

The Joy of Evidence-Based Dentistry

By Edward Feinberg, DMD

Everyone would agree that Dentistry should be practice according to evidence-based scientific principles. Pick up a journal or a dental “tabloid”, however, and it is common to see restorative treatments that have no science behind them. In these publications, the new and “high-tech” are often not honestly evaluated against the benchmark of what came before. Dental students are not being prepared with this benchmark. They are easy targets for the latest marketing gimmick. Dr. John Sorenson, Director of the Pacific Dental Institute, remarked that clinicians are less discerning today than in the past so they are more accepting of what a company says”.¹ As a result, much of dental practice has been reduced to aimless experimentation with the patient as the guinea pig. It is little wonder that the profession is crying out for an evidence-based approach to patient care.

What’s needed, says Gordon Christiansen¹, is “a combination of external evidence (i.e. research—both traditional and clinical) and a clinician’s own expertise (i.e. ability to decide if the evidence is relevant in order for a treatment or product decision to be made on a patient’s behalf”. This observation is, in essence, the ADA’s definition of Evidence-Based Dentistry²:

“Evidence-based Dentistry is an approach to oral health care that requires the judicious integration of:

- Systematic assessments of clinically relevant scientific evidence, relating to the patient’s oral and medical condition and history, together with
- The Dentist’s Clinical expertise and
- The Patient’s Treatment Needs and Preferences

Clinical expertise is often overlooked as important evidence by academic researchers and often they believe that everything needed to make evidence-based decisions about patient care can be found in searchable studies on the internet. This is not even close to being true. Everything is *not* on the internet and many of the studies online are flawed, arrive at false conclusions or are irrelevant if the clinician is doing something totally different from the majority of practitioners. The practitioner’s judgment is, as underscored by the ADA’s definition, critical to a successful outcome of patient care. “The transfer of science into clinical practice”, observes Dr. David Sackett, the father of

evidence-based medicine³, “remains a challenge because practitioners often face individual needs and demands that are not reflected in the required rigors of “randomized controlled clinical trials”.

Most clinicians have not been trained to conduct research. As a result, they are, says Dr. Richard Simonsen, Dean of Midwestern University College of Dental Medicine, “under the misconception that evidence-based dentistry is very formal and doesn’t apply to them...I think we need to emphasize that evidence-based dentistry is simply having a scientifically-based reason for doing what they’re doing”¹.

A scientific attitude really is the basis for evidence-based practice Clinicians should essentially view themselves as scientists. The famous educator from the University of Wisconsin IC Davis outlined the qualities that a practitioner with a scientific attitude must have in the 1930s⁴:

1. A willingness to change opinion on the basis of new evidence
2. A desire to search for the whole truth without prejudice
3. A concept of cause and effect relationships
4. A habit of basing judgment on fact
5. The ability to distinguish between fact and theory.

“Don’t accept any research finding as gospel”, says Dr. David Hamlin¹, founder of contract Dental Evaluations, “There’s always another page to be turned and a better question to be asked”. Evidence-based practice must start out with proven treatments as the benchmark for the evaluation of new ones, or the profession cannot advance. The success of gold crowns with processed acrylic veneers cannot be dismissed merely because they are not as esthetic as modern all-ceramic CAD/CAM crowns. The great scientist and innovator Per-Ingmar Branemark emphasizes that “clinical documentation established during half a century must be respected”⁶. He conducted nearly twenty years of clinical studies of osseointegration before bringing the techniques to the mainstream profession. Many of his original cases have been documented for more than 40 years.

My background of clinical documentation of patients is in the tradition of Dr. Branemark. I have 100,000 slides and digital pictures that date back to 1950. All the full coverage restorations in these pictures were prepared and handled in the exact same manner according to techniques that are different from mainstream practice. Full Mouth X-Rays taken every two years over decades demonstrate that these restorative techniques eliminate recurrent decay and halt the progression of periodontal disease in a high percentage of cases. When I present treatment options to patients I routinely show them numerous cases that have been successful with similar or worse conditions to theirs.

This is evidence-based dentistry from a clinical perspective. I have not conducted statistical analysis of patients, but I do have the ability to do so.

Based on this perspective, I believe there are five basic elements clinicians need in order to practice evidence-based dentistry:

1. Key Principles of evidence-based practice cannot be based on unproven assumptions. It is a terrible mistake, says scientist Tom Siegfried⁵ ...to assume anything. “When an assumption is clearly stated at the outset, it’s easy to go back and check to see if that assumption skewed the results. But when the assumption is invisibly ingrained into the scientist’s mind, a seemingly certain conclusion may actually be fatally flawed”. It is my belief that many assumptions ingrained in the minds of practitioners during their dental school education clearly do not make scientific sense. Few practitioners enter practice with the insight or the courage to question them.
2. Evidence for techniques must be based on years of follow-up at hygiene re-care visits. Practitioners find out quickly what works and what doesn’t when they examine hygiene patients objectively. Because individuals vary, the anecdotal case is not, by itself, evidence for the success of a treatment. In a young person with no periodontal disease who is not susceptible to recurrent decay almost any treatment will work. The measure of a successful treatment is how it works for the majority of patients and how it works for medically compromised patients or for patients with periodontal bone loss and high susceptibility to decay. A good analogy can be found by taking inventory of the homeless alcoholics in a major city. One of these poor souls may live to be 95, but no one would advocate this lifestyle for living a long and healthy life. The vast majority are dead by age 35.
3. Clinical analysis of techniques must be measured in parameters that clinicians can follow and interpret. One of the most important parameters clinicians have for measuring success is X-Rays, because the X-Rays measure the levels of periodontal bone. Years of X-Ray follow-up provide valuable insight into whether a particular type of treatment is successful. This bone is what holds the teeth in place and if the bone levels remain constant the patient will be able to keep his or her teeth even if the gingiva is unhealthy. X-Rays must be taken with the Rinn Attachment in a consistent manner in order to be properly compared with previous sets of X-Rays. The Rinn attachment allows the film to be perpendicular to the X-Ray source in order to get a true picture of the tooth/bone relationship. A full series of X-Rays should be taken a minimum of every two years for most patients.

4. Cases that succeed must be analyzed to uncover the reasons for success. In order to properly evaluate a treatment, successful cases must be analyzed to uncover the factors that contributed to longevity and prevention of disease. Sound principles of engineering and healthy architecture may be enough to provide success in spite of poor oral home care.
5. Cases that fail must be analyzed to uncover the reasons for failure. No practitioner likes failures, but failures are inevitable whenever dealing with the human body. Operating room surgeons accept that in spite of their best efforts, some of their patients will not live. A true scientist tries to learn from today's failures in order to prevent future ones. Perhaps recurrent decay happened because a casting was not seated all the way. A good practitioner will take steps to pay more attention to seating the castings properly in the future.

The great researcher and Dean of USC Harold Slavkin¹ believes that “there are many different takes on the words “evidence-based practice”. My take on these words is that evidence-based practice is a scientific approach to patient care. A scientific approach allows me to sleep well at night. I am on solid ground when I recommend treatment for my patients. I do not practice aimless experimentation. When I decide to try something new, the treatment must conform to principles I believe in, have evidence for its efficacy, come with recommendations from sources I trust, and be unlikely to cause harm. A scientific approach to care is what makes me an eternal student. I am always eager to learn, acquire a new skill, or view a clinical problem from a new perspective. I'm not afraid to look at my mistakes objectively, either. I want to be the best practitioner I can be. But the best part of evidence-based practice is the joy I receive every day when my patients return for their hygiene visits. I love seeing the dentistry I created last many years in health!

¹DiMatteo, Allison; “Does Office Based Equal Evidence-Based”? Inside Dentistry; Feb 2008, Vol 4, No. 2.

²www.ada.org/goto/ebd The ADA's Evidence-Based Dentistry Website offers abstracts of published systematic reviews on dental topics as well as links to national and international sources of valuable information (e.g. the Cochrane Oral health Group and Pubmed libraries).

³Sacket, David, William MC, Rosenberg, JA Muir Gray, R Brian Haynes and W. Scott Richardson, “Evidence-Based medicine: What it is and what it isn't”; *BMJ* 1996; 312, 71-72.

⁴Trefil, James; Why Science?; Teachers College Press, 2008.

⁵Siegfried, Tom; Science Matters, 13 April 2006

⁶Per-Ingvar Branemark, The Osseointegration Book: From Calvarium to Calcaneus;
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