

Evidence-based Dentistry: Part I. Getting Started

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A b s t r a c t

This article is the first in a 6-part series on the methods of evidence-based dentistry. To practise in an evidence-based manner, practitioners must be able to formulate a clear question, find the best available evidence efficiently, evaluate the evidence systematically and, if it is relevant and credible, apply the results of the appraisal to their practice. In this paper, we will look at the process of building a clinical question using key elements. Examples of questions most commonly encountered in everyday dental practice are provided.

MeSH Key Words: dentistry; evidence-based medicine

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Keeping current with advances in dentistry and being able to manage patients who have complex needs and demands is a challenge for practising dentists. Each day, we are inundated with information about new techniques, tests, procedures, materials or products. Our desire to keep up to date is often tinged with doubt about the claims of superiority of these new treatments or products. In addition, despite the increase in skills that comes with experience in clinical practice, there is evidence, at least in medicine, that expertise and effectiveness in some areas begin to deteriorate the moment physicians leave medical school.¹ This phenomenon has been called “the slippery slope of clinical competence.”¹ In our profession, many dentists continue to use the same treatments and techniques learned in dental school, which represented the best practice at the time. The dilemma arises in deciding when something “new” is better than our current clinical management strategy. Finding the time to acquire the knowledge to make these decisions often seems next to impossible.

To further complicate matters, the world in which we learn and practice dentistry is changing at an astonishing rate. Two phenomena — the information explosion and the consumer movement, both of which are fortified by the extraordinary advance of the Internet — are coming together to change the way all businesses, including health care, will function in the very near future.

The nature of the relationship between the patient and the clinician is changing. Patients are becoming partners in the decision-making process, not only in the office setting,

where decisions are made about their individual care, but also at the policy and funding levels, where consumer input is increasingly valued. Patients are starting to come to their dental appointments with information downloaded from the Internet, some of which may be unfamiliar to the dentist.

When many of us attended dental school, our primary sources of information were our teachers, textbooks and, occasionally, journal articles. Few of us in undergraduate dentistry had ever done a literature search — using Index Medicus was more than a little tedious. Academic and clinical teachers continue to be the predominant and most influential sources of knowledge for students, but the methods of delivery of information are changing. There is an increasing trend toward Web-based courses and instruction, as well as computer-based interactive learning. Many universities are encouraging the development of “courseware” in all disciplines, to provide Web-based enhancement of existing courses and for use in distance education. Textbooks, while still vital for acquiring comprehensive knowledge of “established” information, have significant shortcomings, particularly in areas of rapid change, where the information, when published, can be several years out of date.

The Role of Evidence-based Dentistry

The term “evidence-based dentistry” has been widely used in recent years, sometimes erroneously. It has been employed to justify a variety of practices, to promote new technologies and products, and to select evidence to

Table 1 The basics of a well-built clinical question

	Patient or problem	Intervention (treatment, test, prognostic factor, cause, etc.)	Comparison (if any)	Outcome(s)
Tips for building a question	Starting with your patient, ask "How would I describe a group of patients similar to mine?" <i>Be precise, yet brief.</i>	Ask, "Which main intervention am I considering?" <i>Be specific.</i>	Ask, "What is the main alternative to compare with the intervention?" <i>Again, be specific.</i>	Ask, "What can I hope to accomplish?" or "What could this exposure really affect?" <i>Be specific.</i>

Adapted from Sackett and others,⁶ with permission.

support particular viewpoints. However, the very definition of evidence-based practice, "the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients,"² suggests that the primary aim and the most valuable application of the evidence-based approach to the practice of dentistry is "to encourage the ordinary dental practitioner in primary dental care to look for and make sense of the evidence available in order to apply it to every day problems."³ To do this successfully, many practising dentists need to acquire certain skills not previously taught in most undergraduate dental curricula.

In a previous paper on evidence-based dentistry,⁴ some of the barriers to implementing evidence-based methods in dental practice were highlighted. These barriers include a lack of appropriate skills on the part of dentists in formulating clear questions, executing efficient electronic searches and evaluating the literature; a lack of good clinical research in the form of well-designed randomized trials; and fear and mistrust by dentists regarding the use of the evidence, especially by third-party funders and regulatory authorities. This series, in which we will look at formulating a clear question related to a patient problem, finding the evidence quickly and efficiently, and evaluating its credibility and usefulness, aims to help dentists overcome the first of those barriers. As more dentists in active practice develop evidence-based skills and embrace this paradigm, the other barriers will come tumbling down. When this happens, the questions and outcomes most relevant to patients, as well as the areas where good clinical trials are lacking, will be more readily identified and meaningful research activities can thus be planned. As dentists become more familiar and more comfortable with evaluating and applying research evidence, they will be less susceptible to the abuse of evidence by others.

The principles of evidence-based dentistry — finding the best information quickly when it is needed, assessing its quality and deciding whether it is relevant — will help you to use research evidence in making everyday clinical decisions.

The Application of Evidence-based Methods

Starting with a Clear Question

As obvious as it may seem, the first step in the quest for answers to clinical questions (and often the first stumbling block) is the formulation of a clear and focused question — one that is relevant and will help you to carry out a quick and effective search.

Where do the questions come from? Important clinical questions arise from daily encounters with patients in the practice setting. These questions often relate to therapy (what technique is most reliable, which material is superior, what drug should I prescribe?), diagnosis (is this test accurate and reliable?), prognosis (what is this patient's likely clinical course over time, what is the expected longevity of this restoration?) or causation (what is the etiology of this condition, is this treatment harmful?).⁵

Most often, the original question is too broad. The first step consists of narrowing the question by deciding which elements are the most important to answer with a "hit and run search."⁶ You can look for answers to the less important elements at your leisure, or more likely, when you really need them in the future.

Focusing the question involves using a framework⁷ to identify the patient or population (for example, adults); the problem or condition of interest (smoking, for instance); the exposure to a test, risk factor or intervention (smoking cessation counselling in the dental office); the comparison test or intervention, if any (no counselling); and the specific outcome (quitting smoking). In our example, these elements form the question, "Will the introduction of chairside counselling for my adult patients who smoke help those patients to quit smoking?" — a question of therapy. Note that the question does not directly address other related questions, such as "What are the oral sequelae of smoking?" — a question of causation; or "How will quitting alter the risk of oral cancer for my patient with a 30 pack-year smoking history?" — a question of prognosis; or "How will implementing this program affect my practice financially?" — a question of economic analysis.

When defining each of the key elements of the question, it helps to be as specific as possible. For instance, when specifying the population, decide whether you want information on all patients or only children, adults or the

Table 2 Examples of questions for different types of problems

Type of question	Patient or problem	Intervention (treatment, test, prognostic factor, cause, etc.)	Comparison (if any)	Outcome(s)
Therapy	"For children with posterior crossbite in the primary dentition..."	...will occlusal grinding to remove premature contacts,...	...when compared to no intervention,...	...prevent posterior crossbite in the permanent dentition?"
Diagnostic	"In patients with undiagnosed oral lesions..."	...can a toluidine blue mouth rinse,...	...when compared to an oral biopsy,...	...effectively detect oral cancer and precancer?"
Prognosis	"For patients with osseointegrated implants..."	...who smoke,...	...compared to patients who do not smoke,...	...what is the proportion of implants lost at 10 years?"
Causation	"For my pregnant dental assistant..."	...exposed regularly to the use of nitrous oxide for patient sedation..."		...what is the risk of harm to her unborn baby?"

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elderly. Are you interested in all stages and causes of the condition? Will the results be useful if the study took place in a specialized setting, such as a hospital or university, rather than a community-based practice setting? This focus will make it easier for you to limit your electronic search and to discard research that isn't pertinent. The elements of a well-built clinical question are outlined in **Table 1**, while **Table 2** provides examples of such questions as they apply to dental practice.

Finding, Evaluating and Applying the Evidence

Finding, evaluating and applying the evidence is key to answering a clinical question. Subsequent articles in this series will look at the use of MEDLINE to perform effective searches (Part II), the use of the Internet to find evidence (Part III), the more commonly used research methodology (Part IV), and the concepts and tools of critical appraisal (Parts V and VI).

Conclusion

All practitioners need to refine their evidence-based dentistry skills is a computer, a connection to the Internet and a desire to meet the challenges of practising dentistry in a new and exciting way. At the same time, the slide down the "slippery slope of clinical competence" may not only be halted, but may indeed be reversed. ♦

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References

1. Sackett D, Haynes R, Guyatt G, Tugwell P. Clinical epidemiology: a basic science for clinical medicine. 2nd ed. Boston: Little, Brown and Company; 1991.
2. Sackett DL, Rosenberg WM, Gray JA, Haynes RB, Richardson WS. Evidence based medicine: what it is and what it isn't. *BMJ* 1996; 312(7023):71-2.
3. Richards D, Lawrence A. Evidence based dentistry. *Br Dent J* 1995; 179(7):270-3.
4. Sutherland SE. The building blocks of evidence-based dentistry. *J Can Dent Assoc* 2000; 66(5):241-4.
5. Oxman AD, Sackett DL, Guyatt GH. Users' guides to the medical literature. I. How to get started. The Evidence-Based Medicine Working Group. *JAMA* 1993; 270(17):2093-5.
6. Sackett D, Richardson W, Rosenberg W, Haynes R. Evidence-based medicine: how to practice and teach EBM. London: Churchill Livingstone; 1997.
7. Richardson WS, Wilson MC, Nishikawa J, Hayward RS. The well-built clinical question: a key to evidence-based decisions. *ACP J Club* 1995; 123(3):A12-3.

C D A R E S O U R C E C E N T R E

The Resource Centre has prepared an information package on evidence-based dentistry. The package is available to members for \$10 and can be ordered by contacting us at tel.: **1-800-267-6354** or **(613) 523-1770**, ext. 2223; fax: **(613) 523-6574**; e-mail: **info@cda-adc.ca**.