

Methods Employed for Other Systematic Reviews

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Abstract:

Two separate groups of reviewers were involved in the Consensus Development Conference on Diagnosis and Management of Dental Caries Throughout Life. The training of the independent reviewers and the methodology they used differed from that of the team at the Research Triangle Institute and the University of North Carolina at Chapel Hill (RTI/UNC).

Keywords: consensus development conference, systematic reviews, systematic review methodology, MEDLINE, database searching, search strategy development, search methodology

The Research Triangle Institute and the University of North Carolina (RTI//UNC) Evidence-Based Practice Center conducted a systematic review of the literature to address some or most aspects of three of the six questions developed by the organizing committee of the Consensus Development Conference. During the conference Dr. Bader provided overviews of the RTI/UNC findings. Each of these presentations was followed by a series of speakers referred to as “discussants.” These individuals were assigned to discuss a specific content area of the RTI/UNC report. Each discussant was provided a copy of the report in August 2000, and used this report to develop their comments. The purpose of this manuscript is to provide a brief description of the methods employed by the remaining speakers because it is important for the readers to understand the difference between types of speakers.

Because the RTI/UNC systematic review did not address all six of the identified conference questions, we needed other scientists to address the remaining questions or aspects of questions. These individuals are identified as ‘independent reviewers’, that is, non-RTI/UNC reviewers. Most of these independent reviewers were asked to conduct systematic reviews concerning a specific topic as noted in the program.

To facilitate the systematic reviews conducted by the independent reviewers, the National Institute of Dental and Craniofacial Research (NIDCR) provided two training sessions for them held in April and in July 2000. Most of the independent reviewers attended both training sessions. The objectives of these training sessions were to review the steps required to conduct systematic reviews and to provide guidance to the general

review process. A training manual was prepared for the independent reviewers. Dr. Amid Ismail conducted these training sessions with the assistance of Dr. Jim Bader, both of whom are experienced in conducting systematic reviews. During the first session, Dr. Bader presented background information on how the RTI/UNC review was conducted. In addition, Dr. Kamerow, from the Agency for Healthcare Research and Quality (AHRQ), provided an overview of systematic reviews and the AHRQ evidence-based practice centers. Also, during the first session, Dr. Ismail provided an overview delineating the differences between narrative and systematic reviews.

The first training session focused on how to:

- develop questions for systematic reviews ;
- develop search strategies;
- abstract information from selected studies; and
- conduct a critical appraisal of the evidence.

At the end of the session, the participants were given a month to develop searchable questions based on their assigned content area. All submitted draft questions were then reviewed by Dr. Ismail and NIDCR staff and returned to the authors. During the second session the submitted questions were discussed and revised. In addition, Ms. P. F. Anderson, a University of Michigan librarian, explained the process of developing searchable questions for the MEDLINE and EMBASE databases.

To facilitate the reviews, Ms. Anderson was then contracted by the NIDCR to conduct the searches for each independent reviewer. The searching done for each team was an iterative, multi-stage process. A uniform caries “filter” was developed, tested and used in all searches except for that of Dr. McComb. The use of a filter in this context refers to the use of a standardized search strategy for a broad clinical concept, such as etiology or diagnosis, that is used in conjunction with a specific clinical topic such as dental caries.¹ The caries filter was validated by comparing the retrieval generated by the filter to that used by the Cochrane Library² results for this topic. This method of validation originated with Bradley et al.³

Searches for the independent reviewer topics were developed in collaboration between the reviewer and the librarian. Each topic expert was asked to generate a list of terms to be included in the concept, and a list of approximately three articles on the topic to be used for validation of the search results. Terms were mapped to appropriate Medical Subject Headings (MeSH terms). Top priority terms were also researched for equivalent and related terms to generate a rich pool of text word terms and phrases to enrich the search. Limits were applied as appropriate to match the defined question, with a few searches further limited through the application of standardized evidence-based filters (prognosis, diagnosis, treatment, etiology). If the latter occurred, the standardized filters used were those from the University of Rochester Miner Library collection,⁴ based on their superior retention of articles from the Cochrane Collection.

Validation of individual topic search results was accomplished by verifying the inclusion of topic expert-identified essential articles. The topic expert reviewed search results, concerns were identified, and, in every case, the search was modified multiple times. From the six areas of inquiry, the independent reviewers generated 42 searchable questions. The 42 questions from the independent reviewers required 100 separate searches, gathering a total of almost 30,000 citations for the researchers to review. These MEDLINE and EMBASE searches were more complex than usual, with search strategies ranging from a low of 50 search statements long to a high of 150. The findings from the final versions of these searches can be accessed at:

<http://www.nidcr.nih.gov/news/consensus.asp>.

Subsequently, each independent reviewer received lists of references with abstracts. The abstracts were read and the reviewers either included or excluded studies based upon criteria that were developed independently by each review team. In most cases, the full reports of the included studies were photocopied and abstracted in evidence tables. Meta-analyses of the evidence were not conducted. The independent reviewers were provided with guidelines on abstraction and a step-by-step manual on how to conduct the reviews.

It should be noted that several independent reviewers opted to cajole a colleague into working with them on their project and, in fact, a couple of the independent reviewers have indicated that it was the co-author(s) who actually did most of the work. This collaboration has been very positive, because more researchers now have been exposed to the process of conducting systematic reviews.

There are a few papers that will be presented where the methods employed vary from those used by the independent reviewers. In the section of the program on indicators of risk, Dr. Brian Burt was asked to develop an overview on the definitions of risk as well as to conduct two related independent reviews. In the section on Primary Prevention of Dental Caries, the review by Dr. Rozier was different in that it is based on recent systematic and other reviews conducted on fluorides, dental sealants, antimicrobials and patient counseling.

For the section on Clinical Decision-Making for Dental Caries Management, Dr. White was asked to provide an overview of clinical decision-making as a framework for the presentations on implications for clinical practice and research. Three of the reviewers in this section [Drs. Tinanoff, Anusavice and Leake] were asked to synthesize the evidence obtained to provide directions for clinical practice decision-making for the management of dental caries in primary and permanent dentition as well as on root surfaces and related research.

With any maiden flight such as this one, it is important to understand that this has been a learning process for all of us involved. We have learned a great deal! It is important to point out the variations inherent in the process we used. The NIDCR was committed to using an evidence-based review for the conference, acting upon the recommendations provided for the future organization and implementation of NIH consensus development conferences. The extensive breadth and scope of this conference

required more systematic reviews than could be conducted by the RTI/UNC. We then developed an approach to complement the RTI /UNC approach to answer all six conference questions. This presentation and that of Dr. Bader highlights the two approaches and their differences. For example, the ratio of reviewers to presentations varies. Only one outside reviewer reviewed each manuscript prepared by the independent reviewers, which differs from the process used by the RTI/UNC where there was a team of reviewers. As mentioned earlier, although training sessions were provided for the independent reviewers, there was no effort to standardize them. Finally, there were no discussants for the independent reviewers as there are for the RTI/UNC report. There simply was not time on the agenda.

On behalf of the NIDCR I thank all of the presenters and their co-authors. We fully appreciate that each of you added one more time-consuming project on an already full plate. We appreciate your time and effort. The independent reviewers especially had major tasks and time commitments. Most importantly, we must thank Dr. Amid Ismail profusely because without his assistance we could not have had this conference.

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