



Illustration: Matt Mullin

## CDA Defines Evidence-Based Dentistry

**Note:** In 2002, the CDA House of Delegates ratified a resolution establishing an evidence-based dentistry (EBD) action plan that included the formation of a task force to recommend to the Board of Trustees and then implement programs related to evidence-based dentistry. The task force — made up of a membership of James Freed, DDS; Emilio Garcia, Jr., DDS; Raymond Pedersen, DDS; Michael Perry, DDS; and chaired by Richard Kao, DDS, PhD — met last fall to establish a definition of evidence-based dentistry for CDA, establish recommendations to monitor EBD efforts within the Association, and to suggest elements of a communication effort on EBD among CDA's membership. This article, the first in a series, is a conversation with Dr. Kao on the nature and significance of the evidence-based dentistry definition adopted by the task force.

### Q. What is EBD?

**A.** The CDA Task Force on Evidence-Based Dentistry recommends a definition drawn from the “Oral Health in America” report by the U.S. Surgeon General, and which is philosophically consistent with EBD as defined by the American Dental Association.

Evidence-based dental practice is the integration of an individual practitioner's

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experience and expertise, with a critical appraisal of relevant best available external clinical evidence from systematic research, and with consideration of the patient's needs and preferences.

**Q. Why does the definition of EBD adopted by the CDA task force include three elements — practitioner's expertise, clinical evidence from systematic research, and the patient's needs and preferences?**

**A.** The definition the task force adopted emphasizes the importance of a dentist's expertise and clinical judgment, relevant clinical evidence from research, and the informed patient's preference. In a dental practice that incorporates an evidence-based approach, the practitioner's expertise is first and foremost in deciding the course of treatment since it is the clinician's responsibility to consider all three components in defining the ideal evidence-based course of treatment. Evidence-based treatment can be characterized as the ideal intersection of these three elements.

**Q. Why is it important for organized dentistry — in this case, CDA — to promote a definition of EBD?**

**A.** EBD is a popular and frequently used phrase, but its use can be easily abused. The development of clinical practice guidelines is one of the intended outcomes of EBD. Unfortunately, the EBD approach to clinical dentistry is a relatively young discipline and overemphasizing certain aspects — notably the clinical research — can misrepresent an evidence-based approach to dentistry.

The profession has a voluminous amount of literature on a variety of treatment-related subjects, but it is often unclear what journal articles constitute good science or "junk" science. Giving priority solely to the research evidence while disavowing other elements can result in "warped" clinical guidelines.

Added to this problem is that many studies lack consideration of the long-term outcome, an evaluation of patient

satisfaction, and excludes the patient from making an informed decision.

This "tunnel vision" approach under the guise of EBD can easily happen in the marketing of dental products, and in third-party benefit assignment policies. Developers and marketers of new dental apparatus can use selected "research" to highlight their products while ignoring other research evidences. Dental benefit providers can favor "evidence" which justifies restricting payments for certain dental procedures.

To prevent potential abuses, it is important for CDA to promote the concept of EBD, since only the practitioner is capable of integrating valuable clinical expertise and the wishes of the patient with relevant research findings.

**Q. Isn't the monitoring of dental research journals, the review of all relevant research, and implementation of current findings into one's practice rather problematic for the average dentist? Also, how is the integration of current science and procedures best accomplished by the practicing dentist?**

**A.** As mentioned previously, there is a voluminous amount of dental research articles published each year. It is estimated that approximately 12,000 dental research articles were published in 2002, and that number will increase in the coming years. This is complicated by the fact that some journal articles are not peer-reviewed, are multiple versions of the same study, and may have flaws in both scientific research design and interpretations. Some published reviews may also be flawed by the manner in which the research studies are compared and filtered to the readership.

How can clinicians make sense out of the quagmire? CDA encourages its members to diligently seek out journals that provide reasonable reviews of the literature.

*Dr. Richard Kao is a practicing periodontist in Cupertino, Calif., and is chair of the Council on Dental Research and Developments. Dr. Kao acknowledges Drs. James Freed, Emilio Garcia, and Raymond Pedersen, and CDA staff Teresa Pichay and Greg Alterton for their assistance.*

## Golden State Program Snuffing Cigarette Sales

California has been ranked among the top four states for effective tobacco-control programs in the country.

According to a study in last September's issue of *Journal of Health Economics*, states that spent more than the national average on comprehensive tobacco-control programs demonstrated a notable decline in cigarette sales compared to states with average program funding.

The first study to include cigarette sales data from all states, including excise taxes, found that California, Arizona, Oregon and Massachusetts, fell an average of 43 percent as opposed to 20 percent for the remaining states.

"Although we've seen improvements in preventing and controlling tobacco use, smoking remains the leading cause of preventable death and disease in our nation," said Julie Gerberding, MD, Centers for Disease Control and Prevention director. "This study provides our clearest evidence to date that tobacco control programs are an excellent investment in public health."

Effective state-based programs, according to the CDC's Best Practices for Comprehensive Tobacco Control Programs outline, include several components: cessation programs including telephone quitlines; community and school programs and



policies; counter-marketing campaigns; program evaluation and monitoring; management and staffing.

While the CDC's minimum recommended average per capita funding for tobacco control was \$5.98, the overall average was \$1.22.

"States received unprecedented funds from the 1998 Master Settlement Agreement, but in many states these funds have been used for competing needs," said Terry Pechacek, PhD, the CDC's lead scientist for the study. "These new data show that robust tobacco control programs prevent and reduce tobacco use and protect people from exposure to second-hand smoke."



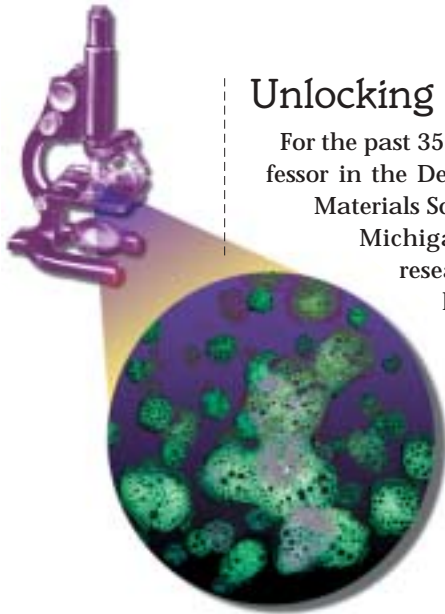
## Cameras Can Assist in Case Presentations

The use of extra-oral cameras may help dentists better inform their patients during case presentations, resulting in higher acceptance rates among their patients.

In *Dental Practice Management*, published last summer, John Jameson said studies show that during the communications process only 11 percent is understood verbally by the patient. But when dentists used a monitor to show patients their conditions and proposed treatment, the rate of patient comprehension increased up to 83 percent.

According to Jameson, utilizing this technology makes significant strides in case acceptance, particularly when patients have a disease but downgrade the need for treatment because they currently are not feeling any discomfort.

Jameson also noted that the biggest change in technology related to dentistry has been the ability to use all available technologies and link them to patient records. Dentists interested in integrating this technology in their practice begin by investing in a quality extra-oral digital camera, and using the camera into the entire system of the practice. Jameson said the technology has to be a routine step for every new patient for a comprehensive oral examination or returning hygienic patient diagnosed but who has not yet completed treatment



## Unlocking the Secret of Resistant Bacteria

For the past 35 years, Don Clewell, a professor in the Department of Biologic and Materials Sciences at the University of Michigan Dental School, has researched bacteria cells. He hopes to one day answer what causes them to resist and even emerge when an antibiotic is present. That answer may affect how pharmaceutical companies develop antibiotics and how patients are treated.

“Certain bacteria are actually producers of many antibiotics that are useful in fighting other bacteria that are present in the environment as part of the constant competition for nutrients,” said Clewell in *DentalUM* published last spring.

An estimated 10,000 bacteria species can be found in one gram of soil, he said. Additionally, the human intestine alone can

carry up to a thousand species, and Clewell said, the number of bacteria in and on the human body exceeds the number of human cells that make up an individual (more than 100 trillion).

The good news is most of these are harmless, Clewell said.

Clewell’s research is focused on the bacteria known as *Enterococcus faecalis*, which typically is carried in the intestine but at times cause urinary tract and blood infections (bacteremia), and endocarditis. The bacteria also may dwell in the oral cavity and often are connected to root canal infections.

The bacteria patients and their dentists most encounter are primary components of dental plaque. At least five other bacterias are associated with periodontal disease, while similar species cause caries.

Clewell said bacteria “wars” have gone on for millions of years. “The emergence of resistance genes has paralleled the process, since they are necessary to protect the antibiotic producers from self-destruction.”

## The Role of Dentists in Treating Diabetic Patients

The complications of diabetes mellitus range from xerostomia (dry mouth); high susceptibility to bacterial, fungal and viral infections (oral candidiasis); increased incidence of caries, periodontal disease and gingivitis; taste impairment; burning mouth syndrome; periodontal disease; as well as poor wound healing.

This is why, Anthony T. Vernillo, DDS, PhD, said in *Global Health Nexus*, a dentist can play a major role in managing the diabetic patient. *Nexus* is a publication of New York University College of Dentistry.

The dentist, along with the patient’s nutritionist and physician, can assist in controlling the patient’s diabetes through prevention, Vernillo said. In addition to motivating the patient to carefully monitor one’s blood sugar level — which is critical in potentially delaying or preventing the advancement of systemic complications —the dentist can purchase a glucometer for their practice, Vernillo recommended. Testing a patient’s blood sugar, especially those who have a family history of the disease or those exhibiting signs of diabetes mellitus, is a public service.

Vernillo further suggested that dentists teach their diabetic patients about oral hygiene, ranging from proper flossing and brushing following every meal, to behavior modification such as discontinuing tobacco use. Smokers, Vernillo said, are five times more likely than their non-smoking counterparts to have gingivitis and therefore, dentists can recommend smoking cessation programs and provide follow-up and support.



## Scorpion Venom May Hold Key to Stemming Bone Loss

A component in scorpion venom has been shown to stop bone loss in an advanced periodontal disease model. That's good news to more than the one-quarter of American residents over the age of 30 who have periodontal disease involving teeth or bone loss, the National Institute for Dental and Cranial Research said.

Additionally, an estimated 21 million people in the U.S. suffer from osteoarthritis and 2.1 million have rheumatoid arthritis, according to a 1998 study from the Arthritis Foundation. Scientists are encouraged that the component of scorpion venom, kaliotoxin, may help people afflicted with those inflammatory diseases.

"We are very excited because this is the first demonstration that this type of compound (called a potassium channel blocker) may be useful in treating periodontal disease," said Martin Taubman, DDS, PhD, chair of the Forsyth Institute's Department of Immunology lab where the study was conducted. "We hope that our findings will lead to success in alleviating the bone-ravaging effects of many other diseases."

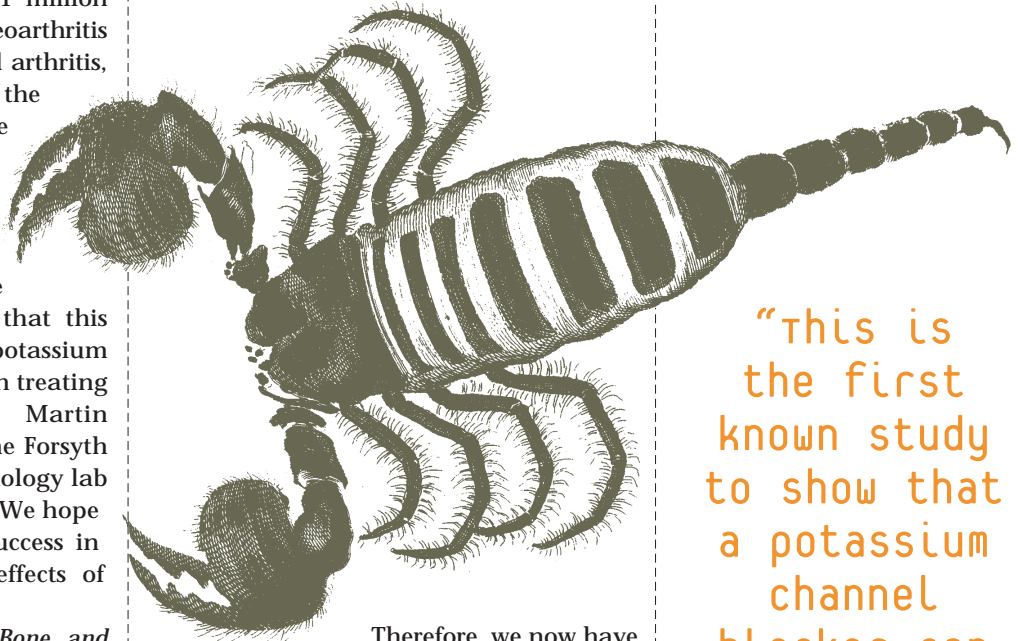
In the January *Journal of Bone and Mineral Research*, Forsyth scientists said they induced the bone loss component of periodontal disease in rats. They then injected one group of the rats with kaliotoxin. Ten days later, the injected rats exhibited 84 percent less alveolar bone loss than those rats that did not have the injection.

Paloma Valverde, PhD, principal investigator, said kaliotoxin modulates inflammatory bone resorption by blocking the protein Kv1.3, a potassium channel involved with inflammation.

"Kaliotoxin decreases the expression of RANKL, a protein expressed on the surface of memory/activated T cells, which are present at high levels in periodontal disease," said Valverde.

RANKL is prominent in inducing bone cells (called osteoclasts) to destroy bone. Therefore, potassium channel blockers or kaliotoxin targeting Kv1.3 could stem bone resorption.

"This is the first known study to show that a potassium channel blocker can decrease alveolar bone loss," said Valverde. "Furthermore, we observed no toxic effects.



Therefore, we now have a novel and apparently safe strategy to ameliorate bone destruction associated with periodontal disease. We expect that kaliotoxin and other Kv1.3 blockers can also be used to prevent bone destruction in other inflammatory bone resorptive disorders such as osteo- and rheumatoid arthritis."

The J.W. Hein Fellowship at The Forsyth Institute and the National Institute of Dental and Craniofacial Research funded the study. Currently, other scientists are studying other components of scorpion venom for potential uses in treating autoimmune diseases ranging from various cancers, heart disease, lupus, multiple sclerosis, and stroke.

"This is the first known study to show that a potassium channel blocker can decrease alveolar bone loss."

PALOMA VALVERDE, PhD



**“To achieve this good balance, we need input from practicing dentists as the primary users of amalgam separator products.”**

DR. FREDERICK EICHMILLER

## Volunteers Needed to Help ADA Standards Group

Practicing dentists are needed to assist the ADA Standards Committee on Dental Products in establishing an American National Standard for instruments that separate amalgam particles from dental wastewater.

“The consensus process must have representation from industry, government regulators, academia and the profession,” said group chair Dr. Frederick Eichmiller, director of the ADA’s Paffenbarger Research Center. “To achieve this good balance, we need input from practicing dentists as the prima-

ry users of amalgam separator products.”

Whether an observer of the working group or as a participant, ADA member dentists will collaborate with other parties toward creating an ANSI/ADA standard by assessing the current international norms on amalgam separators (ISO 11143). Providing expertise on the standards process will be the ADA Council on Scientific Affairs.

For more information, contact Dr. Eichmiller, [frederick.eichmiller@nist.gov](mailto:frederick.eichmiller@nist.gov), or Sharon Stanford, Standards Administration director, (800) 621-8099, ext. 2509.

### Upcoming Meetings

#### 2004

<b>March 2-3</b>	Academy of Laser Dentistry Certification Program, Standard Proficiency and Advanced Proficiency, Palm Springs, (954) 346-3776, <a href="http://www.laserdentistry.org">www.laserdentistry.org</a> .
<b>March 3-6</b>	Academy of Laser Dentistry 11th Annual Conference, Palm Springs, (954) 346-3776, <a href="http://www.laserdentistry.org">www.laserdentistry.org</a> .
<b>March 5-8</b>	Academy of Laser Dentistry 10th Anniversary Conference and Exhibition, Destin, Fla., (954) 346-3776, <a href="http://www.laserdentistry.org">www.laserdentistry.org</a> .
<b>March 10-13</b>	International Association for Dental Research’s 83rd general session and exhibition (also 33rd annual meeting of the American Association for Dental Research and the 28th annual meeting of the Canadian Association for Dental Research), Honolulu, Hawaii, (703) 299-8094, <a href="http://www.dentalresearch.org">www.dentalresearch.org</a> .
<b>April 15-18</b>	CDA Spring Scientific Session, Anaheim, (866) CDA-MEMBER (232-6362).
<b>April 27-May 2</b>	American Academy of Cosmetic Dentistry’s 20th annual Scientific Session, Vancouver, British Columbia, <a href="http://www.aacd.com">www.aacd.com</a> .
<b>June 24-26</b>	ADA 18th annual New Dentist Conference, San Diego, (312) 440-2779, <a href="http://www.ada.org/goto/newdentconf">www.ada.org/goto/newdentconf</a>
<b>Sept. 8-11</b>	International Federation of Endodontic Association’s sixth Endodontic World Congress, Brisbane, Queensland, Australia, <a href="http://www.ifea2004.im.com.au">www.ifea2004.im.com.au</a> .
<b>Sept. 10-12</b>	CDA Fall Scientific Session, San Francisco, (866) CDA-MEMBER (232-6362).
<b>Sept. 30-Oct. 3</b>	ADA Annual Session, Orlando, Fla., (312) 440-2500.

To have an event included on this list of nonprofit association meetings, please send the information to Upcoming Meetings, *CDA Journal*, P.O. Box 13749, Sacramento, CA 95853 or fax the information to (916) 554-5962.