overcoming BARRIERS

The Challenges of Transferring Evidence-based Dentistry Into Practice

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ABSTRACT

The goal of evidence-based dentistry is to help practitioners provide their patients with optimal care. This is achieved by integrating sound research evidence with personal clinical expertise and patient values to determine the best course of treatment. Though clinicians embrace this concept, its implementation in clinical practice has been slow. In this paper, barriers against the implementation of evidence-based care are examined and possible solutions are offered.

The dental profession is committed to providing the best possible dental care for patients. This is proving to be more complex due to a virtual "information explosion" on new therapies, techniques, and materials; increased consumer understanding of treatment possibilities and therapeutic outcomes; and changing socio-demographic patterns. Though the profession advocates the importance of evidence-based dental disease prevention and treatment, practitioners have been slow to implement this concept.

In 2003, the California Dental Association formulated an evidence-based dentistry action plan that included the formation of a task force to monitor evidence-based dentistry efforts and implement programs to educate CDA members on this methodology. The challenges of transferring evidence-based dentistry into clinical practice

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were key issues addressed by the task force, and much of their deliberations and perspectives are reflected in this paper. Possible solutions for eliminating barriers against evidence-based care will also be explored.

What Is Evidence-based Dentistry and How Do Dental Practitioners Interpret It?

The CDA Task Force on Evidence-Based Dentistry recommended a definition of evidence-based dentistry drawn from the "Oral Health in America" report by the U.S. surgeon general, which is philosophically consistent with the American Dental Association's definition.[1,2] Evidence-based dental practice is the integration of an individual practitioner's experience and expertise, with a critical appraisal of relevant available external clinical evidence from systematic research, and with consideration for the patient's needs and preferences. This definition stresses the importance of three elements: a dentist's expertise and clinical judgment, relevant clinical evidence that is present in the literature, and the informed patient's preference. In a dental practice that incorporates an evidence-based approach, the practitioner's experience is primary since it is his responsibility to consider all three components when defining the best course of treatment. Ideally, evidence-based treatment is characterized by the intersection of these three elements.

Barriers Against Evidence-based Care

Though the concept appears fundamentally simple and reasonable, clinicians have been slow to implement evidence-based dentistry. For clinical practitioners, evidence-based dentistry as a concept is not unlike the logical and common-sense patient-oriented approach that was advocated in the 1980s and 1990s as comprehensive care. The significant difference is the emphasis on clinical decision-making based on the body of evidence present in the literature. This difference has deterred the implementation of evidence-based care. It has been suggested that perhaps as little as 8 percent of dental care is justified by peer-reviewed, published, and appropriately analyzed dental research.[3,4] This paper will examine barriers that clinicians encounter in their attempts to incorporate evidence-based dentistry into clinical practice.

DESPITE THE GROWING NUMBER OF SYSTEMATIC REVIEWS, MORE THAN ONE-HALF OF THESE ARE UNABLE TO ANSWER THE KEY CLINICAL QUESTION DUE TO WEAK STUDIES.

The Information Overflow Barrier

One of the main concerns clinicians have is the challenge of keeping up with a constantly expanding knowledge base. No one knows exactly how many dental research articles are published in a single year. In 1998, it was estimated that approximately 10,000 dental research articles were published in English.[5] Considering the fact there is an equal amount of research published in foreign languages, this number may safely be doubled.

It is inconceivable for private practitioners to even consider analyzing this overwhelming volume of research. Therefore, most rely on systematic reviews. Unfortunately, the number of systematic reviews that address clinical topics in dentistry is small, but growing.[6] The Cochrane Library lists only three reviews that met the minimum criteria for systematic reviews published in 1993. However, in 1999 there was an exponential increase to 484 reviews. Systematic reviews not only identify all relevant information contained in the literature, but also define the key question, inclusion and exclusion criteria, and literature search parameters, and evaluate the quality of the study and information obtained. When systematic reviews are structured appropriately, multiple studies may be combined to potentially provide clinical insight. Further scrutiny of these reviews indicates that these reviews may not be clinically relevant or available to practitioners.

A recent survey was performed of systematic reviews from 1966 to December 31, 2002, on MEDLINE and the Cochrane Library's Database of Abstracts of Reviews of Effectiveness.[7] A total of 592 articles were identified and those lacking a well-defined search process, clearly delineated inclusion and exclusion criteria, and a re-examination of the raw or synthesized data from all included studies were eliminated. Furthermore, reviews not published in English were excluded. Using these criteria, 131 systematic reviews were identified, only 96 of which had direct clinical relevance. These 96 reviews covered a wide range of dental topics; however, 17 percent of them concluded that the evidence was insufficient to answer the key question. An additional 50 percent hedged in answering the key question, noting that the supporting evidence was weak or limited in quantity. It was concluded that despite the growing number of systematic reviews, more than one-half of these are unable to answer the key clinical question due to weak studies.

An additional problem with systematic reviews is their inability to inform practitioners about new dental materials and techniques, such as the ever-evolving implant design materials, tooth-colored restorative materials, and adhesives. Both the names and formulations of these products are changing so rapidly that it is difficult to sort them out. Further complicating this situation are savvy sales representatives who

often provide slick marketing pieces with questionable claims. Some practice consultants even view these sales representatives as the key providers of information about advances in dental services, products, and technology.[8] In the absence of reliable systematic reviews and scientifically sound data, clinicians are forced to depend on either clinical trial and error or commercial market information.

Further confounding clinicians is the fact that the few relevant systematic reviews published in journals often are interspersed with weaker studies and case reports/series. Consequently, in addition to being inundated with non-refereed journals and marketing information, clinicians perceive there is a dental information overflow, and they are unable to distinguish the presence and importance of valid published systematic reviews. Additionally, there are few good systematic reviews that definitively guide practitioners on clinically relevant procedures. Perhaps the difficulty of implementing evidence-based care is that the amount of relevant clinical evidence is so poor or the questions are so unrelated to clinical issues that it appears that evidence-based dentistry is not used. The challenge for evidence-based dentistry advocates is to ensure the increase in the number of systematic reviews that address well-defined and clinically relevant key questions.

Guideline or Treatment Algorithm Barrier

Despite their limited number, clinicians question whether these systematic reviews can lead to conclusions that will result in clinical practice guidelines.[7] Practitioners are then concerned about whether they must firmly adhere to such guidelines. Although dentists' adherence to clinical practice guidelines has not been studied extensively, factors influencing physician adherence have been examined.[9] These studies have shown that there are several impediments, such as unawareness of the existence of guidelines, personal disagreement with the guidelines, lack of confidence in expected results, practice inertia, and other external barriers. In the independent and often isolated dental practice environment, these same barriers may prove to be just as difficult, if not even more significant.

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Patient-Related Barrier

Patient preferences can be a barrier to adherence to evidence-based care. Patient decisions about care are based on two major factors: personal desire and insurance benefits.

With increased dental advertising and ready access to information on the Internet, today's patients are well-informed consumers. Commercial marketing of esthetic and implant dentistry procedures and results have resulted in more demand for these services. Though there are longevity and survival studies for esthetic materials, the nature of these materials is changing so rapidly it is not clear whether this information is still germane to the various generations of composites, adhesives, veneer materials, and implants entering the marketplace. When such an information void exists, it is easy to be influenced by marketing jargon and non-refereed publications. In the face of growing patient demand, non-existent evidence, and significant economic gains associated with these services, it is difficult for clinicians to provide evidence-based care.

Insurance benefits warrant attention since approximately 69 percent of patients have dental insurance.[10] Practitioners are understandably concerned that the insurance industry may misuse information to define evidence-based dentistry and dictate the types of procedures and treatment that will be covered. This fear stems from dental carriers' history of regulating covered services and terms of re-treatment. Instead of informing the public that these regulations are based on purchase-service utilization analyses, third parties frequently suggest in their denials that provided services are not clinically sound or scientifically based. Additionally, outcomes assessment in terms of patient satisfaction has largely been ignored by the insurance industry. Though patient satisfaction can be quite high for esthetic procedures such as esthetic crown lengthening, bleaching, veneers, and dental implants, these procedures are generally not covered benefits. Insurance carriers have given the public the impression they define the parameter of care through their regulations and coverage, even though their decisions may often be contrary to evidence obtained from well-designed, peer-reviewed studies and patient preferences.

Internal and External Barriers Faced by Clinicians

CDA's definition of evidence-based dentistry emphasizes the importance of a dentist's expertise and clinical judgment. Though these are largely based on past clinical experiences, other factors can influence the clinician's decision.

Awareness and familiarity with the evidence remain one critical problem. It is clear that most clinicians either do not have access to or are not capable of evaluating the primary literature. Though there are numerous articles that inform clinicians on the art of evaluating the literature, most clinicians are still heavily dependent on systematic

reviews.[7,11-18] As previously mentioned, there are presently a limited number of reviews, with the majority hedging on definitive clinical recommendations due to weak or limited supporting evidence.[7] Faced with these systematic reviews, clinicians' first intuition is to decide if the key question is clinically relevant. Even with relevant reviews, clinicians may not agree with a specific guideline due to personal experiences or expected outcomes.

There are also internal barriers which may prevent adoption of evidence-based dentistry. Clinicians may fall prey to practice inertia and not be motivated to change. Altering therapeutic regimens in a small practice may require behavioral adaptations among the staff. At times, clinicians still practice in the same fashion as they were taught in their earlier training. Though this is inappropriate given the rate of change in clinical dentistry and availability of continuing education courses, this nevertheless does occur. Additionally, many of the procedures and decisions are financially based. Though a more conservative and less profitable procedure may be evidence-based, clinicians still need to deal with the temptation of providing a more profitable procedure. This is driven by both business pressure associated with a running a practice and the need to make a living.

External factors not under the clinician's control also impact evidence-based dentistry. For example, necessary access to certain equipment or changes in facility design may be cost-prohibitive, making adherence to certain aspects of evidence-based dentistry difficult. Other barriers include insufficient staff support, poor reimbursement, escalating practice operational costs, and increased liability.

Embracing Evidence-based Care

Evidence-based dentistry have been the buzzwords for the type of quality dental care promoted by academicians and dental policymakers for the past decade. Yet, this practice philosophy has not been readily embraced by clinicians. This paper has revealed barriers against universal acceptance of evidence-based care, but what are some possible solutions?

Evidence-based care has much potential in improving patient care.

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The central problem with its implementation is there is a lack of respect and appreciation between the various stakeholders in evidence-based dentistry. The academicians and evidence-based dentistry advocates fail to acknowledge that much of the evidence are not clinically relevant or are weak. Additionally, their ability to define clinically relevant key questions can be greatly improved by working closer in association with clinicians. Lastly, both the quality and quantity of clinically relevant systematic reviews need to increase. With increases in quality systematic reviews, dental associations and health organizations need to take responsibility for the dissemination of this information. This effort to date has not been obvious. For the clinicians, some of the internal and external barriers need to be removed in lieu of possible financial gain in order to provide better patient care. The insurance industry must also make clear the distinction the difference between evidence-based care from actuarial-based care. In defining patient benefit plans, it would behoove all parties to learn more about patient expectations and outcome satisfaction for dental care. Until each of the four stakeholders learn to appreciate the weakness, strengths, potentials, and barriers toward implementation for all concern, the growth and implementation of evidence-based care will be slow.

Academicians and evidence-based dentistry advocates must begin to appreciate that evidence-based dental care entails more than randomized controlled trials, refereed journals, meta-analysis, and systematic reviews. These have little meaning for the clinician trying to provide dental care. The profession must be able to frame answerable questions based on clinical problems. To do so retrospectively through systematic reviews has been a failure to date.[7] The National Institute of Dental and Craniofacial Research recently committed $75 million over the next seven years to establish three practice-based research networks.[19] The proposed objective of the practice-based research networks is to accelerate clinical trials and studies of important issues in oral health care. Though it is of concern that these centers have been awarded funds without any evidence of their ability to develop these networks or define general questions to be addressed, the practice-based research networks may be a golden opportunity to develop the informational-evidence element of evidence-based dentistry.

Instead of conducting systematic reviews or performing meta-analysis on disjointed studies presently in the literature, the practice-based research networks may provide a prospective mechanism for addressing issues of clinical approaches and effectiveness in a real-world environment. The challenge to academicians and evidence-based dentistry advocates will be to design answerable questions based on clinical problems that can be tested in this network. The experts in clinical den-

tistry have always been the practitioners. Academicians and evidence-based dentistry advocates should partner with astute clinicians so basic problems can be identified. It is important these problem areas be identified by frontline dentists and not by bureaucrats, ivory tower academicians, or statisticians. If the questions are appropriately framed, practice-based research networks can generate important and timely information to guide the delivery of dental health care and improve patient outcomes. More importantly, this information is more likely to be accepted, adopted, and translated into daily practice by clinicians.

Another step for removing patient-associated barriers to evidence-based dentistry would be for the dental insurance industry to educate its subscribers on the nature of its business. While it is acknowledged dental insurance benefits promote oral health, it is important for insurance carriers to educate subscribers on the limitations of benefited care. These limitations are based on a business model utilizing employer-paid insurance premiums to provide a defined level of care for employees. When treatment falls outside of this defined level (i.e., cosmetic dentistry, implants, etc.), patient preferences should be respected. In lieu of denials and commentaries, carriers should acknowledge the patient's preference and the treatment as an accepted option despite the fact that it is not covered by insurance.

Given the sheer volume of scientific information available, it will be a challenge for our dental educators, journal editors, and public policymakers to provide an effective information transfer. Though an increasing number of schools and residency programs are instituting curricula for teaching the principles and practice of evidence-based care, success has been limited.[20] It is questionable as to how much of the evidence-based decision-making process is utilized after training. If evidence-based dentistry is to succeed, it is critical that these problems associated with the dissemination of the evidence-based systematic reviews be evaluated. Additionally, evidence-based dentistry teaching strategies need to be developed. This task falls to dental educators, dental associations, and journal editors.

WE ARE IN AN ENVIABLE POSITION WHERE THERE IS FINALLY A CRITICAL MASS OF INFORMATION THAT CAN HELP US IN OUR PATIENT CARE DECISIONS.

Conclusion

Despite the barriers that have prevented evidence-based dentistry from being readily embraced by dental clinicians, there should be no mystery or fear surrounding this concept. This logical, common-sense, patient-oriented approach is not different from the comprehensive care that was the popular in the 1980s and 1990s. The difference is that we are in an enviable position where there is finally a critical mass of information that can help us in our patient care decisions. In evidence-based dentistry, there is a "conscientious, explicit and judicious use of current best evidence" to be used in clinical decision-making.[21] This information is an adjunct, not a substitute for clinical judgment and patient preferences. When used in concert, it has the potential to provide optimal treatment. CDA

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