

AAE Consensus Conference on Diagnostic Terminology: Background and Perspectives

Diagnostic terminology in endodontics has been a topic of discussion, controversy, and debate for decades. Confusion in terminology naturally arises when educators, clinicians, and researchers use a wide array of diagnostic diction and schematics; when there are distinct differences in definitions of terms; when key endodontic textbooks promulgate histologically based characterizations for clinically based diagnoses; and when there are strong proponents of specific classification systems. Reasons for these disparities are myriad and multifactorial because diagnosis is already, in its own right, a complex and challenging process. Furthermore, there is a lack of biologically based terms that can represent the true status of the pulp and periapical tissues, poor correlations exist between clinical symptomatology and pulpal histopathology, and lack of sophistication with current armamentaria endorses confusion.

Moreover, questionable reliability and validity with current testing modalities are ignored, passionate and “ego-driven” beliefs about specific terms are rampant, and disagreement as to whether diagnostic terminology should be linked to specific treatment modalities has not been formally assessed. What further complicates this process even more is the contemporary evolution of indirect pulp capping as a viable therapeutic entity, as well as revascularization/regeneration procedures in which innovative treatments are being considered for pulpal and periapical conditions that were originally destined for pure endodontic treatment.

Because a biologically and metrically based set of terminology is lacking, the Board of Directors of the American Association of Endodontists (AAE) recommended the construction and adoption of a consensus-driven, evidence-based classification system for endodontic diagnosis to arrive at conformity in terminology, enhance communication between clinicians and health care providers, and ultimately provide predictable treatment for patients on the basis of sound and reproducible diagnoses. The overall strategy of this approach was similar to that used by other medical and dental groups focused on developing standards in terminology.

After nearly a year of planning, the AAE held its first ever Consensus Conference on the topic of “Standardization of Diagnostic Terms Used in Endodontics” on October 3, 2008 in Chicago, Illinois. Generously funded by the AAE Foundation, this conference was by invitation only. Sixty-four attendees addressed the wide variation in terms, with the intent of reaching consensus on the terminology, definitions, evaluation criteria, and treatment modalities for pulpal and periapical disease. The initial impetus for this event arose from the 2007 AAE Program Directors Workshop at which attendees unanimously expressed their concerns over the lack of standardized diagnostic terms, especially across the spectrum of predoctoral endodontics curricula at United States and Canadian dental schools, endodontic textbooks, the American Board of Endodontics, the AAE *Glossary of Endodontic Terms*, and materials used for construction of national dental board exams. As a result of that discussion, along with the impending impact of electronic claims codes on reimbursement, the AAE Board of Directors, under 2008–2009 President Louis E. Rossman, ultimately approved a consensus conference to address these issues. In turn, a special committee composed of Drs Gerald N. Glickman as chair, Leif K. Bakland, Ashraf F. Fouad, Kenneth M. Hargreaves, and Scott A. Schwartz was appointed to conceptualize, design, and implement the conference.

Both short-term and long-term goals were identified early in the discussions of standardizing diagnostic terminology. The 1-year, short-term goals related primarily to the development, implementation, and outcomes of the consensus conference itself. These included directives to do the following:

1. Develop a consensus conference process in which expert opinions will be solicited and papers written pertaining to focused questions, along with proposed universal recommendations regarding endodontic diagnoses.
2. Develop a standardized definition of key diagnostic terms that will be generally accepted by endodontists, educators, test construction experts, third parties, generalists and other specialists, and students.
3. Resolve concerns about testing and interpretation of results in teeth with multiple diagnoses in different canals.
4. Determine the radiographic criteria, objective test results, and clinical criteria needed to validate the diagnostic terms established at the conference.
5. Identify areas of research that are required to support long-term goal #4 (see below).

The 5-year, long-term goals of the overall process are to do the following:

1. Achieve acceptance for standardized terminology that is biologically and metrically based.
2. Develop and validate metric-based clinical diagnostic categories that form the basis for making optimal treatment decisions with known prognostic implications.
3. Identify, conduct, and support research to address long-term goal #2.
4. Reconvene the consensus conference approach to incorporate new research findings into the metric-based clinical diagnostic categories.
 - a. Ensure the theme regarding traumatized teeth receives priority and consideration when determining the questions in the next consensus conference.
5. Establish diagnostic codes before 2015 to comply with the National Health Information Infrastructure initiative to have all patient health records available electronically by 2015.
6. Develop and validate biologically based, clinically useful markers for predicting healing response to treatment.
7. Identify data to be pursued in future research endeavors to better understand pathologic conditions of the pulp and periradicular tissues.
 - a. Appropriate imaging tools.
 - b. Appropriate biologic markers, inflammatory mediators, and/or microbial DNA sequences that are predictive of specific pathologic conditions and/or treatment outcomes.
 - c. Clinical indications for endodontic tests on any tooth in the patient's mouth during the course of routine treatment planning.
 - d. Linking diagnostic categories to symptoms, treatment, and/or prognosis.
 - e. Patient's systemic health and its influence on endodontic diagnosis.
8. Determine how to incorporate the diagnosis of traumatic injuries into endodontic diagnosis.

9. Define pulpal diagnosis of teeth with cracks (infractures and vertical fractures, superficial caries, dentin hypersensitivity, apical radiopacities, and other hitherto not well-defined, trauma-related conditions).
10. Formulate questions that identify both areas of knowledge and gaps in knowledge to support the development and validation of metric-based clinical diagnostic categories.
11. Identify funding priorities that are relevant to these goals to the academic endodontic community as well as to the AAE Foundation.
12. Identify an existing committee or appoint a new committee to convene the planning, oversight, and management of the long-term goals.

Because of the size limitation of the conference, the oversight committee only considered and selected individuals who were key stakeholders in the process; these included educators, the AAE Board of Directors, members of the American Board of Endodontics and the AAE Foundation, international experts, textbook authors, *Journal of Endodontics* associate editors, and representatives from test construction committees. So many world-renowned authorities in the field of endodontics had never before been gathered together for this form of scholarly endeavor. The conference was modeled after the National Institutes of Health Consensus Conference format, which essentially involves proposing questions that could be answered by the presentation of scientific information derived from evidence-based research.

Eleven months before the conference, 4 subcommittees were appointed to address separate and specific questions regarding diagnosis. These were the following:

1. Identify and determine the metrics, hierarchy, and predictive value of all the parameters and/or methods used during endodontic diagnosis.
2. Identify and define all diagnostic terms for pulpal health and disease states.
3. Identify and define all diagnostic terms for periapical/periradicular health and disease states.
4. Identify the endodontic treatment modalities.

With respect to each of these questions, each subcommittee was asked to do the following:

- Establish the best levels of evidence/information available to answer the proposed investigations.
- Critique the value of the information identified.
- Establish a consensus relative to the current understanding of the data obtained.
- Identify gaps in the knowledge base with the intent to provide direction for future clarification and codification of the essence of the questions asked.
- Recommend a position based on literature/levels of evidence and the rationale for stated position.

Each subcommittee worked diligently during a 5-month period to gather the data and information necessary to construct a high-quality, evidence-based paper based on the aforementioned guidelines. To obtain feedback and comments from the "global" world of endodontics, the AAE posted a Call for Comments on its Web site to solicit responses to the papers. All comments were reviewed by each subcommittee and incorporated into the papers as appropriate; the papers were finalized and subsequently reposted on the Web site before the conference. Each of the subcommittee chairs presented the outcomes from their papers at the conference, and breakout sessions with attendees were used to facilitate open discussion; an Audience Response System was used for participants to provide feedback on the papers and to answer questions that were developed by the oversight committee.

On the basis of the wide range of responses received during the Audience Response System session, the oversight committee decided to conduct a follow-up survey to the attendees by using revised questions that focused more specifically on selection of terminology, definitions, and outcomes. The results of the survey appear in these proceedings, along with a set of recommended terms. The questions were also used to identify those areas in which "consensus" was reached, as well as areas that generated minority reports; these aspects are further defined in the results and recommendations paper within these proceedings. The 4 subcommittee papers published in this issue of the *Journal of Endodontics* represent scholarly achievements never before attained on a subject so important to the specialty of endodontics.

For the most part, all short-term goals originally outlined by the oversight committee were addressed, and the committee acknowledges the outstanding work by each of the 4 subcommittees. This was an arduous project that engaged all program participants as well as the endodontic community. The AAE will certainly address the long-term goals as follow-up to the consensus conference, including the development of continuing and new initiatives such as regenerative endodontics and trauma symposia. This historic conference was the first in a series of AAE initiatives that address the state of the science in endodontics, thus contributing to the AAE's continued dedication to the highest quality of care for the patient.

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