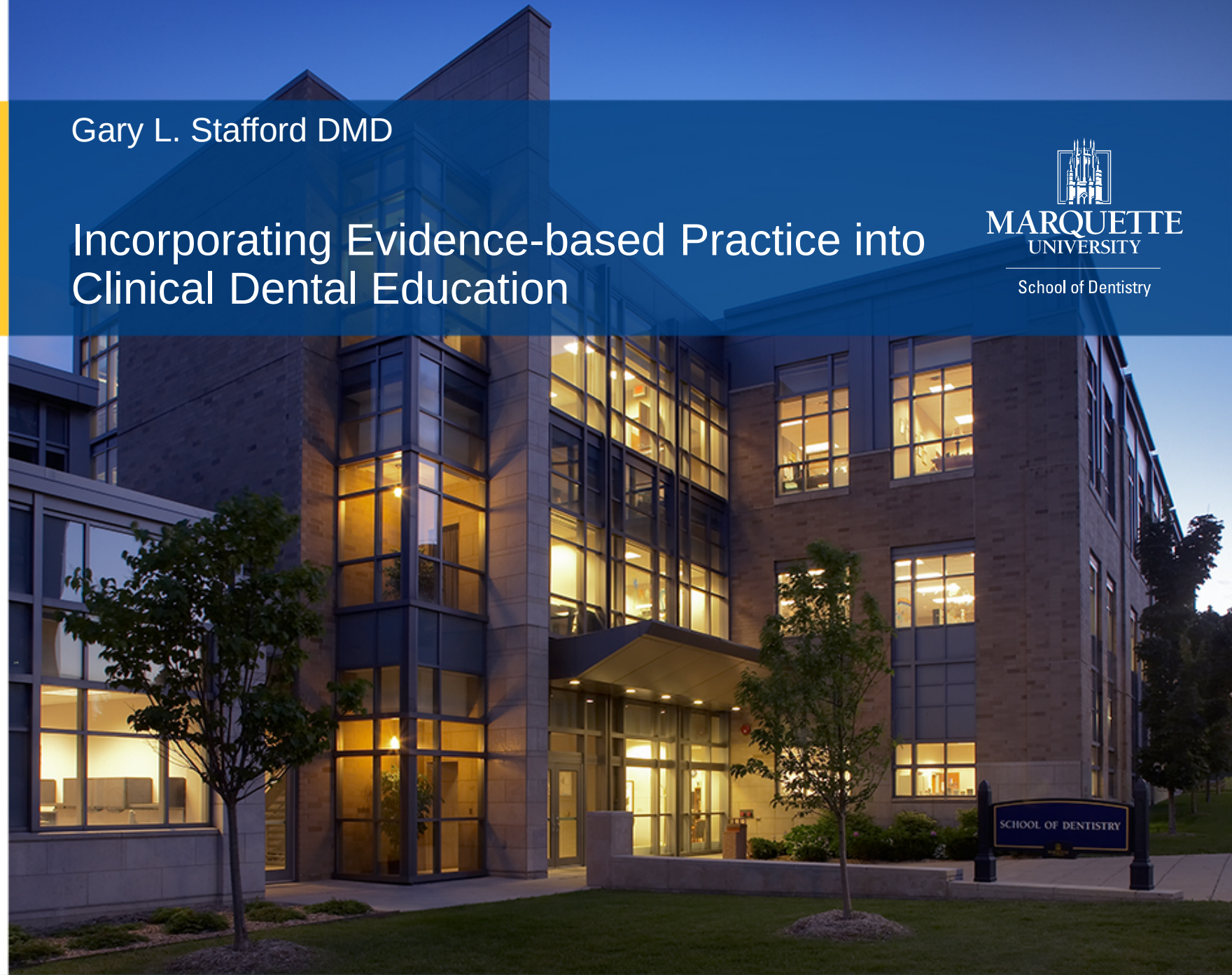
Gary L. Stafford DMD

Incorporating Evidence-based Practice into Clinical Dental Education

MARQUETTE UNIVERSITY
School of Dentistry



American Dental Association

CODA STANDARDS ADDRESSED

CODA Standard

- 2-9
  - Graduates must be competent in the use of critical thinking and problem-solving, including their use in the comprehensive care of patients, scientific inquiry, and research methodology.

CODA Standard

- 2-9 – Intent:
  - Throughout the curriculum, the educational program should use teaching and learning methods that support the development of critical thinking and problem solving skills.

CODA Standard

- 2-10
  - Graduates must demonstrate the ability to self-assess, including the development of professional competencies and the demonstration of professional values and capacities associated with self-directed, lifelong learning.

CODA Standard

- 2-10 – Intent:
  - Educational program should prepare students to assume responsibility for their own learning….Lifelong learning skills include student assessment of learning needs.

CODA Standard

- 2-14
  - Graduates must be competent in the application of biomedical science knowledge in the delivery of patient care.

CODA Standard

- 2-14 – Intent:
  - Biological science knowledge should be of sufficient depth and scope for graduates to apply advances in modern biology to clinical practice and to integrate new medical knowledge and therapies relevant to oral health care.

CODA Standard

- 2-21
  - Graduates must be competent to assess, critically appraise, apply, and communicate scientific and lay literature as it relates to providing evidence-based patient care.

CODA Standard

- 2-21 – Intent:
  - The education program should introduce students to the basic principles of clinical and translational research, including how such research is conducted, evaluated, applied, and explained to patients.

CODA Standard

- 5-2
  - Patient care must be evidence-based, integrating the best research evidence and patient values.

CODA Standard

- 5-2 – Intent:
  - The dental school should use evidence to evaluate new technology and products and to guide diagnosis and treatment decisions.

3 Tiered Approach

Advisory Council

Dental Rounds

Didactic Instruction

Incorporating Evidence-based Practice into Clinical Dental Education

The “Bottom Up” Approach

EARLY EXPOSURE

MARQUETTE UNIVERSITY
School of Dentistry

Traditional Didactic Instruction

3 Tiered Approach – “Bottom Up”

Advisory Council

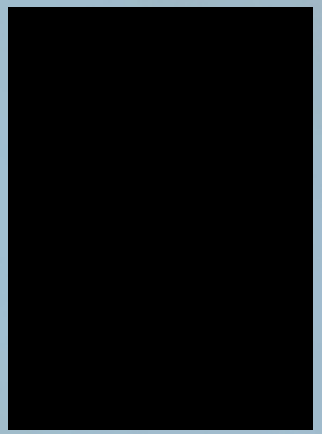
Dental Rounds

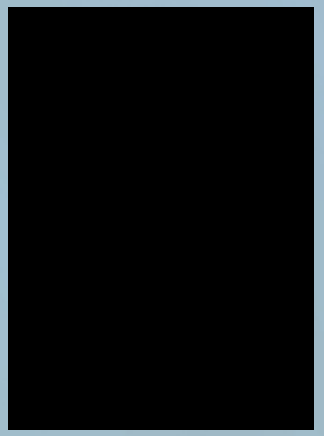
Didactic Instruction

Incorporating Evidence-based Practice into Clinical Dental Education

Timeline

- D1 Year – Fall Semester
  - DEIN 7110 – Foundations of Oral Health I
- D1 Year – Spring Semester
  - DEIN 7120 – Foundations of Oral Health II





Didactic Instruction

Basics

- These courses provide foundational dental knowledge and basic science clinical correlations.

- Multidisciplinary faculty

Didactic Instruction

DEIN 7110 - Foundations of Oral Health I

- Introduction to Evidence-based Dentistry
- Introduction to Epidemiology 1 & 2
- Biostatistics 1 & 2
- Hands-on PICO Formulation & Searching for the Evidence

Didactic Instruction

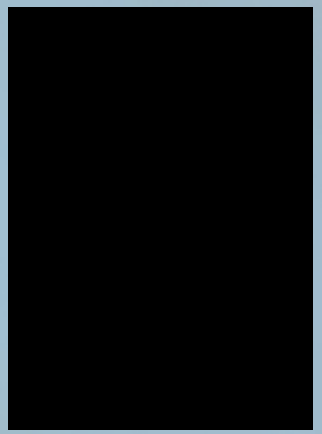
DEIN 7220 - Foundations of Oral Health II

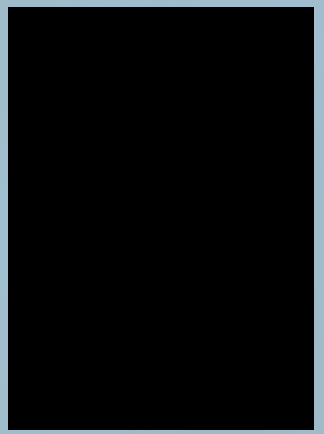
- Introduction to the Evidence-based Dentistry modules
  - Periodontology
  - Cariology
  - Public Health
  - Behavioral Sciences

Didactic Instruction

D2 Year

- DEGD 7310 – Clinical Restorative Procedures I
  - Summer session
- Evidence-based dentistry methods and strategies are discussed





Didactic Instruction

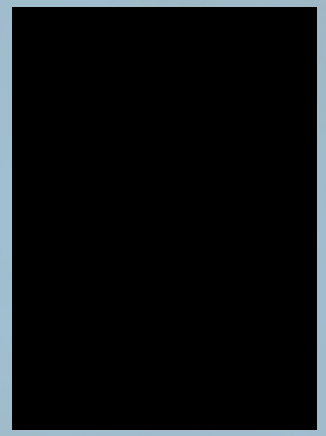
D2 Year

- DEGD 7310 – Clinical Restorative Procedures I
  - 4 person teams research and develop a CATS (Critically Appraised Topics) paper and presentation based upon actual clinical questions

Didactic Instruction

Critically Appraised Topics (CAT's)

- John D. Rugh, PhD
  - Director, Evidence-based Practice Program
  - University of Texas Health Sciences Center at San Antonio (UTHSCSA) Dental School



Rugh JD, Hendricson WD, Hatch JP, Glass BJ. The San Antonio CATs initiative. J Am Coll Dent 2010;77(2):16–21.

KEYS TO SUCCESS

Library Resources

- Ms. Rosemary Del Toro
  - Collection and Resource Management Librarian
  - Liaison to the School of Dentistry

Email: rosemary.deltoro@marquette.edu Phone: (414) 288-3944
Office Number: R-309

The Textbook

Publisher – Wolters Kluwer/Lippincott Williams & Wilkins

ISBN: 978-0-7817-6533-6

The “Core of the Curriculum” Approach

DENTAL ROUNDS

MARQUETTE UNIVERSITY
School of Dentistry

Integrated Didactic and Clinical Instruction

3 Tiered Approach – “The Core”

Advisory Council

Dental Rounds

Didactic Instruction

Incorporating Evidence-based Practice into Clinical Dental Education

Premise

- Cornerstone of the curriculum
  - Acts as the main entity that would pull together didactic and clinical course material and better integrate evidence-based decision making and case-based learning into the curriculum.
- Capstone of the curriculum

Dental Rounds

Premise

- Mechanism to address multiple Commission on Dental Accreditation (CODA) Standards
  - 2-9, 2-10, 2-14, 2-21, 5-2

Key Development Concepts

- Team based
  - Team member from each year
    - D1, D2, D3, D4
- Multidisciplinary
  - High level of faculty involvement
- Clinically Relevant
  - Presentation based on D4’s patient

Key Development Concepts

- "Just in time" learning
- Mimic Medical Model
  - Either before or after clinic hours
  - Grand Rounds
- Maintain Case-based Presentations
  - High value placed on this by students

Dental Rounds

Course Objectives

- Distinguish between journal type
- Identify the study design of a journal article
- Discuss an aspect of a basic science process related to a clinical case

Course Objectives

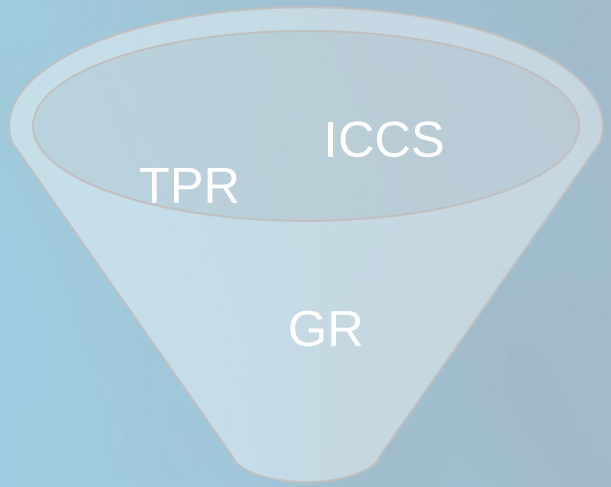
- Orally present information in an effective manner
- Answer questions effectively by providing an appropriate response with supporting evidence/data

Course Objectives

- Demonstrate in depth knowledge of the specific subject manner
- Interact in a professional manner with team members, faculty, and administrators to meet assigned objectives

3 Level Approach

- Integrated Clinical Care Seminars
  - (ICCS)
- Treatment Planning Rounds
  - (TPR)
- Grand Rounds
  - (GR)



CODA Standards Addressed

INTEGRATED CLINICAL CASE SEMINARS (ICCS)

Basics

- Involves all faculty members
- Occurs in fall and spring semester
- Students receive a “letter” grade as opposed to Pass/Fail
- Mandatory attendance policy

Integrated Clinical Case Seminars (ICCS)

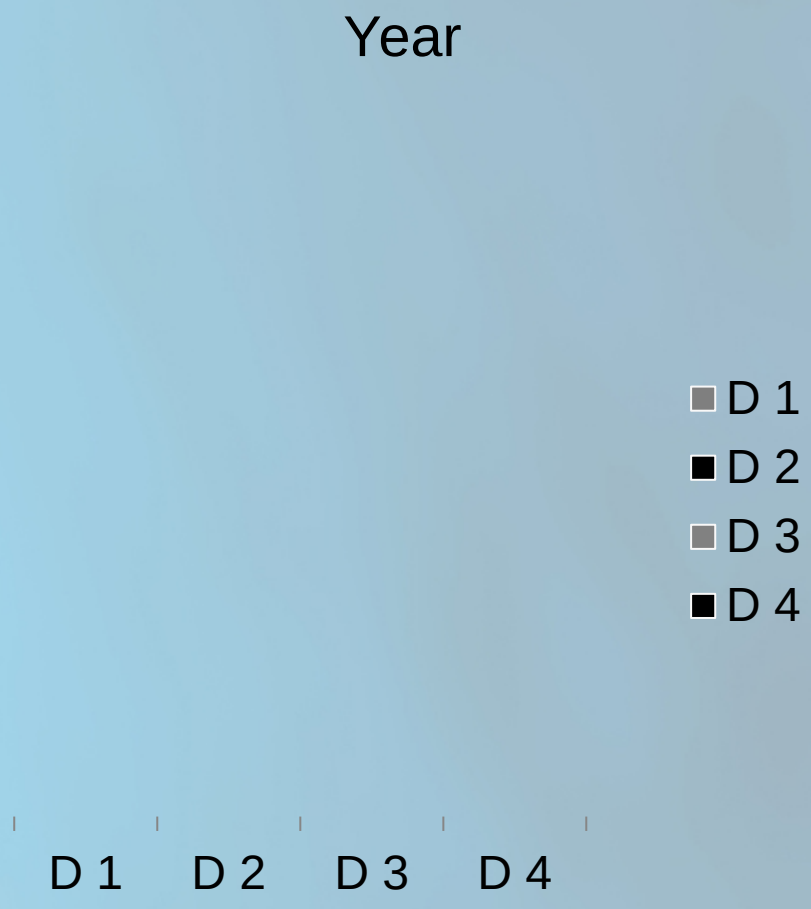
Basics

- Each team presents one clinical case per semester
- Students attend all rounds presentations within their specific group(xxx including their own)
- 50 minute presentations

Integrated Clinical Case Seminars (ICCS)

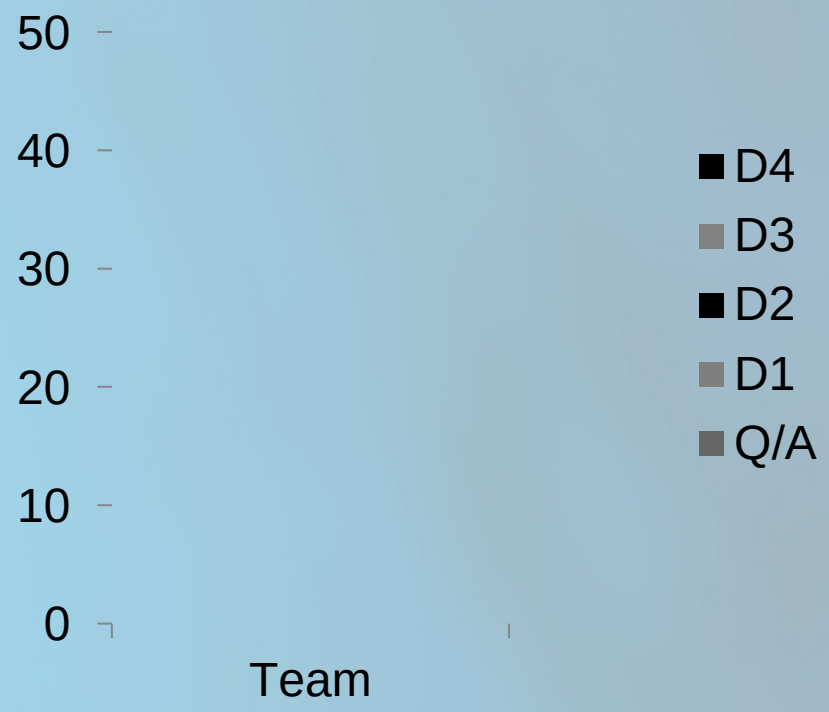
Integrated Clinical Case Seminars (ICCS)

- Integrates D1 – D4 experience
- Utilizes vertical teams of four
  - One from each year
    - D1, D2, D3, D4



Integrated Clinical Case Seminars (ICCS)

- D4 – Team Leader
  - Case explanation
  - 10 mins
- D3 – PICO
  - 10 mins
- D2 – Pathology
  - 5 mins
- D1 – Basic Science
  - 5 mins
- Q/A Discussion
  - 20 mins



D4 Responsibilities

- Team management
- Case selection
- Clinical question generation
- Case presentation

D4 Responsibilities

- Approval of Rounds case from their CPMG Leader
- Meets with team (D3, D2, D1)
  - Discusses case
  - Relays clinical question
  - Assigns tasks for Rounds case

Integrated Clinical Case Seminars (ICCS)

D3 Responsibilities

- Generates and answers PICO question

D2 Responsibilities

- Assigned pathology aspect of the case
- Narrow focus

D1 Responsibilities

- Assigned basic science aspect
- Narrow focus

Accountability

- Students are expected to come to each rounds prepared to participate.
  - Late attendance results in a half letter grade penalty
  - Missing a Rounds (more than 15 mins) results in a full letter grade reduction

Accountability

- Participating students must engage in the process
  - Students not presenting must:
    - Submit at least one discussion question relative to the case
    - Classify one of the journal articles used in the case presentation

CPMG Leader Responsibilities

- Reviews and approves clinical question and PICO question
  - A Sharepoint site exists for each Rounds case/presentation
  - Blank templates are available for students use

Integrated Clinical Case Seminars (ICCS

Activity	Expected Timeline
Selection of Case	6 weeks before presentation
Approval of clinical question	4 weeks before presentation
Approval of PICO question	3 weeks before presentation
Approval of Pathology question	3 weeks before presentation
Approval of Basic Science question	3 weeks before presentation
CAT template completed	4 business days before presentation
Pathology template completed	4 business days before presentation
Basic Science template completed	4 business days before presentation
Powerpoint case presentation posted	2-4 business days before presentation

TREATMENT PLANNING ROUNDS (TPR)

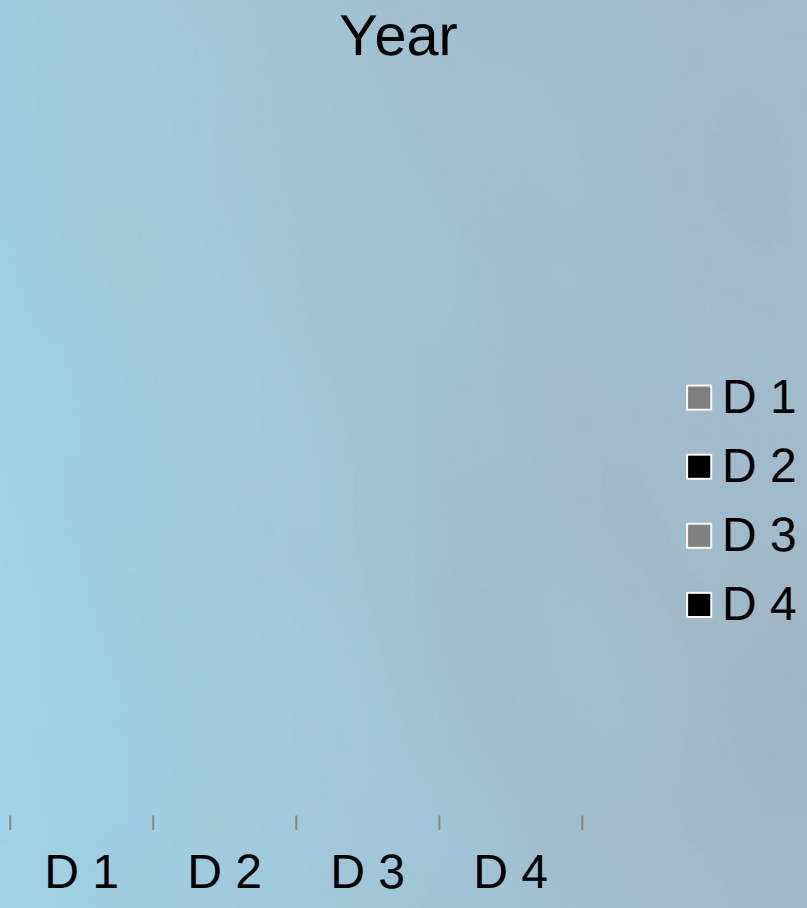
Primary Goal

- Assist and guide the rising D3's with complex treatment planning when they need it the most
- Summer semester
  - After D4's graduate there is a void in the vertical ICCS team

Treatment Planning Rounds (TPR)

Timeline

- Summer semester
- After D4's graduate there is a void in the vertical ICCS team



Course Objectives

- Understand the basics of the diagnostic process
  - Patient history
  - Clinical examination
  - Radiographic examination
  - Other diagnostic aids

Treatment Planning Rounds (TPR)

Course Objectives

- Review basics of evidence-based treatment planning
  - Risk assessment
  - Prognosis
  - Expected treatment outcomes

Treatment Planning Rounds (TPR)

Course Objectives

- Observe and participate in the development of a treatment plan for assigned patient in rounds team
- Observe the interactions between student dentists, patients, and specialists and reflect on experience

Treatment Planning Rounds (TPR)

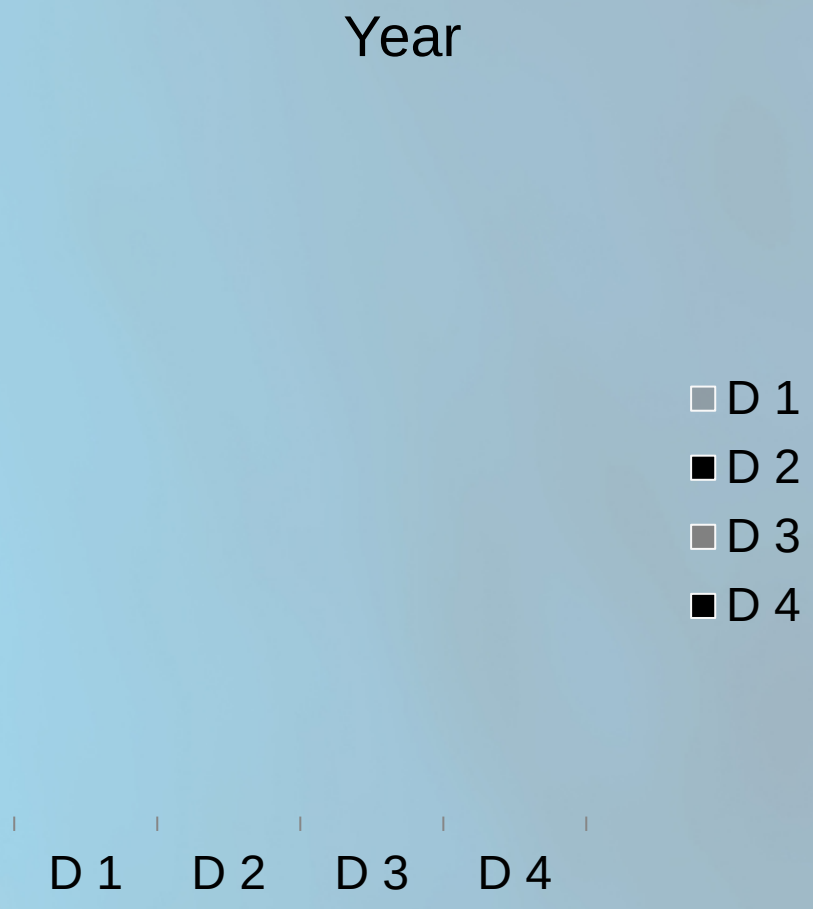
Course Objectives

- Interact in a professional manner with team members, faculty, and administrators to meet assigned objectives

Treatment Planning Rounds (TPR)

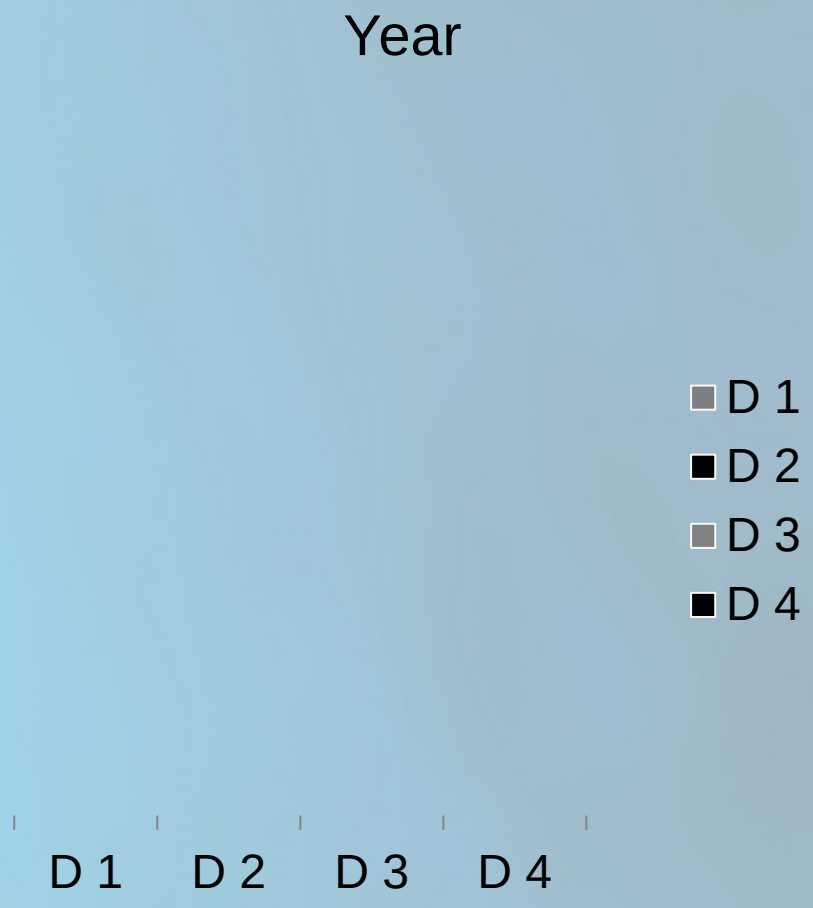
Structure

- Rising D3 takes the leadership role
  - Chooses case
  - Responsible for one case during summer session



Structure

- Rising D4
  - Provides guidance
- Rising D2
  - Observation/questions



Structure

- Treatment planning teams include CPMG Leader, Prosthodontic faculty, Periodontal faculty

Structure

- Student preparation
  - Comprehensive examination
  - Study models
  - Oral Medicine clearance
  - Preliminary treatment plan

Treatment Planning Rounds (TPR)

Structure

- Modeled after Dermatology Rounds at the Medical College of Wisconsin
- Patient present for the session as well
  - Patient Incentive
    - Core group of experts available to develop ideal treatment plan or aid in diagnosis at no additional charge to them

Treatment Planning Rounds (TPR)

Structure

- Two cases scheduled for each one hour session of (TPR)

Assessment

- Students receive a “letter” grade as opposed to Pass/Fail

Advantages

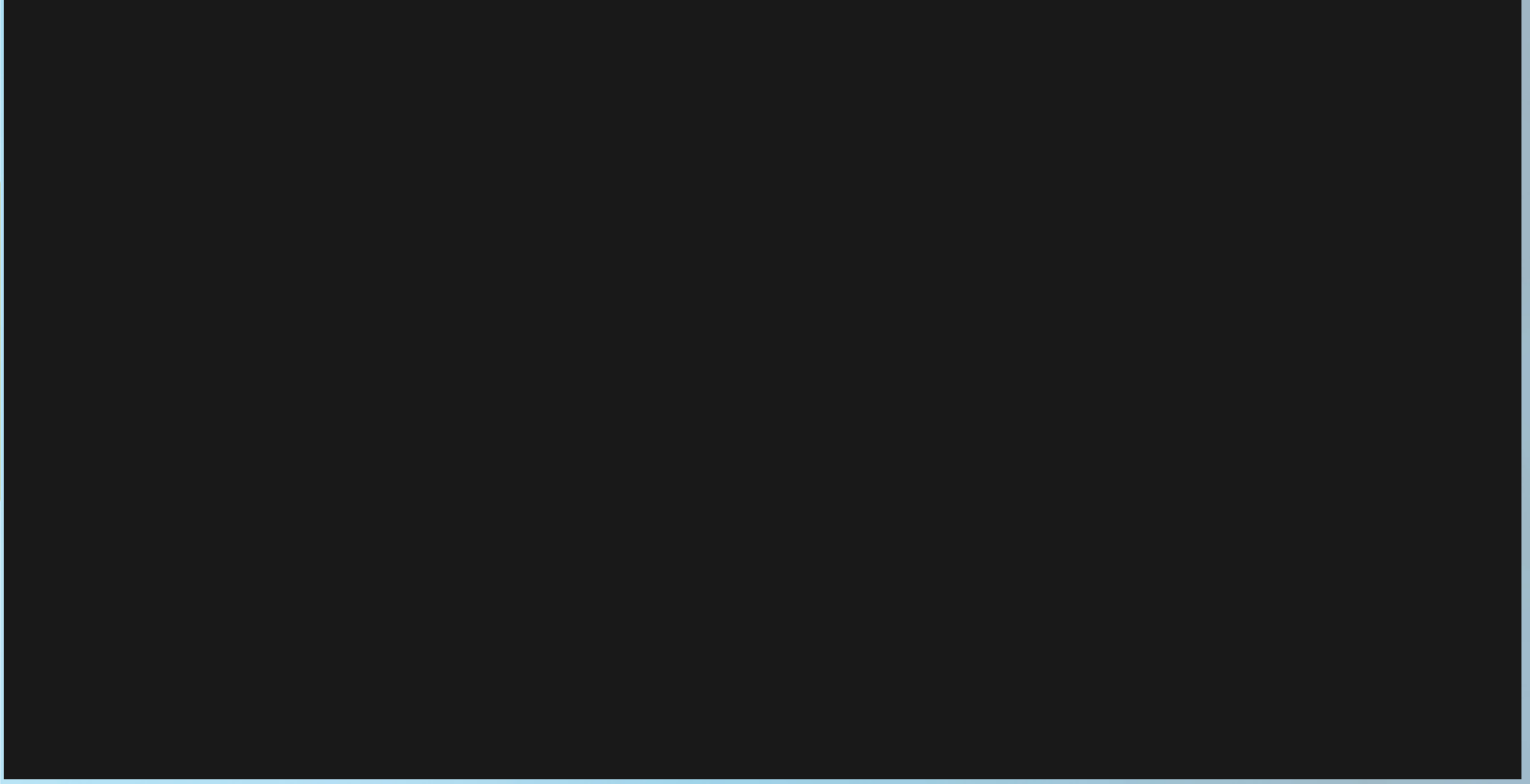
- “Just in time” learning
- Rising D4’s benefit from refreshing of information

Treatment Planning Rounds (TPR)

Advantages

- Rising D2's witness and learn about clinical application of treatment planning much earlier
- Will get complex cases into active treatment much earlier

Treatment Planning Rounds (TPR)



GRAND ROUNDS

Premise

- Widespread in medicine and takes on many forms
- Raise our rounds model to a higher level

Timeline

- Held once a year in April

Structure

- Mandatory for entire student body, faculty, and staff
- Outside attendance encouraged
- Keynote speaker
- Showcase the two best student presentations

Grand Rounds

Advantages

- Another venue for students to experience evidence-based, case-based learning
- Students are rewarded for outstanding ICCS presentations

Disadvantages

- Students selected may not view this as a “reward”
- Cost
- Lost clinic revenue

KEYS TO SUCCESS

Keys to Success

- Rounds “Czar”
- Support
  - IT
  - Staff

Dental Rounds

- Group Leader: Dr. Derderian
- Specialty Leader: Dr. Koenig
- Project Team Leader: D4=James Schaeffer
- Project Team Participants:
  - D1=Scott Hirsbrunner
  - D2=Amanda Adamiec
  - D3=Sara Menard

- 60 year old female of Middle Eastern Decent
- "On friday when I came in I was in a lot of pain and swelling. I started amoxicillin on Thursday night. After that I feel a lot better. The pain is almost gone."

- Hypothyroidism
  - TakingSynthroid
- High Cholesterol
  - Taking Crestor

- RCT and Crown #30
- Pt had pain and swelling lower left on Thursday. Given Amoxicillin. Was seen on Friday in AEGD program, when vitality testing, bitewing, and PA were done. Returned Monday for OS consult and CBCT. All teeth tested vital.

ƒ Bitewing

f PA

f PAN

f CBCT

f CBCT

- CBCT
  - Disruption of lingual cortex
  - Mandibular Canal buccal to impacted #17

- Teeth #1 and 16 are missing
- #32 is vertically impacted
- #30 has had RCT and has PARLs
- #17 is horizontally impacted and displaced to inferior border of mandible by large pericoronal radiolucency approximately 6 cm x 3 cm x 1.5 cm in size. Lingual cortex interupted and mandibular canal intact. Roots of #18 resorbed and distal root #19 mildly resorbed.

- Swelling of left posterior mandible with mild tenderness to palpation
- #18 mobile

- Differential diagnosis from CBCT report:
  - Keratocystic Odontogenic Tumor (KOT)
  - Unicystic Ameloblastoma
  - Dentigerous Cyst

- 3rd Molars
- Pain
- Swelling
- Root Resoption
- Pericoronal Lesion

D1 Basic Science

Describe: Anatomy of Angle of Mandible and impacted Mandibular 3rd molars.

- Angle of Mandible (Ramus --- Body)
- Nerves: Inferior Alveolar / lingual

(Bleeding, Alveolar osteitis, Swelling)

- Impactions
- Mesioangular
- Vertical
- Distoangular
- Horizontal

Reference : http://home.comcast.net/~wnor/lesson4.htm & 'Thieme Atlas of Anatomy' Head and Neuroanatomy 2

The pathology topic is to compare and contrast Keratocystic Odontogenic Tumors (Odontogenic Keratocyst) and Unicystic Ameloblastomas (especially radiographic findings).

- Demographic
- Location in the Oral Cavity
- Clinical Signs
- Histology
- Radiographically

Regezi, J., Sciubba, J., & Jordan, R. (2012). Oral pathology: Clinical pathologic correlations. (6 ed., pp. 255-259, 273-274). St. Louis: Elsevier Saunders.

Reichart, P., & Philipsen, H. (2004). Odontogenic tumors and allied lesions. (pp. 77-85). London: Quintessence Publishing

Shear, M., & Speight, P. (2007). Cysts of the oral and maxillofacial regions. (4 ed., pp. 32-36). Ames: Blackwell Munksgaard.

ƒ Clinical Question:

During surgical removal of an odontogenic keratocyst (KCOT), does enucleation, marsupialization or a combination of both procedures provide the lowest reoccurrence rate?

P: Surgical removal of odontogenic keratocyst

I: Enucleation or marsupialization

C: Marsupialization and enucleation

O: Recurrence rate

- When surgically removing odontogenic keratocysts, does enucleation or marsupialization as compared to marsupialization followed by enucleation provide the lowest recurrence rate?

- Initial marsupialization followed by subsequent enucleation demonstrated the lowest recurrence rate, however further clinical research is still needed.

- Date(s) of Search: 9/06/12, 9/10/12, 9/11/12
- Database(s) Used: Pubmed
- Search Strategy/Keywords: Odontogenic keratocyst, KCOT, marsupialization, enucleation

- MESH terms used: Odontogenic keratocyst, Nevoid basal cell carcinoma syndrome

Keratocystic Odontogenic Tumor: A 10 Year Retrospective Study of 83 Cases in an Iranian Population

Authors: Ataollah Habibi, Nasrollah Saghravanian, Mehdi Habibi

Jounral of Oral Science. Volume 49 No. 3. Pages 229-235. 2007

ƒ Study Design: Retrospective Analysis

- The Mashhad School of Dentistry department of Oral and Maxillofacial Surgery reviewed 83 cases of KCOT's affecting 74 different patients. Six o the patients had nevoid basal cell carcinoma syndrome and therefor had multiple KCOT's, each of which were biopsied and counted for separately
- This study consisted of 44 males and 30 females with an age range of 5 t 82 years old. Further information gathered included site of involvement, clinical manifestation, treatment modalities, recurrences, and the association with impacted teeth or satellite cysts.
- 66 cysts were treated by enucleation alone, 11 cysts were treated by marsupialization and subsequent enucleation and 6 cysts were treated by marsupialization alone.
- The average follow up period was 32.5 months after surgery and of the 83 cysts treated, there were 7 total reoccurrences, 1 in maxilla and 6 in the mandible. 5 of the reoccurrences were noted with enucleation alone and reoccurrences were noted with marsupialization alone. No reoccurrences were noted in the cysts treated by marsupialization followed by subseque enucleation.

- Overall this study concluded that patient age, gender and original location of cyst did not affect the reoccurrence rate. However, this study did note that reoccurrence tended to be more likely in the mandible. This study also concluded that the type of initial treatment provided did not affect the reoccurrence rate, but patient cooperation and post-operative patient home care did play a role in reoccurrence. Regarding treatment regimen, this study concluded that marsupialization with subsequent enucleation does appear to have the lowest reoccurrence rate, although not to a significant degree, and more research needs to be conducted.

- Directly compared enucleation or marsupialization with intial marsupialization followed by subsequent enucleation and the reoccurence rate of each, which directly addressed out clinical and pico question.

Treatment of Odontogenic Keratocysts: A Follow Up of 255 Chinese Patients

Authors: Yi Fang Zhao, Jin Xiong Wei and Shi-Ping Wang

Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology and Endodontics Volume 94 Issue 2. Pages 151-156. August 2002.

ƒ Study Design: Retrospective Analysis

- This article retrospectively studied 484 patient cases of KCOT's that were diagnosed and treated between the years 1962 and 1998 in the Department of Oral and Maxillofacial Surgery at the Hospital of Stomatology at Wuhan University. Between the 484 different patients, there were 489 total cysts, with a total of 319 male patients, 165 females patients whose ages ranged from 13 - 73 years old.
- Enucleation alone was carried out in 402 of the cysts, with 43 of the cystic cavities being cleaned out with Carnoy's Solution. A total of 17 of the cysts treated with enucleation alone had post-operative infections. A combination of marsupialization and later enucleation was made in 11 of the cases. Radical resection was completed in 76 of the cysts where 31 patients received rim mandibulectomy. 255 patients were followed radiographically and clinically for a period ranging from 2 - 29 years after operation and recurrences were found in 31 cases, all of which were from enucleation alone without Carnoys Solution .

- This article concluded that while the reoccurrence rate was higher in the mandible, it was not of statistical significance. However, this article concluded that the treatment of the cyst was related to reoccurrence rates. Enucleation has the highest reoccurrence rate, but the reoccurrence rate can be reduced by wiping out the cavity with Carnoys solution. Furthermore, a combination of earlier marsupialization with later enucleation has a lower reoccurrence than enucleation alone.

- Directly compared enucleation alone with initial marsupialization followed by subsequent enucleation, which addressed part of our clinical and pico question.

☐	1a – Systematic Review of Randomized Control Trials (RCT'S)
☐	1b – Individual RCT
☐	2a – Systematic Review of Cohort Studies
☐	2b – Individual Cohort Study
☐	2c – "Outcomes" Research, Ecologic Studies
☒	3a – Systematic Review of Case Control Studies
☐	3b – Individual Case Control Study
☐	4 – Case Series (and poor quality cohort and cas control studies)
☐	5 – Expert Opinion without explicit critical appraisal, or based on physiology/bench researc

Double click table to activate check-boxes

☐	A – Consistent, good quality patient oriented evidence
☒	B – Inconsistent or limited quality patient oriented evidence
☐	C – Consensus, disease oriented evidence usual practice, expert opinion, or case series for studies of diagnosis, treatment prevention, or screening

Double click table to activate check-boxes

- While there are many different surgical techniques available for the removal of odontogenic keratocysts, initial marsupialization followed by subsequent enucleation resulted in the lowest reoccurrence rate. However , surgeons need to keep in mind that this is not the ideal treatment for everyone. Patients having an odontogenic keratocyst surgically removed need to be evaluated on an individual level to determine what treatment regime suits their age, cyst location and symptoms the best.

The “Top Down” Approach

ADVISORY COUNCIL

MARQUETTE UNIVERSITY
School of Dentistry

Faculty Development and Calibration

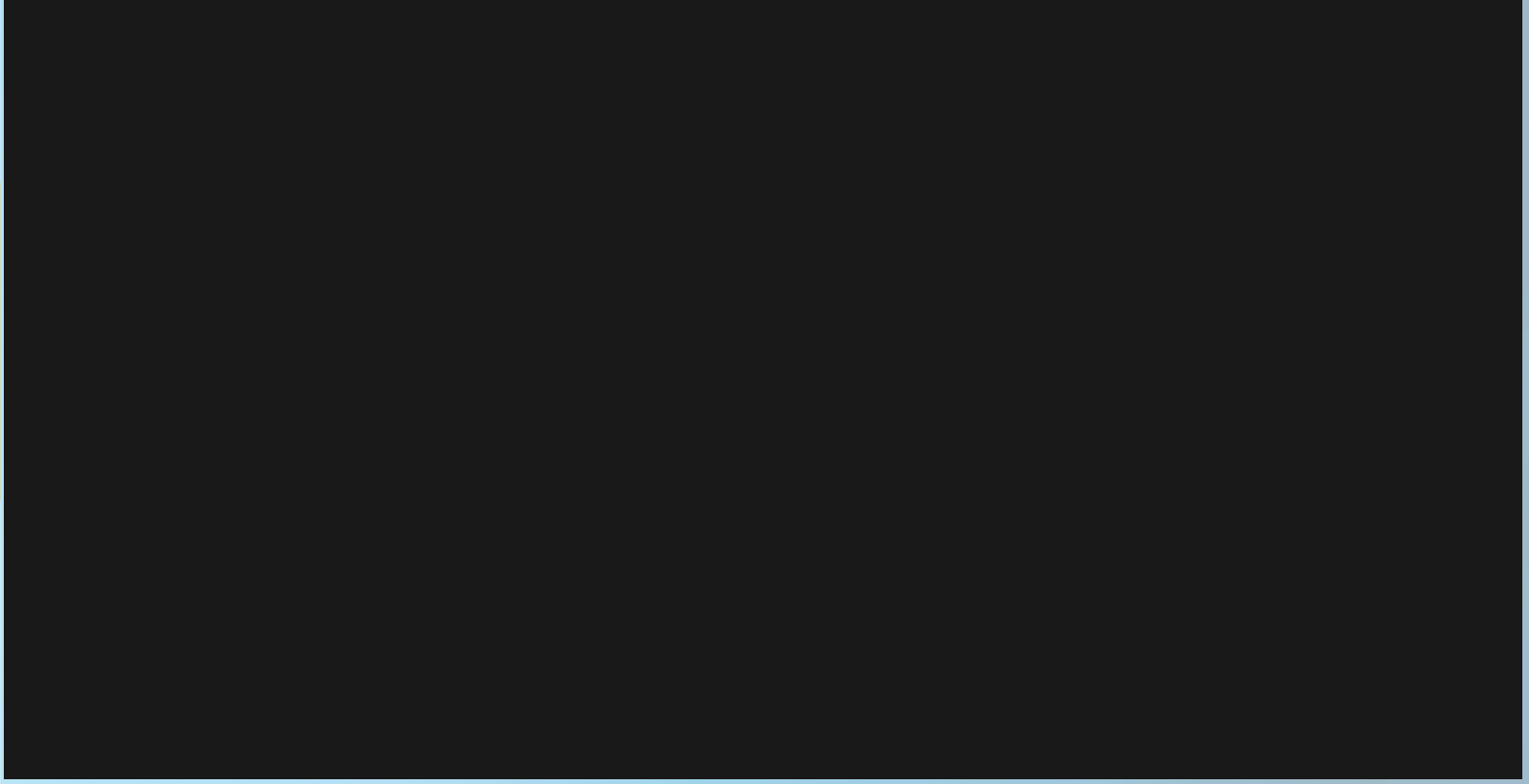
3 Tiered Approach – “Top Down”

Advisory Council

Dental Rounds

Didactic Instruction

Incorporating Evidence-based Practice into Clinical Dental Education



WHY?

Why?

Why?

- Department size
- Building expansion
- Benefits the students and the faculty
  - Involvement
  - Calibration

Why?

Concept

- Task Force (TF) – a unit or formation assigned to work on a single defined task or activity

Concept

- Comprised of:
  - F/T faculty – required
  - Volunteer P/T faculty
- Interdepartmental (by invitation)

Department of General Dental Sciences Advisory Council

Overview

- Nine Individual Task Force Teams
  - Task Force Team Leader
    - F/T faculty member
  - Ideally no more than 3 other team members
  - Meets weekly until task is completed and recommendation is made

Overview

- GDS Advisory Council
  - Meets bimonthly
  - Made up of Task Force Team Leaders
  - Discusses specific Task Force recommendations and create an action plan across department
  - Monthly reporting to all GDS faculty

Task Force Teams

- Biomaterials
- Fixed Prosthodontics
- Implants
- Oral Medicine & Radiology
- Quality Control/Quality Assurance

Task Force Teams

- Removable Prosthodontics
- Restorative
- TMD/Myofacial Pain
- Treatment Planning

Department of General Dental Sciences Advisory Council

Faculty Input

- Submit ideas for change to the Chair
- Chair brings suggestion to GDS Advisory Council
- If deemed appropriate, Advisory Council will charge Task Force with researching idea and making a recommendation

F/T or P/T
Idea

GDS
Chair

Task
Force

GDS Advisory Council

Biomaterials
Fixed Prosthodontics
Implants
Oral Medicine &
Radiology
Quality Control –
Quality Assurance

Removable
Prosthodontics
Restorative
TMD/Myofacial Pain
Treatment Planning

EBD

Didactic
Curriculum

GDS
Chair

Task Force
Recommendation

Clinic Procedures
and Protocols

F/T or P/T Idea

Evidence-based Decision Making


MARQUETTE
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School of Dentistry
Questions?
Thank You
SCHOOL OF DENTISTRY