page of the course. The section will also present and discuss their position paper and their clinical case to the class on the date scheduled for their presentation.
The section presentation will occur in the lecture room MT 2-520. The presentation should focus on the clinical question, the strategy used to collect the data, an evidence based answer to the clinical question. Your presentation should reflect the state of knowledge gained by the section in relation to the clinical topic. The lecture hall is equipped for multimedia presentation; computer projector, ethernet connection, slide projectors, and overheads. For help with audio-visuals contact the audio-visual department @ 625 3201 to show you how to use the equipments. You can also contact

Ingrid Benda MoosT 8-450, phone: 612 625 8486, or email: benda002@umn.edu. She will assist you with your needs

The intersection and intrasection evaluation forms; are an integral part of the course. Each student will receive an evaluation booklet containing the evaluation forms. Each student should evaluate his/her section work on the **intra-section critique form**; this form should be completed at the day of your section presentation. Each student should evaluate all the papers and all the presentations **of the other sections** on the **inter-section critique forms**, this should be completed at the end of each presentation. The booklet will be available at the beginning of the session and it will be collected at the end of each session. **EACH BOOK IS CONFIDENTIAL, DO NOT TAKE OR READ A BOOK WHICH IS NOT YOURS.**

These critique form are considered a part of the course and are required to get a final grade, if your forms are missing you will get an I grade.

Calculation to the final grade:

The final grade will be calculated based on:

- (1) The scores calculated from of the intra-section critique forms (60%). Each student will be assigned one of three scores based on his/her percentile ranking within a percentile plot of the section: the upper percentile 60 points, lower percentile 40 points, mid percentile 50 points. In case there is no percentile for the section (due to a common score), all the section will be assigned a score of 60, 50 or 40 points based on the paper rank.
- (2) The scores of the intersection critique forms (20%). A cumulative score will be calculated from both scores of the paper, the presentation and the clinical case. Excellent: 3 points, good: 2 points and fair: 1 point. Based on the scores the papers will be ranked Fst rank through 9th rank. Fst: 20 points, snd rank 18 points, 3rd 17 points, 4th 16 points, 5th 15 points, 6th 14 points, 7th 13 points, 8th 12 points, 9th 11 points.
- (3) The **scientific quality** of the students comments on the lectures and section papers (10%).
- (4) Faculty score (10%) based on the **scientific quality** of the students comments, quality of the paper, the presentaion and the clinical case.
- (5) The final grade will be assigned based on the percentile plot of the class as A-B-C-D

Grading system:

Policy regarding I grades:

Students who fail will receive an "I" grade will repeat the course by preparing a paper and a clinical case with a new assignment. The paper must be completed satisfactorily by the date set by the course director. Satisfactory resolution of the "I" grade will result in receiving the lowest passing grade which is a "D".

Feedback:

Statistical data showing to the groups and to the individual performance

3. **Purpose of course:** Students will be learning about the current concepts in Operative Dentistry using an evidence-based approach. The main focus of the course will be on contemporary treatment modalities related to restorative dentistry. Dental caries as a disease and the carious lesion as a symptom will be discussed. Emphasis will be on the diagnosis, treatment decision using an evidence-based approach and outcome assessment of the different treatments. The faculty of Operative Dentistry will present lectures on contemporary treatment modalities; such as porcelain veneers, Cad Cam, composites, porcelain, cements and build-ups. The lectures reflect the understanding of individual faculty. You are in an academic setting, so you can expect to be exposed to different or conflicting views. Differences in understanding and approach should enrich your academic experience. In addition to the material presented in the lectures students are expected to learn how to answer clinical questions based on an evidence-based approach. Students will work in small groups to formulate search strategies, search, read and evaluate scientific and unscientific literature pertaining to clinical questions. Students are expected to evaluate both the content and the quality of knowledge related to the various aspect of each topic. Students are expected to articulate their understanding in a written paper and in an oral presentation for each section. The paper and the presentation should reflect the content of the scientific database and the state of knowledge of the topics using an evidence-based approach. All the students within each section are expected to fulfill their role and assignments within each section. Each student should be a part of the presentation and the discussion of their section findings with the class. Students are expected to show how to integrate their findings in a clinical protocol and apply it to the clinical case presentation. The experience you gain from this course should be reflected on your daily clinical activities, decisions, and judgments.

4. **Competencies:**

Students will be able to:

1. Discuss evidence-based dentistry and its impact on clinical decision making
2. Discuss the paradigm shift in Operative Dentistry
3. To learn the steps involved in practicing evidence-based health care .
5. To learn what types of evidence are available in major health sciences information resources such as PubMed/Medline, the Cochrane Library, DARE and other sources for dental literature .
6. To learn how to access and search the major information resources for relevant clinical evidence
7. Discuss the concept of dental caries the disease, and dental caries the lesion.
8. Define caries risk assessment and explain its clinical rationale and application
9. Identify specific risk factors in a patient's clinical data-base
9. Explain how caries risk status is determined and how it affects treatment planning decisions and the level of caries control efforts employed
10. Identify the various strategies available for controlling dental caries- including indications, contraindications, dosage, and available products.
11. Describe how to integrate caries risk assessment, caries diagnostic testing, and caries control measures into the developing treatment plan of high risk patients

12	Evaluate the tools and methods used to diagnose the incipient caries lesions
13	Discuss the options for the management of the incipient caries lesions
14	Discuss advances to develop future robust tools for caries diagnosis
15	Describe the treatment options for the mild to moderate phase of dental caries
16	Discuss the principles for designing conventional vs. bonded restorations
17	Describe the lesion specific bonded composite restorations
18	Describe the treatment choices for the moderate to severe phase of dental caries
19	Discuss the biological and bio-mechanical aspects of the bonded restorations.
20	Discuss the concept and application of bonding in pulp therapy
21	Discuss bonding and its effect on tooth strength
22	Classify cements and rationalize the choice based on properties
23	Discuss retention of cemented vs. bonded castings
24	Describe the development of the direct posterior composite restoration
25	Review the technique variables that might affect the outcome of posterior composites.
26	Discuss modern esthetic approach for the restoration of the moderate/severe phase
27	Describe the use of castable glass and its use
28	Describe CadCam Cerec restorations
29	Describe the relation between teeth and tissues during a smile
30	Discuss anterior gingival esthetics
31	Discuss primary elements of esthetics form/color/texture
32	Describe the concepts of porcelain veneers
33	Describe indications of porcelain veneers
34	Describes the clinical steps for a porcelain veneer
35	Describe the preparation of a porcelain veneer
36	Describe Impression/ provision/shade selection for porcelain veneer
37	Describe Try-in and bonding procedures for porcelain veneers
38	Discuss clinical aspects and common errors with porcelain veneers
39	Discuss history of in-office bleaching
40	Discuss history of at-home bleaching
41	Discuss types of discoloration of teeth
42	Describe clinical protocol for at-home bleaching
43	Describe in-office bleaching and over the counter materials
44	Describe the classification of cervical lesions
45	Describe etiology of cervical lesions
46	Describe glass-ionomer as restoration of cervical lesions
47	Describe composite as a restoration of cervical lesions
48	Describe a methods of isolations of cervical lesions
49	Describe the preparations for cervical lesions
50	Describe etiology and methods of controlling pain of dentin origin
51	Discuss of treatment decisions for build-up
52	Describe current bonding agents and their use
53	Discuss how to choose a material for an esthetic option

5. **Schedule** (Day/Time): Wednesday 8:40-9:30 - Friday 8:40-9:30 Room: MoosT 2-520 (MoosT 2-530 Oct 1 and Nov 12)|

1	Wednesday September 8	Introduction to the course, format, expectations, sections assignment, topic assignment. The changing paradigm of Operative Dentistry and the dental caries. It's impact on contemporary dental practice. An introduction to evidence-based health care. Different data base resources	Zidan
2	Friday September 10	Dental caries an evidence-based understanding: Etiology and diagnosis.	Zidan
3	Wednesday September 15	" The non-cavitated carious lesion": "The small carious lesion": An evidence-based approach for diagnosis and management	Zidan
4	Friday September 17	Bonding Overview: Materials and Techniques	Zidan
5	Wednesday September 22	Composites Restorations	Zidan
6	Friday September 24	Build-up: An Evidence-Based Approach	Zidan

7	Wednesday September 29	The disease Dental Caries. Risk Assessment: An evidence-based approach	Hildebrandt
8	Friday October 1	Cervical lesions: Diagnosis and Treatment	Zidan
9	Wednesday October 6	The disease Dental Caries "Control": An evidence-based approach	Hildebrandt
10	Friday October 8	Porcelain: The Cerec Restoration	Zidan
11	Wednesday October 13	Cementing and Luting in Restorative Dentistry	Perdigao
12	Friday October 15	Porcelain Veneers	Zidan
13	Wednesday October 20	<u>The Disease Dental Caries: Risk Assessment/ Strategies of disease control</u> (Paper due : October 11 2004) Should we diagnose dental caries as a disease? How to control it/Treat it? Is research being applied on the 9 th floor clinics? key words / concepts: Definition and etiology- Changing paradigms, Dental plaque as a microbial biofilm, antimicrobials, xerostomia, role of salivary proteins, salivary enhancement, fluorides, sugars, diet analysis, sugar alcohols. Case presentation due October 20	Section 1
14	Friday Oct 22	<u>Dental Caries: The non-cavitated carious lesion:</u> (Paper due : October 11 2004) How to define and diagnosis non-cavitated pits and fissures and smooth surface carious lesions. How to evaluate diagnostic tests and methods used in caries diagnosis? How to treat a non-cavitated lesion? key words concepts: non-cavitated vs. cavitated, quantitative methods for caries diagnosis, reliability, sensitivity specificity, hidden caries, remineralization, sealants, air abrasion, non- invasive treatment, evidence-based tx options, outcome assessment Case presentation due October 22	Section 2
15	Wednesday October 27	<u>Dental Caries: The mild to moderate carious lesion .The lesion specific approach:</u> (Paper due : October 18 2004) Is the restorative material an important factor in restoring small lesions? What is the lesion specific approach used with composite? What choice of materials are there for small lesions? If you elect to place an amalgam and your patient is concerned about it's safety what to tell you patient? (prepare one or two page patient information brochure about amalgam safety/ risk). What is the evidence-based clinical evidence related to the clinical performance of composite vs. amalgam in small lesions? Key words: lesion specific composites, tunnel preparations, ultrasonic preparation, amalgam toxicity, evidence-based tx options, outcome assessment Case presentation due October 27	Section 3
16	Friday October 29	<u>The moderate to severe dental lesion .The Composite Restoration:</u> (Paper due : October 18 2004) How to bond composite to tooth structure? Which bonding agents? How to choose your composite? Which light source? How to build proximal contacts? Can you avoid post-operative sensitivity? What is the clinical evidence about composite restoration? Case presentation due October 29	Section 4
17	Wednesday November 3	<u>The moderate severe dental lesion. The Porcelain Restorations:</u> (Paper due : October 25 2004) What types of porcelain can be used for different restorative procedures ? How does the material properties affect the design for porcelain? What is the future of Cad Cam in restorative dentistry? What is the clinical evidence for using porcelain? Case presentation due November 3	Section 5
18	Friday Nov 5	<u>Build up: A foundation restoration to receive an indirect restoration:</u> (Paper due : October 25 2004) What is a build-up procedure? When is it indicated? What materials are used? How to select a build-up materials? What types of posts and cores are available? How to select	Section 6

a system and when to use it? What is the clinical evidence?
Case presentation due November 5

- 19 Wednesday November 10 **Cervical Lesion:**
(Paper due : November 1 2004)
What are the types of cervical lesions? What is the etiology and manifestations? How would you restore it? What is the clinical evidence?
case presentation due November 10 Section 7
- 20 Friday November 12 **Esthetic Options : Bleaching**
(Paper due : November 1 2004)
How to classify discolored teeth? How to evaluate the diagnostic data? What types of systems are available? How are they used? Is there any biocompatibility or adverse reactions? What is the clinical evidence?
Case presentation due November 12 Section 8
- 21 wednesday November 17 **Esthetic options: Veneers:**
(Paper due : November 8 2004)
How to analyze the anatomy of a smile? How to collect diagnostic data such as color, contour, shape and occlusion required for a veneer case? How gingival esthetics affect the final outcome of a veneer case? How a dentist evaluate patient expectation? How to communicate the case with the ceramist? What is the clinical evidence?
Case presentation due November 17 Section 9

6. Biosketches

Dr. Omar Zidan received his B.D.S. and Ph.D. from Egypt and Denmark 1972 and 1979. He attended a GPR residency at the U of M in 1982 and received an M.S. in Operative Dentistry from the University of Minnesota in 1984. Presently he is Associate Professor in the Division of Operative Dentistry. His research and publications focus on the concepts and clinical application of resin bonding for restorative dentistry. His teaching focus on modernizing the teaching of Operative Dentistry and how to integrate new concepts and evidence based in the curriculum and in clinical practice. He is involved with clinical practice at the U of M faculty practice

Dr. Gary Hildebrandt received his D.D.S. in 1981 and his M.S. in Restorative Dentistry in 1990 from the University of Michigan, where he served as an assistant professor from 1990-1996. In September of 1996 he joined the University of Minnesota. Currently he is a Clinical Dental Specialist and Director of the Division of Operative Dentistry, Department of Restorative Sciences. He has been involved in the clinical practice of Dentistry since 1981 and remains involved through part-time extramural practice. Dr. Hildebrandt's research emphasis has been in the area of caries risk assessment, management of caries active patients, and suppression of the microorganisms associated with dental caries.

Dr. Jorge Perdigao received his DMD from the University of Lisbon, Portugal in 1985, his MS in Operative Dentistry from the University of Iowa in 1992, his PhD in dental materials from the Catholic University of Leuven, Belgium in 1995. He taught at the University of Coimbra, Portugal. He served as Associate Professor at the University of North Carolina at Chapel Hill. Presently he is Associate Professor at the University of Minnesota. Dr. Perdigao research focus in the area of dentin bonding and composites. He serves on the editorial board of many dental journals and he lectures extensively world wide

7. Section Assignment:

Section1	Section2	Section3	Section4	Section5
Allison, Jessica	Connors, Daniel	Grothe, Carly	Johnson, Jeffrey	Lo, Chia-Yin
Amundson, Paul	Curtis, Adam	Hagen, Justin	Johnson, Jessica	Lowe, Nicholas
Barskiy, Maxim	Cziok, Amber	Hendrickson, Matthew	Knorr, Shawn	Lunstad, Daniel
Beers, Adam	Donnelly, Diana (Robin)	Hiller, Joshua	Kocian, Paul	Mach, David
Berger, Alicia	Duchsherer, Charles	Holub (Bulman), Christy	Kov, Anh	Maki, David
Biles, Jill	Dunlavey, Ryan	Horn, Michael	Larson, Cory	Manolovits, Kristen
Bruzek, Matthew	Elimelakh, Marianna	Homan, Jared	Larson, Scott Latgnotha-Wieser, Phinapha	Martin, Elizabeth
Bussler, Brandon	Elmajri, Aliya	Hustad, Whitney	Phinapha	McGrew, Chris
Casey, Conor	Fiedler, Jack	Jaberi, Joby	Lipschultz, Joshua	Middag, Marika
Clifford, Stephen	Fordahl, Breyne	Jensen, Jaclyn	Little, Jaimie	Moos, Jeff
Section6	Section7	Section8	Section9	
Moua, Mickey	Pelsue, Brian	Sampair, Christopher	Suihkonen, Rian	
Naidyhorski (Karter), Melissa	Petrino, Joseph	Schaus, Paul	Ullwelling, Mesa	
Nelson, Sarah	Phillips, Kristina	Schmidt, Judith	Van Nieuwenhuyzen, D.	

Neuner, Timothy	Plotz, Gary	Scotland, Eric	Vang, Joshua
Olson, Michelle	Potasek, Aimee	Sealey, Kathryn	Voelker, Marjorie
Otis, Emma	Powell, Karrie	Selden, Benjamin	Vogt, Stacey
Palokangas, Sara	Quitmeyer, Aaron	Senjem, Rhonda	Warder, Elisabeth
Patel, Rachana	Rediske, Jared	Smith, Atty	Weith, Steven
Pearson, Andrew	Regenold, Tara	Stadsklev, Scott	Wilcox, Andrew

8. **Paper Assignment:**

- Each student should identify his/her section, their clinical topic assignment and the date of their presentation.
- The paper of each section is due in its final format on Monday before 12:00pm one week before the section presentation date, verify the dates on the schedule so that the other sections can read your paper and post their comments. This is a collective section responsibility, if the paper is delayed this might affect the final grade
- The paper in a pdf. format should be emailed to Dr. Zidan zidano@umn.edu. The paper will be published immediately on the home page of the course @: http://www1.umn.edu/dental/courses/dent_6806fall04/index.html
- You must read all 9 papers and attend all the sections presentations. Post your scientific comment before the section presentation. The comment function will be deactivated then. Do not post a comment for your section. The day of the presentation, all students must evaluate all the papers using the inter sections forms. Each member of the section must fill the intra section forms by the end of their presentation, the form will be removed from your evaluation book for confidentiality. A cd with you presentation should be delivered to Dr. Zidan the day of presentation to be published on the home page of the course.

9. **Section Paper:**

Plan: Each section should formulate their plan within the first two weeks, defining the clinical questions, strategy for search and assigning roles to the section members.

A well build question(s) should include 4 parts: PICO Sackett et.al 1997

Patient problem: Primary problem/ disease, co-existing conditions, diagnosis and relevant aspect to the diagnosis

Intervention: what you want to do to the patient

Comparison: what are the main alternatives to compare to your intervention, there is no alternatives

Outcome Assessment: what you hope to accomplish

- short term and/or long term
- define the data you want to collect
- define the tools you will use
- define how you will interpret the data

Paper: Each paper should contain the following elements

1. **Informative title:** representing the assigned clinical topic

2. **Introduction:** Introduce your topic and your section plan

3. **Body of the paper: "Review of the literature":** with detailed references and source of information

4. **Conclusion: Position statement** the position of your section regarding the clinical topic: how you will incorporate the findings in your clinical setting? Is there any risks? how your daily practice would it be different from the way you practiced during your training at school? What would you suggest?

10. **Case presentation:** Each section should apply their clinical protocol to the clinical case. The case needs to be documented in a digital format using digital intra oral photography (contact Dr. Zidan for the camera)

ALL THE MEMBERS OF THE GROUP SHOULD TAKE A ROLE IN THE PRESENTATION

11. **Paper and course Evaluation:**

Each student will receive an evaluation booklet

Inter-sections: Each student must evaluate 8 papers and 8 presentations (do not evaluate your section).

Intra-sections: Each student must evaluate the work of his/ her section (do not evaluate yourself)

Evaluate the course using the course evaluation forms