1 **GUM GARDENERS STUDY CLUB**
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2 **THE ETHICAL DELIMA AND EVIDENCE-BASED DECISION MAKING**
- Before we start we need to talk about this subject.
- I have been around for a very long time and have many examples that would fit into this discussion.
- I need you all to give me some input so we can discuss the here and now and what is going on in our practices.

3 **Educational Program Objectives**
- Identify the basic principles of evidence-based decision making
- Explain the "levels of scientific evidence" and how they relate to research design
- Differentiate between systematic reviews and meta-analyses
- Identify the on-line search tools available to find research evidence
- Apply new information to practice

4 **Evidence-Based Decision Making**

Managing Information
Improving Patient Care

5 **Recent History**
50 years ago we got our news and information from few sources

6 **Now let us go back 40 years, I was there.**
- We had the bible (guess what is was)
- We had a couple of Journals
- We had the ever knowing faculty
- We had the dentists who knew everything
- What did the patients know?
- Did what we did for our patients do what we thought it did?
- And how did we know?
- What were some of those things?

7 **What are some of the decisions that effect our lives that were not supported by evidence?**
- The Thalidomide crisis - lead to the 1962 Kefauver-Harris amendment - increased use of randomized control trial.
- Dalkron Shield crisis - Medical Devise Amendment.
- Use of ERT for Cardiovascular Health (I was popping those patches until voila - it was making it worse)
- Some Dental Examples?

8 **Now on the positive side, what are some that evidence just kept coming.**
- Fluoride - look at the history
  - Water
  - Toothpaste - "Look Mom No Cavities"
  - Topical
- Pit and Fissure Sealants
- Mechanical Toothbrushes
- Dental Implants -

  - We have come a long way Baby

9 **Why is EBDM Important?**
Provides a systematic process to:
- Manage the information overload that's nearly impossible to keep up with it on your own
  - >500 trials per dental specialty published each year in more than 50 journals*
- Reduce variations in practice patterns beyond what is acceptable
- Increase the rate of adopting new knowledge into practice
  - ➢Most practitioners are slow to adopt new knowledge into clinical practice and eliminate ineffective practices

*Niederman, JADA 2009; 140(3):272-274.

10 **Current**
Today dental professionals and patients get information from many sources

11 **The Information Explosion**

Number of years it took TV to reach market an audience of 50 million:

12 **The Information Explosion**
Number of years it took the Internet to reach a market audience of 50 million

13 **The Information Explosion**
Number of years it took the iPod to reach a market audience of 50 million:

14 **The Information Explosion**

searches per month

15 **Medical Publishing**
Annually:
- 20,000 Journals
- 17,000 New Books

Medline
- 4,000 Journals
- 6 Million References
- 400,000 New Entries Yearly

16 **Variations in Dental Practice: An Investigative Report**

- The Patient: Good oral hygiene in need of a crown on #30, possible restoration #18
  - Estimated Cost $500. (in 1997)
- Opinions solicited from 50 DDS in 28 states and Washington DC
- Summary:
  - 15 (30%) missed the need for the crown
  - A number cited the need for a full mouth reconstruction with fees upward to $30.00.
  - Less than 50% performed an oral cancer screening.
    - W. Ecentbarger Readers' Digest 1997

17 **Information Overload**
What Does this Mean to Me?
I am no longer the only or main source of dental healthcare information for my patients.

18 **What are some of the sources of information our patients access?**
- Radio talk shows
- Television advertisements -

Infomercials
- Friends
- Publications
- Internet
- Former dentists and hygienists
- Others

19 **Our Professional Roll in Patient Responsibility**
- We are the educators
- Our patients own their own dental health
- Our roll is to provide all the necessary treatment and the information to enable them care for themselves.
- (I tell them I have 28 of my own to care for, they are responsible for their own 28, I am here to help them do that).

20 **Information Overload**
What Does this Mean to Me?
My patients hear about new products and new procedures from dozens of sources.

21 **Information Overload**

What Does this Mean to Me?
Yet, my patients still look to me for advice and answers to their questions.

22 **Current Decision Making Challenge**
You still have to make decisions everyday about how to treat your patients.

23 **Current Decision Making Challenge**
When faced with 2 choices . . . People make effective decisions.

24 **Decision Making Process**

25 **You and your patient make the final decision**

26 **A New Decision Making Methodology Is Needed**
- But which methodology ?
- How do I learn it?
- How do I integrate it into my practice ?
- What will be the impact?

27 **Evidence-Based Decision Making**

28 **Evidence-Based Dentistry Is NOT….**
- Cookbook dentistry
- A standard of care
- A mandate of what must be done

• A substitute for clinical judgment

29 **Purpose of EBDM**

The use of an evidence-based approach in clinical practice is intended to close the gap between what is known (research) and what is practiced with the goal of improving patient care based on informed decision-making.

30 **Steps in Using EBDM**

31 **Sources of Evidence**

- Scientific evidence is the product of well-designed and well controlled research investigations that minimize sources of bias
- Evidence is the synthesis of all valid research studies that answer a specific question
- Evolves over time as more research is conducted, underscoring the importance of keeping current with the scientific literature

32 **Evidence-based Sources: Primary & Secondary**

- Primary: original research publications
  - ➢Experimental: hypothesis testing; establishing cause and effect; randomized controlled trial (RCT)
  - ➢Non-experimental: observational; researcher does not give treatment, intervention or provide an exposure; cohort studies, case control studies, case series and case reports

- Secondary: filtered or synthesized publication of the primary/original research
  - ➢Meta-analyses
  - ➢Systematic Reviews
  - ➢Evidence-based article reviews
  - ➢Evidence-based clinical practice guidelines

33 **Primary vs. Secondary Research**

34 **Levels of Evidence**

Evidence-based decision-making is about solving clinical problems and involves two fundamental principles:

1) Evidence alone is never sufficient to make a clinical decision
2) A hierarchy of evidence exists to guide clinical decision-making.

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36 **Levels of Scientific Evidence**

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43 **Primary vs. Secondary Research**

44 **Evidence-Based Decision Making**

45 **Evidence-Based Decision Making**

- Systematic in its approach
- Intended to be free from bias and accessible to both the public and practitioner
- Built upon the clinical knowledge base that already exists
- Scientifically confirms or questions clinical practices

46 **Evidence-Based Decision Making Integrating the Most Current Knowledge into Clinical Decision Making**

47 **Isn't there a simpler way?**

48 **Levels of Scientific Evidence**

49 **What is a Systematic Review?**

The structure of a systematic review is very different from the typical research study or literature review.

The authors of a systematic review:

- Identify an intervention for a specific disease or other problem, and then ask whether or not this intervention works.
- Locate, appraise and synthesize evidence from as many scientific studies as possible, including unpublished and (in some cases) non-English records.
- Summarize conclusions about effectiveness, and provide a unique collation of the known evidence on the topic, so that others can easily review the primary studies for intervention.

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51 **Finding Systematic Reviews**

& Meta-Analyses

- PubMed Clinical Queries: Find Systematic Reviews http://www.ncbi.nlm.nih.gov/sites/pubmedutils/clinical
- Cochrane Library (Published by Wiley InterScience) http://www3.interscience.wiley.com/cgi-bin/mrwhome/106568753/HOME
- ADA Website: Systematic Reviews & Summaries/ Clinical Recommendations http://ebd.ada.org/SystematicReviews.aspx

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Clinical Situation

Adult male patient has periodontitis and has heard that it could cause coronary heart disease (CHD). He hasn't had any problems and he'd like to know if his periodontal treatment will prevent CHD.

PICO Question

Need to take the information from the clinical situation to formulate a specific question.

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2 PICO Question

For patients with periodontitis and no prior CHD (P), will the treatment of periodontitis (I) reduce the risk of subsequent CHD events (O)?

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55 **The PICO Question**

Systematic Reviews address a relevant, clearly focused "PICO" question: a question that includes the characteristics of the:

56 **The PICO Question**

- Population:
- Examples:

57 **PICO Question**

- Intervention
- Examples

58 **PICO Question**

- Comparison
- Examples

59 **PICO Question**

- Outcome
- Examples

60 **The PICO Question**

- Our Example:

61 **Step 2. Conducting an electronic search for relevant evidence**

62 **ADA Systematic Reviews and Summaries**

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70 **Conclusions of Review**

- Evidence indicates periodontitis is an independent risk factor for CHD. This association does not necessarily indicate a cause-and-effect relationship.
- Further studies are needed to determine whether treatment of

periodontitis will reduce the risk of CHD.

71 **Systematic Reviews**
The Cochrane Collaboration

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Although control of periodontitis is important for health, current research is unable to say whether treatment of periodontitis will reduce the risk of subsequent CHD events.

73 **Cochrane Centers**

74 **The Cochrane Collaboration**
Review Groups

75 **Cochrane Oral Health Group**

76 **Scenario 3**

Clinical Situation

- Adult female patient presents with gingivitis and is considering changing from a manual to a power toothbrush.

77 **Systematic Reviews**
The Cochrane Library
www.thecochranelibrary.com

78 **An Advanced Search of the Cochrane Library**

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81 **Cochrane Clinical Trials Search**
82 **Cochrane Eligibility Results**
83 **Primary Findings**
The review of trials found that only rotation oscillation (where heads rotate in one direction and then the other) is better than manual toothbrushes at removing plaque and reducing gum inflammation, and is no more likely to cause injury to gums.
84 **Applying the Evidence**
Practitioner Decision
Recommend a power toothbrush with rotating oscillating technology
85 **EBD RESOURCES THAT MAYBE HELPFUL**
- Pubmed tutorial on line searches http//:www.nlm.nih.gov/bsd/disted/pubmed.html
- Levels of evidence http://www.library.downstate.edu/EBM2/2100.htm
- ADA's EBD web site ebd.ada.org
- Dentalcare.com - CE Courses

- Evidence Based Decision Making -
- Strategies for Searching the Literature using PubMed
  - Jane Forrest, RDH, PhD.

86 **Sources of Systematic Reviews**
Websites
- Cochrane Collaboration (International) (www.thecochranelibrary.com)
- Database of Abstracts and Reviews of Effects (UK) (www.york.ac.uk/inst/crd/darehp.htm)
- National Institute of Clinical Excellence (UK) (www.nice.org.uk)
- Agency for Healthcare Research and Quality (US) (www.ahrq.gov)

87 **JADA, March 2008**
88 **Evidence-Based Decision Making in Practice**
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90

Where can I find evidence?
91 **Evidence-Based Decision Making in Practice**
Use systematic reviews from independent, unbiased sources
92 **Evidence-Based Decision Making in Practice**
Example Questions:
1. Are there published clinical studies in any major dental publication?
2. Are trials in a RCT design?

93 **Clinical Evidence Hierarchy**
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95 **Systematic Reviews**
- Scientific investigations that use rigorous methods to review original research
- Statistically combine results from multiple trials addressing the same question
- Distill large quantities of data into clinically useful information
- Could be repeated by others with same results
- Updated on a regular basis to include new science

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97 **Future and Now - EBD**
- Ethical Issues
  - As professionals we have no excuse for not providing EB care. We have the tools. the resources and skills.
  - We now have scientific evidence for recommendations of products and techniques.
- What is the sacred cow of dentistry and dental hygiene that will be effected?

98 **What is EVIDENCE-BASED DENTISTRY?**
According to the ADA…

Evidence-based dentistry (EBD) is an approach to oral health care that requires the judicious integration of systematic assessments of clinically relevant scientific evidence, relating to the patient's oral and medical condition and history, with the dentist's clinical

expertise and the patient's treatment needs and preferences.

99 **Clinical Recommendations**

100 **Three Components of EBD**

101 **Use your judgment**

102 **Slides and materials**

- Procter and Gamble Crest - Oral B
- ADA Champions Workshop
- My Brilliant Mind

103 **Handouts**

- Evidence Locator
- Laminated Chair side Educators:
  - Detecting Oral Cancer Through Visual and Tactile Examination - Screening for Oral Squamous Cell Carcinomas
  - Use of Pit and Fissure Sealants:
    - Evidence-Based Clinical Recommendations
  - Professionally Applies Topical Fluoride:
    - Evidence-based Clinical Recommendations

»Courtesy - ADA

104 **Let's adapt -- It's a paradigm shift!**
A change of perspective on a subject

It's true!

SCIENCE Changes!!

EBD is a way to keep up with this change

105 **Evidence-Based Decision Making**

Managing Information
Improving Patient Care

106 **Barriers to change**

- Time
- Access
- Complexity of information

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"The greatest thing in this world is not so much where we are, but in which direction we are moving."
Oliver Wendell Holmes

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110 **Thank You**