



Evidence-Based Dentistry and AHRQ

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What is Evidence-based Practice?

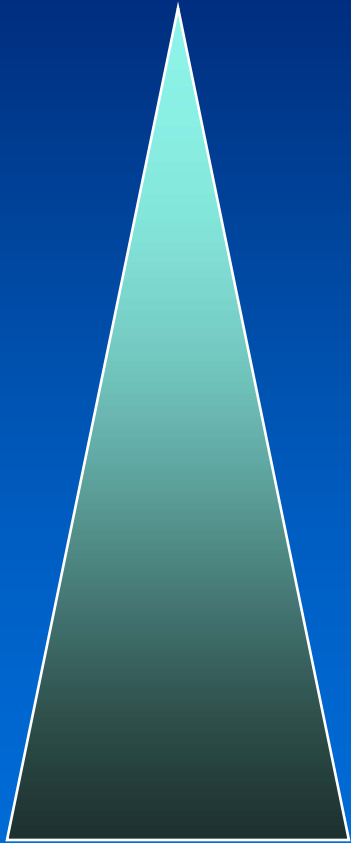




Goals of Evidence-based Practice

- Increase benefit
- Decrease harm
- Improve quality
- Reduce inappropriate variation
- Improve cost-effectiveness

Levels of Evidence



Systematic review

Randomized controlled trial

Cohort study

Ecological study

Case-control study

Expert opinion

Levels of Evidence



Systematic review

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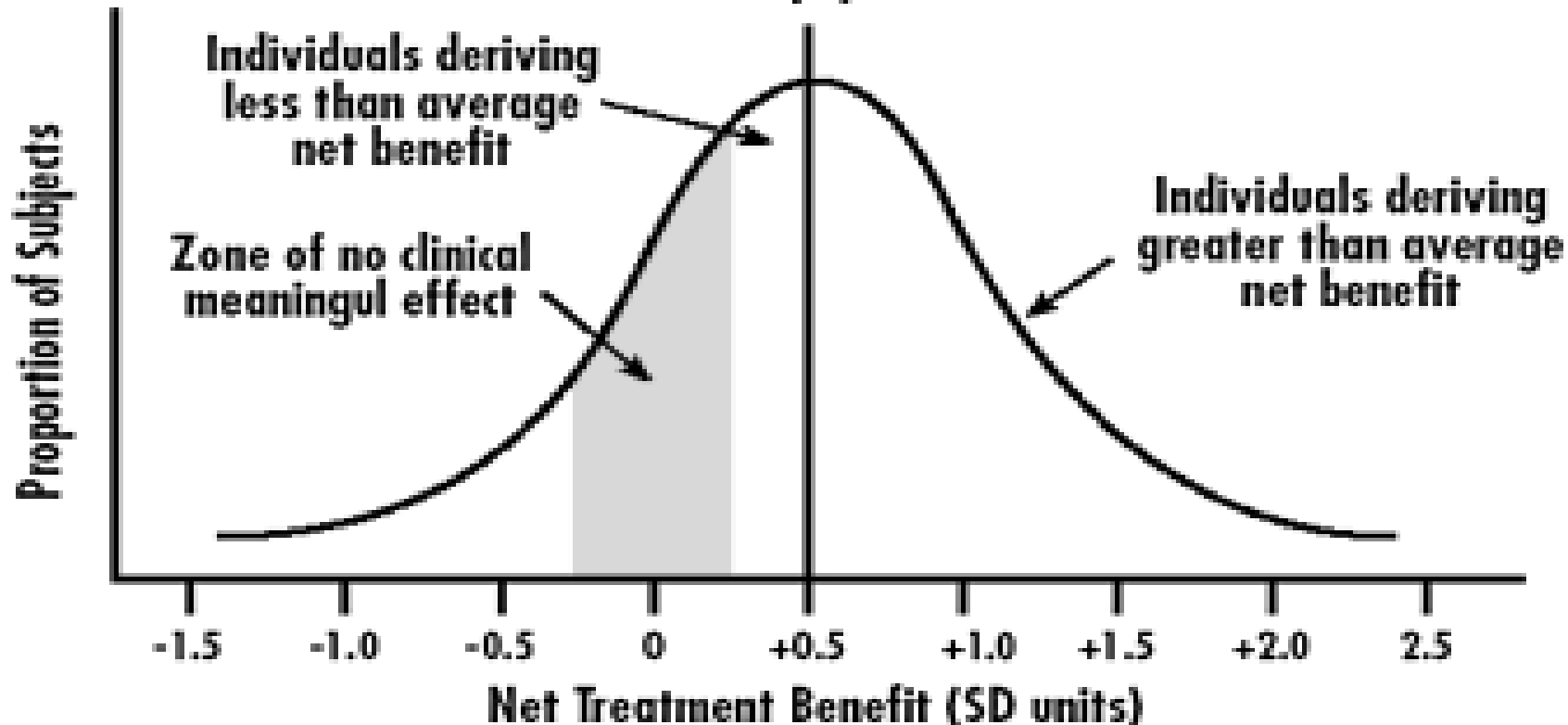
Case-control study

Expert opinion



Applying population-based evidence to individual patients

True mean effect in population, in SD units



Quality of Evidence

- Quality reflects how closely findings represent “truth”
- Study design should minimize bias
 - Recruitment
 - Randomization
 - Blinding
 - Loss to follow up
 - Intention to treat analysis



Agency for Healthcare Research and Quality (AHRQ)

- Part of the US Department of Health and Human Services
- Mission is to improve the quality, safety, efficiency, and effectiveness of health care
- Provide evidence-based information to decision-makers
- Strive to narrow the gap between what we know and what we do



Recent Dental Grants

- Medicaid Dental Visits to EDs
- Examination of caries risk assessment
- Dental access and costs in SCHIP
- Oral health intervention trial
- Effect of public insurance on dental health
- Effects of WIC on child Medicaid dental use, costs



Findings from AHRQ Research

- Low use of preventive dental care in poor children
- High rate of unmet dental needs in Medicaid
- Dental sealants reduce costs in Medicaid within 2 years but underused
- Utilization increases with number of participating dentists
- Little effect on participation from modest (23%) increase in reimbursement
- Wide and unexplained variation in dentist treatment decisions



Evidence Reports on Dentistry Topics

- Management of dental patients who are HIV +
- Effectiveness of antimicrobial adjuncts to scaling and root-planing therapy for periodontitis
- Diagnosis and management of dental caries
- Cardiovascular effects of epinephrine in hypertensive dental patients



Selected Findings

- Little evidence of increased complications from root canal and extractions in HIV+
- Antibiotics modestly improved effects of scaling and root planing
- Poor evidence on accuracy of different methods for diagnosing caries
 - Visual/tactile, fiberoptic transillumination, laser fluorescence
- Use of local anesthetic with epinephrine does not result in clinically significant increase in HR and BP



Steps for Knowledge Transfer in Evidence-based Practice

Generation

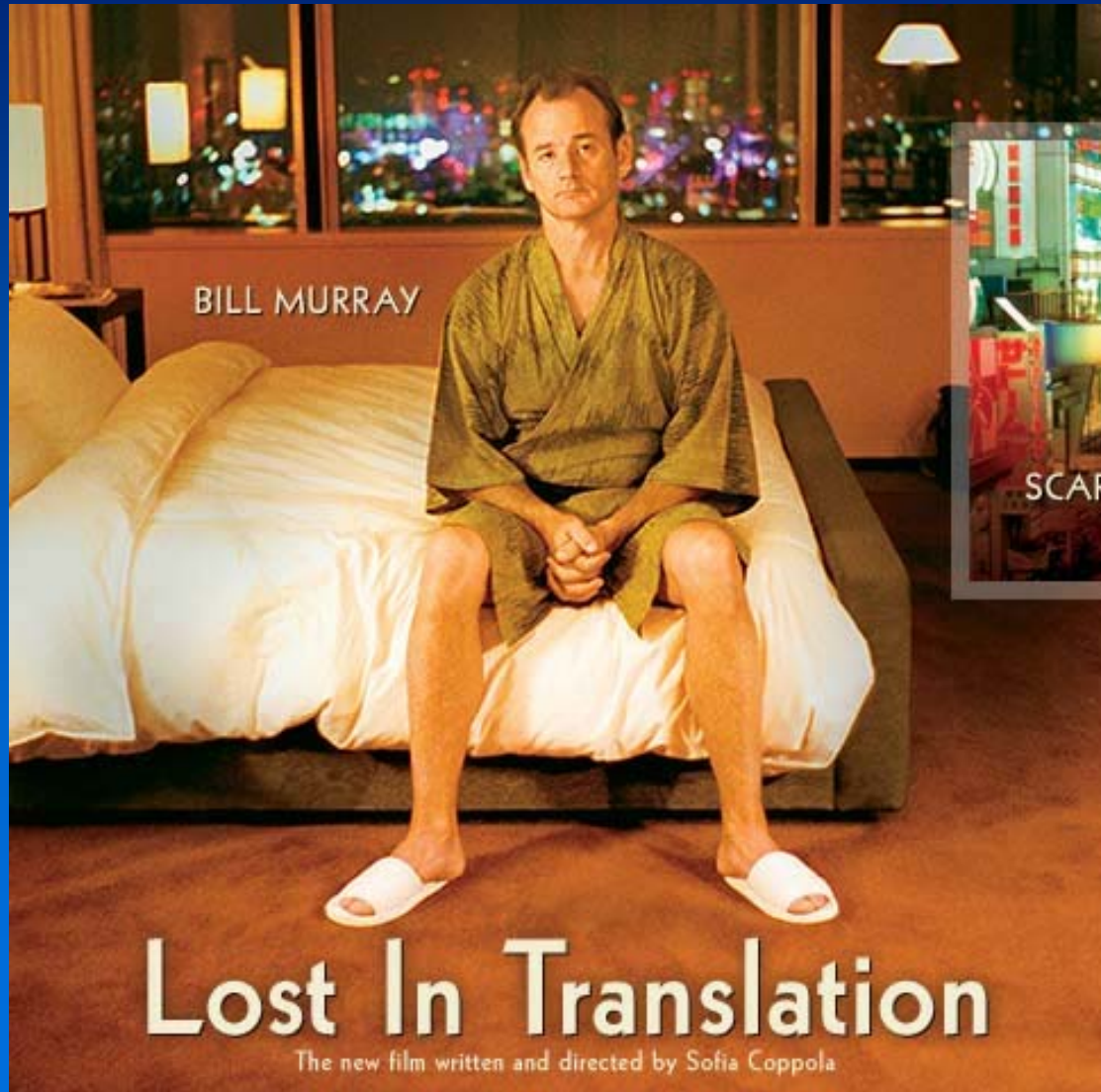
Translation

Integration



Applying Evidence to Your Practice

- How similar is the population studied to your patients?
- How feasible is the intervention?
- Were the outcomes measured appropriately selected?
- Were the study findings both statistically and clinically significant?



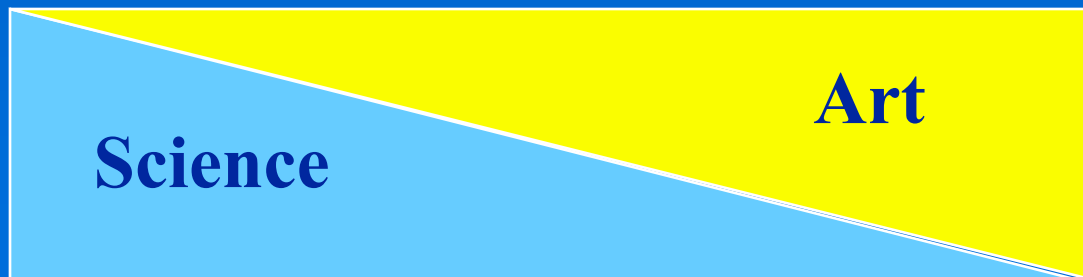


Barriers to Practicing EBD

- Knowledge
 - Poor evidence
 - Lack of time
 - Inaccessible information
- Organization and system
 - Costly
 - Impact reimbursement
 - Loss of autonomy
- Others

Insufficient Evidence

- Insufficient evidence of effectiveness is not evidence of ineffectiveness
- Need to consider other factors such as potential harm, cost, and alternatives
- Evidence often does not apply directly to individual patients



Can a reliance on EBP go too far?



Parachute use to prevent death and major trauma related to gravitational challenge: systematic review of randomised controlled trials



Summary

- EBD involves best available evidence, clinical judgment, and patient preferences
 - Evidence provides a starting point
- Evidence *based* dentistry is not evidence *dictated* dentistry
- EBD requires knowledge generation, translation, and integration





Example: Efficacy of mouth rinse compared to flossing

- RCT with three arms enrolling 326 total
- At 6 months found greater reduction of I-MGI, I-PI, and WM-PI in mouth rinse than floss groups
- “We do not wish to suggest that the mouth rinse should be used instead of dental floss....”
- Funded by Pfizer



Example: Efficacy of mouthwash compared to flossing

- “Listerine antiseptic is clinically proven to be as effective as floss at reducing plaque and gingivitis between the teeth.”
- The judge said “substantial evidence” demonstrates that flossing is important in reducing tooth decay and gum disease and that it cannot be replaced by rinsing with a mouthwash.



What can we learn about evidence from the Law?

- Presumption of innocence

Presumption of ineffectiveness

- Preponderance of evidence or beyond a reasonable doubt

How much evidence is sufficient

- The meaning of “reasonable doubt” is left to the jury

The application of sufficient evidence is made while considering other factors



Health Services Research

- Will it work in daily practice?
- Will it work in different populations?
- What are costs, benefits, and harms?
- How can it be implemented most effectively and efficiently?
- What are implications for patients, health systems and population?

Caveats

- Efficacy vs. effectiveness
 - Just because it worked in a controlled trial doesn't mean it will work in actual practice
- Cost-effective vs. cost-saving
 - Doing everything that's cost effective will still cost a lot
- Screening vs. case-finding
 - Positive predictive value depends on prevalence



Management of HIV Positive Patients

- Little evidence of unusual rates or severity of complications from root canal therapy and extractions
- Oral conditions are poor markers for seroconversion
- Good evidence fluconazole prevents oropharyngeal candidiasis
- Good evidence antifungals can treat infection

Antimicrobial Adjuncts with Periodontitis Therapy

- Addition of antibiotics to scaling and root planing had modest improvements in probing depth and gain in clinical attachment level
- Locally applied tetracycline, minocycline, and chlorhexadine lead to 0.3-0.6 mm improvements in probing depth
- Less evidence for other antibiotics



Diagnosis and Management of Caries

- Poor evidence on diagnostic performance for posterior teeth proximal and occlusive surfaces
 - Visual/tactile, fiberoptic transillumination, laser fluorescence
- Limited evidence on management of noncavitated carious lesions
- Evidence fair for fluoride and suggestive for chlorhexadine in caries-active individuals



Management of HIV Positive Patients

- Are HIV/AIDS patients at increased risk of complications from intra-oral dental procedures
- What are the characteristics of the presence of oral lesions for predicting HIV/AIDS?
- What is the efficacy of antifungal agents for preventing and treating oral candidiasis in persons with HIV/AIDS?



Antimicrobial Adjuncts with Periodontitis Therapy

- Does scaling and root planing (SRP) accompanied by an antimicrobial agent, as a supplemental or adjunct treatment, result in improved outcomes that persist for adults with chronic periodontitis compared to SRP alone?



Diagnosis and Management of Caries

- What is the validity of techniques used to diagnose caries?
- What is the efficacy of non-surgical intervention to arrest or reverse the progress of carious lesions?
- What is the efficacy of preventive methods for individuals who have experience or are expected to experience increased risk or caries?