

Evidence-Based Clinical Practice Guidelines: Where's the Evidence and What Do I Do With It?

One of the most ambitious, and arguably most important, projects of the American Association for Respiratory Care (AARC) has been the publication of peer-reviewed clinical practice guidelines (CPGs). Since 1991, 51 CPGs have been published in *RESPIRATORY CARE*. These have become the backbone of respiratory therapist-directed protocols,¹ and they have been reproduced in current respiratory care textbooks. They have had a global impact, being translated into several foreign languages. In an editorial published in 1991 I wrote that the CPGs have "the potential for tremendous impact on the practice of respiratory care."² That potential has been clearly realized. In the early 21st century we need CPGs more than ever. Moreover, the bar has been raised and the medical community at large now calls for evidence-based CPGs. In this issue of *RESPIRATORY CARE* the first AARC Evidence-Based Clinical Practice Guideline is published.

Why Do We Need Guidelines?

A CPG is a systematically developed statement to help clinicians deliver appropriate care in specific clinical circumstances. CPGs are needed today every bit as much as they have been needed in the past. An information explosion in health care continues. It is impossible for any of us to read all of the published literature, assess its validity, and integrate its findings into everyday patient care. Well-designed CPGs should help to fill the gap between evidence and practice. Although the CPGs are not treatment protocols per se, they do provide a context within which specific policies and protocols can be developed. Previously published CPGs have been used in many hospitals to establish appropriate practice, a desired result being reduced practice variability, in addition to appropriate practice. When questions arise regarding appropriate respiratory care, commonly someone will look for an AARC CPG on the subject. Thus, the CPGs have become a standard against which the validity of respiratory care practice is judged.¹

What Is Evidence-Based Respiratory Care?

"Evidence-based" is a term that has permeated the lexicon of health care in the past 10 years. Evidence-based

respiratory care is an approach to clinical problem-solving that demands careful examination of the evidence, using formal rules applied in an explicit manner.³ Evidence-based respiratory care incorporates the best empirical evidence with patient values and the patient's unique clinical circumstances. The evidence upon which decisions are based is ranked in a hierarchy, from unsystematic clinical observations to randomized trials. Note that there is always evidence upon which to base a clinical decision. At times, however, that evidence exists only at a low level (eg, unsystematic clinical observations). The AARC and its science journal, *RESPIRATORY CARE*, recognized the importance of evidence-based respiratory care through the publication of 2 special issues (November and December, 2001) devoted exclusively to this topic.

What Are Evidence-Based Clinical Practice Guidelines?

Evidence-based CPGs are a natural extension of evidence-based respiratory care. CPGs should have 2 distinct components: the evidence component and the detailed instructional component.⁴ The detailed instructional component is expressed in the form of recommendations. Furthermore, the strength of the recommendations is given a grade based on the strength of the supporting evidence. Recommendations based on high-quality randomized, controlled trials receive a high grade, whereas recommendations based on low-level evidence such as unsystematic observations receive a lower score. Sometimes the evidence is so weak that experts make recommendations based on their consensus; such recommendations were common in the past and offer little more help than the opinion of a local expert.

Are not all of the AARC CPGs referenced to the peer-reviewed literature and thus evidence-based? There is an important distinction between reference-based and evidence-based. Many clinicians' practice is reference-based, but generally this means that references are used to support one's bias. That is quite different than basing one's practice on a careful assessment of all the empirical evidence. Finding a reference to support one's bias is a lot easier (and more ego-gratifying) than searching, critically assessing, and then adapting one's practice to the best

Table 1. The Process Used to Develop an Evidence-Based Clinical Practice Guideline

1. Define the topic
2. Frame the question
a. What is the relevant patient population (eg, adult, pediatric, acute, long-term care)?
b. What are the important interventions?
c. What are the important outcomes?
d. What is the risk of harm?
e. What is the economic impact?
3. Select search terms for the literature search
4. Conduct a thorough literature search
a. Define inclusion/exclusion criteria
b. Screen titles
c. Screen abstracts
d. Select articles for review
5. Select a team to critique articles
6. Develop a standardized form to critique articles
a. Methodology: sample size, randomization (concealed), blinding, intent-to-treat analysis; assign overall methodology score
b. Outcome measures
c. Quantitative findings
7. Review team pilots data collection form on several articles
8. Each article is reviewed by 2 people; data are collected on standardized forms and cataloged on a computer database
9. Review team combines their reviews and reaches agreement on the grading of the articles
10. Prepare evidence tables and conduct quantitative analysis of the results (meta-analysis) as appropriate
11. Write a systematic review of the topic
12. Write the evidence-based clinical practice guideline (CPG), with grading of the level of evidence to support each recommendation
13. Peer-review systematic review and CPG
14. Revise based on peer-review comments
15. Publish CPG

evidence. In the old system CPGs were written, recommendations were drafted, and then references for the recommendations were sought. Although these CPGs are referenced to the peer-reviewed literature, they are largely based on expert opinion and consensus.

The process used to write evidence-based CPGs is quite different. It involves asking relevant questions, systematically searching the literature using explicit methodology, grading the level of the evidence, making recommendations, and grading the recommendations based on the strength of the evidence. Like the scientific process, evidence-based CPGs are methodology- and data-driven. The conclusions (recommendations) must be supported by evidence, and the level of evidence is unambiguous and defensible. The process is explicit throughout, as shown in Table 1.

If evidence-based CPGs are to be useful, they must be valid. Following are criteria of valid CPGs:^{4,5}

- The recommendations are based on a comprehensive review of the literature.
- A systematic review of the literature is linked to each recommendation.
- The recommendations consider all appropriate patient groups.
- The strength of the recommendations is graded.

These criteria can be used to judge not only AARC evidence-based CPGs but also the plethora of CPGs that are being published throughout health care.

The evidence-based CPG published in this issue of *RESPIRATORY CARE*, "Care of the Ventilator Circuit and Its Relation to Ventilator-Associated Pneumonia" is the first AARC Evidence-Based Clinical Practice Guideline.⁶ I hope that this is the first of many to come. This represents a paradigm shift in the approach to respiratory care decision-making and stimulates all of us to strive for practice that is evidence-based.

Dean R Hess PhD RRT FAARC

Department of Respiratory Care
Massachusetts General Hospital
Harvard Medical School
Boston, Massachusetts

REFERENCES

1. Stoller JK, Mascha EJ, Kester L, Haney D. Randomized, controlled trial of physician-directed versus respiratory therapy consult service-directed respiratory care to adult non-ICU in-patients. *Am J Respir Crit Care Med* 1998;158(4):1068-1075.
2. Hess D. The AARC [American Association for Respiratory Care] clinical practice guidelines. *Respir Care* 1991;36(12):1398-1401.
3. Montori VM, Guyatt GH. What is evidence-based medicine and why should it be practiced? *Respir Care* 2001;46(11):1201-1214.
4. Sackett DL, Straus SE, Richardson WS, Rosenberg W, Haynes RB. Evidence-based medicine: how to practice and teach EBM. 2nd ed. New York: Churchill Livingstone; 2000.
5. Guyatt G, Drummond R. Users' guides to the medical literature: a manual for evidence-based clinical practice. Chicago: AMA Press. 2002.
6. Hess DR, Kallstrom T, Mottram C, Myers T, Sorenson H, Vines D. AARC evidence-based clinical practice guideline: care of the ventilator circuit and its relation to ventilator-associated pneumonia. *Respir Care* 2003;48(9):869-879.

Correspondence: Dean R Hess PhD RRT FAARC, Department of Respiratory Care, Massachusetts General Hospital, 55 Fruit Street, Ellison 401, Boston MA 02114-2696. E-mail: dhess@partners.org.