

211 E. Chicago Avenue
Suite 1100
Chicago, IL 60611

Phone: 800/872-3636
or 312/266-7255

Fax: 866/451-9020
or 312/266-9867

Charles L. Siroky
President

Denis E. Simon III
Vice President

Paula Russo
Secretary

Darrell W. Zenk
Treasurer

James M. Drinan
Executive Director

© 2004

Evidence-Based Endodontics: Shaping Your Future

The influence of research on the practice of endodontics has changed dramatically in the last 10 years. Even as new methods and materials offer the promise of improved treatment, patients come to your office educated, or sometimes miseducated, by their own variety of Internet research. Insurance companies sometimes look to research for statistical justifications to deny treatment or to encourage patients toward less costly alternatives. In the midst of this, the practitioner is inundated with new information, leaving him/her to wonder, Should I change my technique? Should I try that new material? How should this patient's systemic health play into treatment planning? Will making a change really improve care for my patients?

Challenges and questions like these are what evidence-based endodontics is all about. The good news for today's practitioner is that the AAE and the AAE Foundation are already actively working to stimulate the production of scientific evidence to support clinical practice and to ensure that such evidence is relevant and accessible to all endodontists.

Your Priorities

In 2002, we came directly to you, by means of a survey, asking what clinical questions you feel are most important to your practice. The top three questions reflect your most urgent concerns:

- 1. In patients with teeth that have pulpal or periradicular pathosis, does nonsurgical root canal therapy or retreatment, compared to extraction and tooth replacement (including implants), result in a more functional and healthy dentition?*
- 2. In patients with endodontic failures, does nonsurgical retreatment, compared to surgical retreatment, result in more favorable healing of the periradicular tissues?*
- 3. In patients with endodontic failures, does nonsurgical retreatment, compared to extraction and replacement, result in a more functional and healthy dentition?*

The AAE Evidence-Based Committee is currently planning a review of the existing literature related to question #1 to identify

what additional research must be done to answer it.

Clinical Research Is Key

Much of the promise for achieving evidence-based endodontics lies in the area of clinical research. Thanks in part to the efforts of the AAE Foundation, researchers across the nation and in other countries are pursuing clinical research of types and scales never before seen in the field of endodontics. That research promises to pave the way for a specialty more firmly based in science and biologic principles than ever before.

"We certainly have always had clinical research in the field of endodontics," says Dr. Linda Levin, who chairs the Endodontic Department at the University of North Carolina and consults with the AAE Research and Scientific Affairs Committee. "But often, the statistics were based on small, localized samples." In addition, treatment methods have changed dramatically, and the clinical research base has yet to catch up. "You can't look, for example, at data for surgical outcomes based on the old literature," adds Dr. Levin, "because we aren't doing surgery that way anymore."

Broadening the Scope

While researching new materials and methods is an important goal, the true promise of clinical research relies on broadening the

continued on page 4



From the President's Desk

Dear Colleague:

The idea of doing well by doing good is a simple but powerful concept. In asking you to consider a pledge to the AAE Foundation, I share some thoughts about what the Foundation means to me and why I believe it should be important to you. The Foundation hitches our wagon to a star. It allows us to actualize our highest ideals and values. The generosity of many creates miracles that you and I could not accomplish alone. The Foundation's real work is not to raise and disburse money. It is to inspire our dreams for the future.

Of course, dreams do not become reality without effort and planning. Each of us must contribute to this process. The Board of Trustees is responsible for guiding the Foundation's activities. Recently, we reviewed the mission statement and finalized a revision. We also wrote a vision statement, adopted core values and developed goals and objectives for funding. These touchstones will guide our deliberations and provide benchmarks for measuring our success.

The goals and objectives are the framework for funding initiatives that will occur over the next several years. Activity on some projects, such as producing scientific evidence to support clinical practice, has already begun. You may have participated in the survey that was conducted to identify the clinical questions that members consider most important.

As a result of the survey, three topics were identified. The Foundation has asked the AAE's Evidenced-Based Committee and the Research and Scientific Affairs Committee to collaborate to address these issues. Beginning with the top ranked question, the Evidence-Based Committee will conduct a literature review. If there are gaps in our knowledge, they will develop a Request for Proposal to solicit targeted research. The Research and Scientific Affairs Committee will review the proposals. Over time, we will investigate each of the top questions.

These activities could not happen without a successful Foundation to provide the funding. Our goals are motivated by the need to transcend business as usual and excel in every area of specialty practice. Being the best we can be is critical. When we limit our possibilities, we also limit our future. I am proud and thankful that we need not settle for the status quo. More than sixty percent of members have affirmed their commitment to excellence with a pledge of at least \$2,000. I invite you to join them. Experience the joy of doing good and doing well.

Sincerely,

Charles L. Siroky
President

Bring home a bargain and support the Foundation

The live auction in Anaheim is an opportunity to bid on quality products and support the AAE Foundation. The auction takes place on Thursday, May 6 from 5:00 to 6:00 p.m. during Happy Hour in the exhibit hall. Enjoy snacks, beverages, music and friendly competition with your colleagues. Don't let the gavel fall on this exciting opportunity! Participants include:

ASI Medical, Inc.

Advanced Endodontic System with Satelec Ultrasonic unit
can be upgraded or customized

Carl Zeiss Surgical

\$5,000 certificate to be applied to any Carl Zeiss product
limited to U.S. residents

CK Dental

Conventional and surgical instruments

Dentsply Tulsa Dental

Endodontic and surgical systems

DogBreath Software, Inc.

TDO Imaging and TDO Express Modules

olo2.com

Carr II Photo Adapter with Cine

Global Surgical

Nikon digital camera model 4500, a digital adapter, a beamsplitter, and a Personal Display System for attachment to a Global microscope

Obtura/Spartan

Kis microsurgical hand instruments
Spartan Piezo electric ultrasonic
KIS 1-6
CPR 1-5
Ultrasonic tips

Schick Technologies

Single User CDR Digital X-Ray System

Seller Precision Microscopes

Seiler Model 202 dental operating microscope with video camera

Sybron Endo

Elements Diagnostic Unit
Nouvag Motor
100 packs of K3 rotary files

New Fellowships Awarded

The AAE Foundation Board of Trustees approved four new Endodontic Educator Fellowship Awards. The Fellowship, which is designed to recruit new endodontic educators, pays tuition and a stipend of \$1,000 per month. In return, recipients agree to teach full time for five years. To date, 12 fellowships have been awarded. The 2004 recipients are:



Marie Gosselin, D.M.D.
Laval University



Asma A. Khan, B.D.S., Ph.D.
The John and Joyce Ingle Fellow
University of Texas, San Antonio



Nancy Medina, D.M.D., M.S.
Boston University



Christopher Brett Owatz, D.M.D.
University of Texas, San Antonio

scope of studies to ensure that the data are, in turn, broadly applicable. "Traditional endodontic practice philosophies derived from what worked clinically," reports Dr. Kenneth Hargreaves, who chairs the Endodontic Department at the University of Texas and edits

the AAE's *Journal of Endodontics*, "and that's an important level of information, but there are several levels of information above that." True clinical research ascends a ladder from clinical observation to the case series, to the

cohort study, and ultimately randomized control trials and systematic reviews.

Ascending the Ladder

In a case series the researcher might treat 30 or 40 patients in a private practice or dental school environment and draw conclusions from the results. While this is often a good place to start, the conclusions do not necessarily hold true to larger groups of patients or patients in other demographic groups. "We need to do more of these studies in multiple centers," suggests Dr. Ashraf Fouad, an associate professor in the Department of Endodontology at the University of Connecticut and a

member of the AAE Research and Scientific Affairs Committee, "such that the data is universal rather than just regional in its impact." A cohort study does just that by adding more information through the inclusion of comparison groups of patients and tracking their progress over time.

The goal of a randomized control trial, which is a more sophisticated form of cohort study, is to remove bias and increase the probability that the results are reproducible and significant. Patients are randomly assigned to groups, and methods are incorporated to increase the protection against bias, such as a double blind study where neither the doctor nor the patient knows what is being administered. Another option is to have an observer who was uninvolved in the trial subsequently review the research and results.

The highest level of research is the systematic review, in which the researchers go to the literature and review all of the clinical research — be it case reports, cohort studies, or randomized clinical studies. They then summarize the strength of the overall evidence. The research soon to be underway with the AAE Evidence-Based Committee is an example of a systematic review.

Waging the Resource War

The advent of new record keeping and communications technologies, such as digital radiography and the Internet, make large-scale cooperative research between institutions easier than ever before. Even with these new weapons in our

arsenal, however, the age-old enemies of research — time, money and manpower — are still waging war against our success.

Because broadening the scope of study is a major goal in clinical research, it is inherently resource intensive. In light of the many variables involved in these types of studies, much time is spent in the design phase to ensure that the study will produce reliable and usable results without wasting resources on false starts. "It's long-term analysis," points out Dr. Fouad, "it's not something that can be done fast." Dr. Fouad hopes that the AAEF's goal to develop a protocol for the design of these studies will lead to better study planning and, ultimately, greater resource efficiency.

Clinical research is inherently more expensive than laboratory research, partly because the researchers are dealing with real people who must be motivated to participate. "The biggest constraint on clinical research," says Dr. Levin, "is patient numbers." Generally, the bigger the numbers, the more reliable the results. Unfortunately, the best way to ensure patient retention throughout the follow up and assessment period is to provide financial incentives. "If you have a large cohort, and you're reimbursing patients," Dr. Levin explains, "even if it's just for parking or part of their dental care as it pertains to the study, it can get quite expensive." In addition, many dental schools are cutting their budgets, which often translates to a loss of funding and manpower for research.

"But probably the most important cost," Dr. Hargreaves counters, "is if we don't do the research. If we don't do the research, we won't control our destiny. We will not be able to provide the best level of care to our patients." That could lead to patients seeking alternative forms of care, perhaps having a tooth



The Foundation as Catalyst

Your support of the AAE Foundation helps launch investigators to gather preliminary data and receive more training and then become successful at receiving larger grants that greatly magnify the amount of resources that are leveraged for endodontic research.

extracted and having an implant placed or having a surgical procedure where nonsurgical root canal treatment could have been provided. "So I actually think the highest cost of clinical research," he restates, "is the cost to our specialty if we don't do it, because we no longer control the destiny of our specialty."

Filling the Success-Failure Gap

Obviously, success-failure studies represent one of the most important areas of clinical research for our specialty. The RSAC recognizes this and is working to foster more success-failure studies. "Certainly, the implant companies are investigating this," reports Dr. Levin, "seeking the help of university-based dental epidemiologists to look at endodontic outcomes in different quality assessments."

Much of the endodontic success-failure research is dated and often limited by small sample size. "You just can't compare some of them because they looked at different parameters of success," Dr. Levin continues, "and these are compared, nevertheless, to the newest studies on outcomes with implants using different criteria." Unfortunately, if a patient is confronted with getting an implant or a retreatment and the implant studies are reporting a 98 percent success rate and the retreatment studies show 80 percent, that puts us at a disadvantage. Dr. Levin asserts that, although implants are certainly indicated in some situations, trying to justify implant placement using the existing research is like comparing apples to oranges. "It just isn't a fair comparison," she concludes. Yet patients and insurance companies are forced to base decisions on this incomplete evidence. It is our responsibility as a specialty to fill the gap with accurate research.

Searching for Solutions

One obvious solution is to look to the federal government, a major source of clinical research funding throughout medicine and dentistry. "For instance if you look at periodontics and the advances they've made in recent years in potentially linking periodontal disease with some systemic diseases,"

Dr. Fouad notes, "most of that effort has been funded by NIH."

Dr. Fouad grants, however, that making a successful application for NIH funding can be a monumental challenge, "but that is the level of funding that we need in order to have the resources that we're talking about."

Before NIH will pay attention to an endodontic issue, its importance to public health must be demonstrated through preliminary research. "We have to be able to convince the funding agencies that endodontic problems are significant problems," Dr. Fouad explains, "that they have a quality of life impact — that it is important to save patients' teeth." This is one area where the AAE Foundation plays a pivotal role. Through smaller grants from AAEF, researchers are able to provide pilot data to build the case for federal funding.

Training the Researchers

"Not only is the Foundation helping to support a lot of this research," Dr. Hargreaves adds, "I think it's equally important that the Foundation has found opportunities to educate endodontists to do better research." When the contemporary importance of evidence-based endodontics was just beginning to come to light, the Foundation sponsored workshops to train a

corps of endodontic researchers to do evidence-based research. "I think you're going to see more and more papers on evidence-based approaches towards endodontics," Dr. Hargreaves predicts, "as an outcome of this type of training."

"One of the great values of clinical research is that it's practical. It has the potential for application to the practicing endodontist in how they treat their patients. Ultimately, improving patient care is the real value of clinical research and it's the real reward for endodontists doing clinical research."

– Dr. Kenneth M. Hargreaves

Achieving Exponential Progress

"Similarly," Dr. Hargreaves continues, "I think that we're starting to see people who successfully received grants from the AAE Foundation now successfully competing for grants at NIH, and that's a large step up." The total NIH award now is roughly \$250,000 a year to help support an investigation. Little more than a decade ago, that was the entire portfolio budget of the AAE Foundation.

So, in short, your support of the AAE Foundation helps launch investigators to gather preliminary data and receive more training and then become successful at receiving grants that greatly magnify the amount of resources that are leveraged for endodontic research. "I think the Foundation today is the catalyst," Dr. Hargreaves concludes. "Not only is it directly supporting research that is of relevance to the practice of endodontics but it's also training the clinician scientist that will take us to the future."

The AAEF wishes to thank Drs. Ashraf F. Fouad, Kenneth M. Hargreaves, Bradford R. Johnson, Linda G. Levin, and Shahrokh Shabahang for their assistance with this article.

Volunteer leadership is key to Foundation's success



The 2003-2004 campaign goal is \$1 million. It takes courage, passion, persistence and, above all, hard work to raise that much money in one year. Fortunately, Foundation volunteers have those qualities in abundance. The Friends of the Foundation enlist support from their colleagues. Student Ambassadors present the Foundation to residents in endodontic programs. Both groups contribute substantial time and effort to ensuring the Foundation's success. We are grateful for their outstanding leadership and commitment.

2003-2004 Friends of the Foundation and Student Ambassadors:

| | | |
|------------------------------|-----------------------------|----------------------------|
| Dr. W. Craig Bell | Dr. Raed S. Kasem | Dr. Robert L. Reames |
| Dr. Deborah S. Bishop | Dr. Charles P. Kass | Dr. James O. Roahen |
| Dr. Uziel Blumenkranz | Dr. Harmon R. Katz | Dr. Martin J. Rogers |
| Dr. Russel K. Christensen | Dr. Lee Anne Keough | Dr. Louis E. Rossman |
| Dr. Evan R. Chugerman | Dr. John A. Khademi | Dr. John L. Santopolo |
| Dr. A. Scott Cohen | Dr. Kevin T. King | Dr. Mark A. Schachman |
| Dr. Robert A. Coleman | Dr. Roger R. Lacoste | Dr. Steffan J. Scherer |
| Dr. Ty E. Erickson | Dr. Alan S. Law | Dr. Hank Schiffman |
| Dr. Nava Fathi | Dr. Martin D. Levin | Dr. Betty J. Schindler |
| Dr. Mohamed I. Fayad | Dr. Robert J. Loushine | Dr. William G. Schindler |
| Dr. David C. Funderburk | Dr. Tanya K. Machnick | Dr. Stephen F. Schwartz |
| Dr. Julio R. Gaitan | Dr. Jay Marlin | Dr. Bruce H. Seidberg |
| Dr. Stuart E. Garber | Dr. Donna J. Mattscheck | Dr. Shahrokh Shabahang |
| Dr. Richard J. Gardner | Dr. R. Cary Mead | Dr. Colleen C. Shull |
| Dr. Bradley H. Gettleman | Dr. Kim A. Menhinick | Dr. Brent C. Sonnenberg |
| Dr. Nader Gill | Dr. Andre K. Mickel | Dr. Barry H. Stevens |
| Dr. Gerald N. Glickman | Dr. Evan N. Miller | Dr. Charles V. Tatosian |
| Dr. Shepard S. Goldstein | Dr. Steven G. Mohorn | Dr. James M. Tinnin |
| Dr. Tom G. Gound | Dr. Peter A. Morgan | Dr. James C. Tinnin |
| Dr. John F. Hatton | Dr. M. Sadegh Namazikhah | Dr. James A. Wallace |
| Dr. Robert W. Hawkinson, Jr. | Dr. Carl W. Newton | Dr. William R. Watson, Jr. |
| Dr. Michael M. Hoen | Dr. John S. Olmsted | Dr. John D. West |
| Dr. Jeffrey W. Hutter | Dr. Ardon L. Overby | Dr. Shane N White |
| Dr. C. Russell Jackson | Dr. Glenn L. Paulk | Dr. Gary S. Yonemoto |
| Dr. Allan Jacobs | Dr. William D. Powell | Dr. Stefan I. Zweig |
| Dr. Jeffrey M. Javelet | Dr. Cindy R. Rauschenberger | |
| Dr. Kenneth H. Kahn | Dr. Al Reader | |

"The Foundation hitches our wagon to a star. It allows us to actualize our highest ideals and values. The generosity of many creates miracles that you and I could not accomplish alone. The Foundation's real work is not to raise and disburse money. It is to inspire our dreams for the future."

– Dr. Charles L. Siroky, AAE Foundation President