

## **An Overview Of 2003 Workshop on Contemporary Science in Clinical Periodontics: Purpose, Process, and Methodology**

### **Background**

In 2000, the American Academy of Periodontology Board of Trustees charged a Task Force to investigate the need to convene an invitational workshop to address emerging scientific topics within the field of periodontology. The Task Force determined that a workshop was warranted, and as a result, the Academy planned and conducted the 2003 Workshop on Contemporary Science in Clinical Periodontics (also known as the Contemporary Science Workshop, or CSW).

### **Purpose of the Workshop**

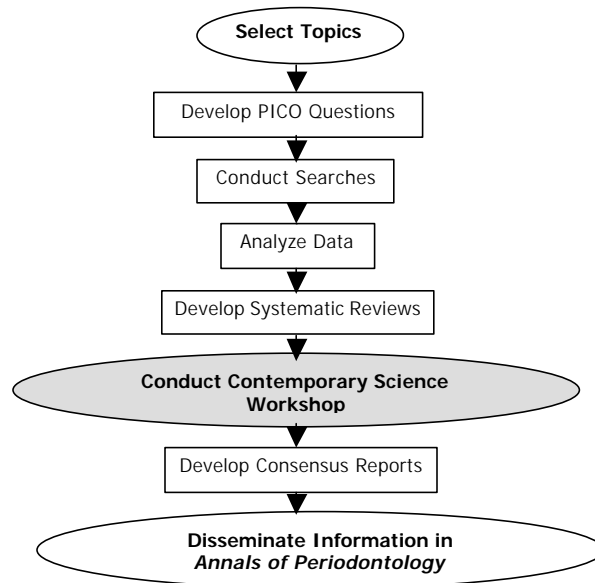
The stated purpose of the Contemporary Science Workshop was to conduct systematic, evidence-based reviews of the most current existing information on three main topics in periodontics:

- Host Modulation Factors
- Anti-infective Therapy
- Tissue Engineering in the Management of Periodontal Diseases and Dental Implants.

From these systematic reviews, consensus statements were developed, with the intention of empowering clinicians, research workers, funding agencies, payers, product developers and policy makers with insights that would facilitate using, improving, and developing new products and technologies for the treatment of periodontal diseases. [View the AAP press release.](#)

### **A Summary of the Process**

The following diagram illustrates the continuum of the process implemented for the Contemporary Science Workshop, from topic selection to information dissemination. Each of the steps will be discussed briefly. A more complete overview of the Workshop can be found in the introductory article to [Volume 8 of the \*Annals of Periodontology\*](#) titled "The Use of the Evidence-Based Approach in a Periodontal Therapy Contemporary Science Workshop".



### **Systematic Reviews: The Basis of the Workshop**

Prior to the conference, fifteen systematic review papers were generated on topics within the three major categories. The systematic reviews served as the basis for the development of consensus reports containing the most up to date information in these innovative areas and their implications for practice and research.

The structure of a systematic review is very different from the typical research study or literature review on a given topic. Four distinct steps are included in the development of a systematic review:

- Development of a clinically relevant and focused PICO question
- Conducting systematic searches for the best evidence
- Data analysis for internal and external validity
- Development of conclusions

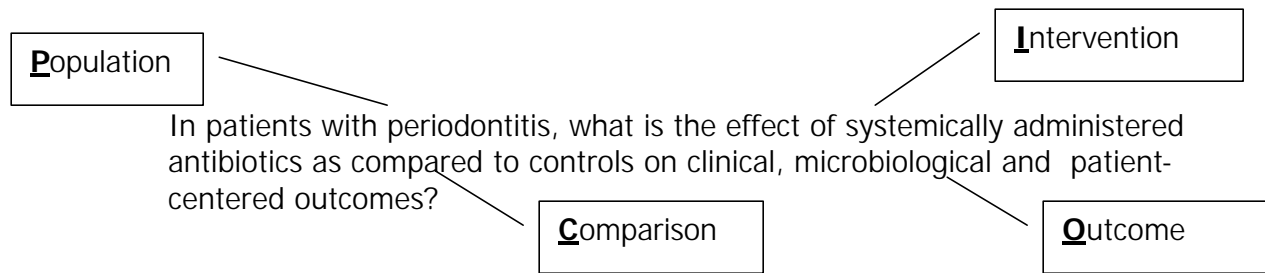
A continual process of evaluation and approval is the hallmark of the evidence-based systematic reviews developed for this Workshop.

Because the process of developing evidence-based systematic reviews is so detailed, authors of the systematic review papers, along with Workshop Group Leaders and Section Chairs met in Chicago in December 2001 to receive training on the concepts and methodologies of developing evidence-based reviews.

#### **Step 1: the PICO question**

In keeping with the EB approach, each systematic review paper was developed based on an approved focused “PICO” question: a question that includes the characteristics of the **P**opulation to be investigated, the nature or delivery of the **I**ntervention to be tested, a **C**omparison statement, and the type of **O**utcome to be assessed.

An example of a PICO question used for the Contemporary Science Workshop is:



## Step 2: Conducting Searches

Systematic reviews not only seek the best evidence from sources of published data, but also seek to include evidence from studies that have not been published or released. “Best evidence” is a term that refers to information obtained from the following sources, in order of most valid:

1. Human randomized controlled clinical trials
2. Non-randomized controlled clinical trials
3. Cohort studies
4. Case-control studies
5. Crossover studies
6. Cross-sectional studies
7. Case studies
8. Expert opinion

After gathering and synthesizing information from studies that directly answer the focused PICO question, the quality of the evidence was graded using the following criteria:

Quality of Evidence	
I	Evidence obtained from at least one properly designed randomized, controlled trial.
II-1	Evidence obtained from well-designed controlled trials without randomization.
II-2	Evidence obtained from well-designed cohort or case-control analytic studies, preferably from more than one center of research group.
II-3	Evidence obtained from multiple time series with or without the intervention. Dramatic results in uncontrolled experiments (such as the results of the introduction of penicillin treatment in the 1940s) could also be regarded as this type of evidence.
III	Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees.

### **Step 3: Data Analysis**

Qualitative and/or quantitative analyses were conducted to determine the validity and usefulness of the evidence obtained from the systematic searches. In the EB approach, two types of validity are considered:

- Internal validity: refers to the fundamental soundness of the scientific and clinical rationale of the study, the structure of the study, determination of bias, and statistical approach. Evaluation of internal validity oftentimes determines whether or not a study is included in a systematic review.
- External validity: the extent to which the evidence is relevant and generalizable to the population and conditions of typical dental practice.

In addition, formal meta-analyses were conducted by the Workshop's biostatistician if sufficient data existed for each research question. This decision was made based on having sufficient number of studies with the same outcome variable to provide insight into the PICO question. For each meta-analysis, a forest plot has been provided that graphically demonstrates the results by illustrating the difference of effect between a control arm of a study and the active arm of the study.

More detailed and complete information regarding the analysis methods for the Contemporary Science Workshop is provided in the introductory article to [Volume 8 of the \*Annals of Periodontology\*](#) titled "The Use of the Evidence-Based Approach in a Periodontal Therapy Contemporary Science Workshop".

### **Step 4: Developing Conclusions**

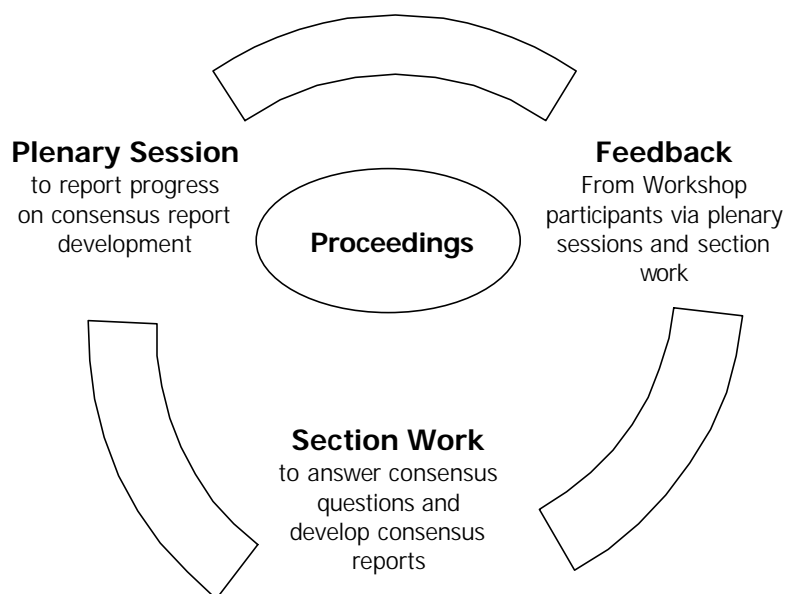
The findings of the systematic reviews for the Contemporary Science Workshop were submitted for peer review by section chairs, group leaders, and conference co-chairs. Included in the conclusions were the authors' opinions regarding the strength of the evidence, as well as implications of the intervention for practice. In addition, most authors identified gaps in the knowledge base and opportunities for further research.

### **The 2003 Workshop on Contemporary Science in Clinical Periodontics**

110 researchers and practitioners with clinical or research expertise in one of the focus areas were invited to participate in the Workshop. Each individual attending the Workshop was assigned a specific function, from review authors and Group Leaders and Section Chairs to section participants and observers. Corporate sponsors and representatives from external organizations were invited to attend the Workshop as observers, based on the organization's interest in periodontics and evidence-based methodologies.

The primary task to be completed during the three day Workshop was the development of consensus documents for each topic, addressing the most up to date information in these innovative areas and their clinical implications. This was a cyclical process, as illustrated by the following Diagram 1.

## DIAGRAM 1: Development of Consensus Reports



Consensus reports for each group were developed by answering five standard questions based on the information contained in the assigned systematic reviews. Those questions were:

1. Does the section agree that the evidence-based systematic review is complete and accurate?
2. Has any new information been generated or discovered since the evidence-based search cut-off date?
3. Does the section agree with the interpretation and conclusion of the reviewers?
4. What further research needs to be done relative to the focused questions of the evidence-based review?
5. How can the information from the evidence-based review be applied for patient management?

Consensus statements for question #5 developed by the Workshop participants were ranked according to the strength of the evidence according to Table 1.

**TABLE 1: Ranking Strength of Evidence**

<b>Strength</b>	<b>Strength of Evidence</b>	<b>Example</b>
<b>Strong</b>	Strong evidence to support the recommendation	Consistent Level I studies
<b>Moderate</b>	Moderate evidence to support the recommendation	Consistent Level II-1 or II-2 studies or extrapolations from level I studies
<b>Limited</b>	Limited evidence to support the recommendation	Level II-3 studies or extrapolations from level II-1 or II-2
<b>Incomplete</b> OR <b>Insufficient</b>	Incomplete or insufficient evidence to support the recommendation	Inconsistent or inconclusive studies of any level. Anecdotal evidence only, level III

## **Workshop Proceedings**

The proceedings of the American Academy of Periodontology's 2003 Workshop on Contemporary Science in Clinical Periodontics have been published in [Volume 8 of the \*Annals of Periodontology\*](#). The publication is an invaluable tool for periodontists, general practitioners and hygiene professionals. The 353-page book costs \$89 for members, \$49 for student members, and \$169 for non-members and can be ordered online at [www.perio.org](http://www.perio.org) or by calling 312.787.5518.