Dentistry and Clinical Practice Guidelines

- To become familiar with the historical roots of the development of clinical guidelines
- To learn link between development of guidelines and quality of care issues
- To understand link between development of guidelines and evidence-based research
- To become familiar with the notions, evidence hierarchy & hierarchy of studies
- To consider what evidence-based dentistry (EBD) entails

Historical Perspective

Three Eras
  - I. Expansion
  - II. Cost Containment
  - III. Assessment & Accountability

Era of Expansion (40’s -60’s)

- Health care system grew quickly
  - More hospitals
  - More private insurance coverage
  - Numbers of clinicians increased
  - Advances in technology and science

Era of Cost Containment (1965-80s)

- Focus on efforts to curb cost growth
  - Prior approval
  - Second opinions
  - Utilization reviews
  - Prospective payment
  - Managed care - HMOs, PPOs, independent practitioner associations

Era of Assessment & Accountability - (late 80s - present)

- Focus broadened -
- Not only cost, but quality of care
  - Patients, employers, government increasingly requested information
  - about the value of resources spent on health care

Quality of care

- Most widely accepted view - three dimensions:
  - structure - characteristics of the settings in which care is provided
  - process - actions taken on behalf of patients, or by patients
  - outcome - the effects of care
Quality of care Dimensions

- Structure - the settings and resources used for health care
  - facilities
  - equipment
  - personnel qualifications and experience
  - staffing patterns
  - organizational arrangements

Quality of care Dimensions

- Process
  - the content/act of care
    - how the patient moves into...
    - through...
    - out of...the health care system
  - the services provided during the episode

Quality of care Dimensions

- Outcome
  - the results/effect of care
    - did the patient get better?
    - was morbidity reduced?
    - was mortality reduced?

Quality of care Dimensions

- How to know which procedures were “best”?
  - Examined process (procedures)
    - in the 60's, in medicine
    - as way to learn about treatment appropriateness
  - Found considerable variation
    - in the utilization rates of surgical procedures
    - within small, similar geographic areas

Quality of care Issues

Variation in use

- Most commonly refers to: different observed levels of per capita consumption of a service
  - when all the usual explanations have been controlled
  - leaving no obvious explanation except “practice style”

Quality of care Issues

Implications of variation in use

- Can result in:
  - under- and over-utilization
- With cost implications
- With health implications
Quality of care
Issues

- Need to know “best” treatments
  – only those so categorized would be reimbursed,
  – thus reducing the amount of ineffective care & its costs
- Led to development of practice guidelines

Evidence-based guidelines - Types of evidence

Efficacy - Does the agent “work” under ideal, “laboratory” conditions?
Often studied with the randomized clinical trial
- conducted in highly controlled settings
- often expensive
- may present ethical constraints
- may not reflect the outcomes obtained when used in a typical practice setting

Evidence-based guidelines - Types of evidence

Effectiveness - Does the agent work under ordinary “real life” conditions, i.e., the average DDS for the typical patient?
Often studied with clinically-based/practice-based research designs

Examine average providers providing care in average clinical situations

Evidence-based guidelines - Outcomes research

Congress began to look to outcomes research
- as a means of evaluating medical/dental treatment
- as a sound source for the development of practice guidelines

Evidence-based guidelines - Outcomes research
Dimensions of oral health outcomes

- Drs. Jim Bader & Dan Shugars described four dimensions of oral health outcomes:
- 1. Physical and physiological dimension-
  – pathology (dental caries, periodontal disease, oral cancer, periapical infection, etc.), pain, & functional capacity

Evidence-based guidelines - Outcomes research
Dimensions of oral health outcomes

2. Psychosocial outcomes of dental care
- aesthetics
- level of perceived oral health
- satisfaction with oral status
- self-concept
- interpersonal relations
  – Measured by asking patients about their experience, perceptions
3. Longevity and survival of dental restorations, tooth vitality, tooth retention
   - reflects the survival of dental restorations
   - time until restoration failure
   - need for subsequent treatment for same condition

4. Economic dimension
   - Assess the direct and indirect costs
   - From the patient's, practitioner's, purchaser's, and society's perspective
   - Cost of dental care
   - can be an important patient outcome

Summarizing -
- examines the clinical, functional results of a therapeutic intervention
- as well as the patient’s perceptions of outcome & quality of life

Growing focus on developing practice guidelines based on outcomes research:
- Medicine – 1980’s
- Dentistry – 1990’s
- Need to know "best" treatments
- Need to reduce variation in use
  - only those so categorized would be reimbursed
  - thus reducing the amount of ineffective care & its costs

In 1989 Congress established the agency for Health Care Policy and Research (ACHPR)
In 1999, became AHRQ – Agency for Healthcare Research and Quality
- to support studies designed to:
  - reduce variation in tx selection
  - to assess efficacy/effectiveness of care
  - to support studies designed to develop program/clinical guidelines

Discovered lack of evidence
- Almost no studies of efficacy
- Almost no studies of effectiveness
- Many guidelines the product of expert opinion
- Patients' perceptions of outcomes of treatments
  - Little known
- Overall:
  - Had paucity of information
  - Had ever-increasing health care expenditures
Evidence-based guidelines

Evidence hierarchy

- **Level 1** - Replicated clinical trials
  - Systematic replication of results from well-controlled, multiple, randomized controlled trials in which the outcomes are relatively homogenous
  - Meta-analyses
  - Meta-analytic studies of well-designed studies in which the literature review is comprehensive and the selection criteria are explicit

- **Level 2** - Randomized clinical trial
  - Large multisite studies employing controls such as:
    - randomized sampling and assignment to conditions,
    - double-blind design,
    - and appropriate statistical analysis

- **Level 3** - Systematic, well-controlled, longitudinal studies with careful sampling
  - One or more well-conducted cohort studies
  - One of more well-conducted case-control studies

- **Level 4** - Randomized, non-controlled studies
  - Surveys with random sampling (e.g., census)
  - Cross-sectional studies with careful random selection and clear exclusion rules

- **Level 5** - Non-random, non-controlled
  - Dramatic uncontrolled field observations or experiments
  - Expert committees, task forces, professional reports
  - Lowest level of evidence base
    - Case studies
    - Editorial & articles in non-peer reviewed journals
    - Opinion pieces

Quality/Hierarchy of Evidence
(Guide to Clinical Preventive Services, 2nd ed.)

- I: Evidence from at least 1 properly randomized controlled trial
- II-1: …from well-designed controlled trials w/o randomization
- II-2: …from well-designed cohort or case-control analytic studies from >1 research grp
- II-3: …from multiple time series w/ or w/o the intervention (dramatic results, e.g., penicillin)
- III: Experts, experience, case reports
**Strength of Recommendations**

- **A:** Good evidence to support the rec that condition be considered in periodic hlth exam
- **B:** Fair evidence to support rec that be specifically considered
- **C:** Insufficient evidence to rec for or against the inclusion of the condition, but rec may be made on other grounds
- **D:** Fair evidence to support the rec that be excluded
- **E:** Good evidence to support the rec that be excluded

**Evidence-based dentistry**

- Practice in accordance with rules of scientific evidence...
- Whenever possible, evaluate health care using controlled clinical trials...

**Evidence-based dentistry**

- **Taken in a narrow sense**
  - suggests that randomized clinical trials qualify as “evidence”…
  - …that experiential knowledge acquired through experience and practice, however useful & usable, does not

**Evidence-based dentistry**

- **EBD - narrowest sense**
  - Counterproductive? –
    - since intention of evidence-based is to bridge the gap between research and practice
- **EBD - broadest sense**
  - includes both experiment and experience
  - Neither form of evidence is sufficient
    - both necessary for good clinical care

**Evidence-based dentistry**

- Use of practice-based research networks (PBRNs) to collect data these studies
  - a network of practitioners
  - define research questions
  - record health and health care events
  - in relatively unselected patient populations

**Evidence-based dentistry**

- Organized dentistry could provide the leadership
- to form networks of private dental practices
  - to collect information on treatment effectiveness
  - in a scientifically valid and reliable manner
Evidence-based dentistry

- Would allow DDS to systematically evaluate a particular procedure or condition of interest
  - provide results directly representative of and applicable to the daily practice of dentistry in the "field"

Evidence-based dentistry

- Challenge has been made:
  "With the exception of dental sealants, the effectiveness, or average benefit of a procedure, when used by the average provider in the average community, of most common dental therapies has not been established"

Evidence-based dentistry

- In the future, seven-fold ranges in tx costs (re Reader’s Digest)
  - hard to defend to payers and patients
- Consensus on tx guidelines to reduce this variation will be elusive
  - until have a better understanding of tx outcomes