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Mark V. Thomas

## Evidence-Based Curriculum Reform: The Kentucky Experience

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Mark V. Thomas, Fonda G. Robinson, and Patricia Nihill

Evidence-based health care seeks to base clinical practice and decision-making on best evidence, while allowing for modifications because of patient preferences and individual clinical situations. Dentistry has been slow to embrace this discipline, but this is changing. In the Graduate Periodontology Program (GPP) of the University of Kentucky, an evidence-based clinical curriculum was implemented in 2004. The tools of evidence-based health care (EBHC) were used to create evidence-based protocols to guide clinical decision-making by faculty and residents. The program was largely successful, although certain challenges were encountered. As a result of the positive experience with the GPP, the college is implementing a wider program in which evidence-based protocols will form the basis for all patient care and clinical education in the predoctoral clinics. A primary component of this is a computerized risk assessment tool that will aid in clinical decision-making. Surveys of alumni of the periodontal graduate program show that the EBHC program has been effective in changing practice patterns, and similar follow-up studies are planned to assess the effectiveness of the predoctoral EBHC program.

## Stumbling Into the Age of Evidence

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James D. Bader

This article presents personal observations on how the concept of evidence-based dentistry is faring in the profession. It considers how the dental profession's concept of evidence has matured, how evidence-based dentistry was originally envisioned, how it is currently embodied, and what its prospects might be for the immediate future. Evidence-based dentistry began in the profession approximately 2 decades ago, initiated by the appearance of the first systematic reviews on dental topics in the late 1980s. The emergence of the concept of evidence-based dentistry—and its fundamental construct, the systematic review—marks what can be considered a fundamental shift in how the dental knowledge base has grown and developed over time.

## Evidence-Based Dentistry and the Concept of Harm

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Mark V. Thomas and Sharon E. Straus

Evidence-based medicine requires the integration of best research evidence with the clinician's expertise and the patient's unique values and circumstances. One of the most important issues in deciding what course of treatment to select is balancing the potential risks and benefits of treatment. A framework for evidence-based decision-making includes

formulating the clinical question and then retrieving, appraising, and considering the applicability of the evidence to the patient. It is the duty of all health care providers to reduce patient risk by selecting appropriate therapies and informing patients of unavoidable risks.

### **The Benefits of Evidence-Based Dentistry for the Private Dental Office**

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Jane Gillette, Joseph D. Matthews, Julie Frantsve-Hawley,  
and Robert J. Weyant

Dentistry over the last 100 years has been characterized by improved approaches to education and practice. Parallel to trends in the field of medicine as a whole, dentistry is moving toward evidence-based practices. The goal of evidence-based dentistry is the assurance, through reference to high-quality evidence, that care provided is optimal for the patient and that treatment options are presented in a manner that allows for fully informed consent. As we transition toward broad-based use of evidence-based dentistry approaches in clinical practice, many dental offices will benefit from a better understanding of how evidence-based dentistry can improve patient outcomes. This article lists the likely benefits evidence-based dentistry can provide to patients, staff, and dentists when routinely adopted in daily practice.

### **In-Office Treatment of Dentinal Hypersensitivity**

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Mohanad Al-Sabbagh, Amanda Brown, and Mark V. Thomas

Dentinal hypersensitivity is a common dental complaint, especially in periodontal patients. It is believed to be mediated by a hydrodynamic mechanism in which various stimuli result in increased fluid flow in dentinal tubules, thereby generating action potentials in associated nerve fibers. Although it is often perceived as mild discomfort by the patient, it can be severe. A variety of interventions has been used, although few have been subjected to rigorous study. This article surveys those in-office treatments that are available, and suggests directions for research so that clinicians may treat patients based on best evidence. Until such evidence is available, it seems prudent to employ therapies that are least likely to cause harm and are reversible.

### **Patient-Applied Treatment of Dentinal Hypersensitivity**

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Mohanad Al-Sabbagh, Ershal Harrison, and Mark V. Thomas

This article reviews the evidence regarding the effectiveness of various patient-applied interventions for dentinal hypersensitivity. Self-applied treatments are popular because they are both economical and easy to use. The disadvantages include compliance, difficulty to deliver to specific sites, slow onset of action, and the requirement for continuous use. Conflicting research findings make it difficult for the practitioner to determine which self-applied product to advise patients to use. There are a number of issues that have plagued research in this area, including the lack of standardization of stimulus testing and inadequate sample size. The evidence is insufficient to permit the development of evidence-based guidelines for the treatment of dentinal hypersensitivity.

**Restoration of Posterior Teeth in Clinical Practice: Evidence Base for Choosing Amalgam Versus Composite** 71

Robert E. Kovarik

This article reviews the current use of amalgam versus resin composite in posterior restorations and the evidence-base for choosing between these two treatment options. While much research has been published on the issue of the clinical use of amalgam versus resin composite, there are several issues that limit the true evidence-base on the subject. Furthermore, while the majority of published studies on posterior composites would seem to indicate equivalent clinical performance of resin composite to amalgam restorations, the studies that should be weighted much more heavily (randomized controlled trials) do not support the slant of the rest of the literature. As part of an evidence-based approach to private practice, clinicians need to be aware of the levels of evidence in the literature and need to properly inform patients of the true clinical outcomes that are associated with the use of amalgam versus resin composite for posterior restorations, so that patients are themselves making informed decisions about their dental care.

**Evidence-Based Decision Making: The Third Molar** 77

Richard H. Haug, Jihaad Abdul-Majid, George H. Blakey,  
and Raymond P. White

The American Association of Oral and Maxillofacial Surgeons (AAOMS) has been at the forefront of formal evidence-based dentistry with such projects as the *Parameters of Care: Clinical Practice Guidelines for Oral and Maxillofacial Surgeons*, the AAOMS Outcomes Assessment Program, the AAOMS Third Molar Clinical Trial, and the AAOMS “White Paper on Third Molar Data.” This article reviews these evidence-based resources to provide a consensus of opinion for the management of the third molar.

**Evidence-Based Decision Making: Replacement of the Single Missing Tooth** 97

Paul A. Fugazzotto

Single-tooth replacement may be effected through various methods, including the use of a resin-bonded fixed partial denture, a conventional fixed partial denture, and a single implant-supported crown. Although the introduction of newer therapeutic modalities, surgical and restorative techniques, and restorative materials has significantly expanded available treatment options, a greater demand is now placed on the diagnostic and treatment planning acumen of the clinician. The questions confronting each clinician are when to apply each treatment modality and how to use these therapeutic approaches to their maximum benefit for the patient. This article focuses on the factors that should be considered when making such clinical decisions and offers a framework within which to formulate appropriate treatment algorithms.

**Evidence-Based Clinical Recommendations for the Use of Pit-and-Fissure Sealants:  
A Report of the American Dental Association Council on Scientific Affairs** 131

Jean Beauchamp, Page W. Caufield, James J. Crall, Kevin J. Donly,  
Robert Feigal, Barbara Gooch, Amid Ismail, William Kohn, Mark Siegal,  
and Richard Simonsen

This article presents evidence-based clinical recommendations for use of pit-and-fissure sealants developed by an expert panel convened by the American Dental Association (ADA) Council on Scientific Affairs. The panel addressed the following clinical questions. Under what circumstances should sealants be placed to prevent caries? Does placing sealants over early (noncavitated) lesions prevent progression of the lesion? Are there conditions that favor the placement of resin-based versus glass ionomer cement sealants in terms of retention or caries prevention? Are there any techniques that could improve sealants' retention and effectiveness in caries prevention? Staff of the ADA Division of Science conducted a MEDLINE search to identify systematic reviews and clinical studies published after the identified systematic reviews.

**Evidence-Based Caries, Risk Assessment, and Treatment** 149

Margherita Fontana, Douglas A. Young, and Mark S. Wolff

Dental caries is a dietary and host-modified biofilm disease process, transmissible early in life that, if left untreated, will cause destruction of dental hard tissues. If allowed to progress, the disease will result in the development of caries lesions on tooth surfaces, which initially are noncavitated (eg, white spots), and eventually can progress to cavitation. The "medical model," where the etiologic disease-driving agents are balanced against protective factors, in combination with risk assessment, offers the possibility of patient-centered disease prevention and management before there is irreversible damage done to the teeth. This article discusses how to use evidence supporting risk assessment and management strategies for the caries process.

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