Current literature encourages nurses to use evidence-based techniques for the purpose of integrating research into the clinical decision-making process. Researchers are discovering, however, that there are significant gaps in practicing nurses’ abilities to identify, access, retrieve, evaluate, or use published evidence. Multiple issues related to the aging of the nurse workforce, education requirements for entry into practice, and information access are creating a mismatch between the demand for evidence-based practice and the information literacy of practicing nurses. A previous article outlined the efficient use of web sites. This article describes how to access and evaluate evidence-based guidelines.

**Clinical Scenario**

A 10-year-old patient presented to an outpatient surgery facility for tonsillectomy. She had a history of spina bifida and one previous surgery to close her spinal defect when she was a neonate. The child’s mother reported that the patient was sensitive but not allergic to latex. The patient had been on latex precautions from birth and had recently developed an allergy to tomatoes.

The perioperative nurse placed her patient on latex precautions for the uneventful procedure, but she wondered what recent advances had been made in the diagnosis, treatment, and prevention of latex allergy. At a staff meeting later the same week, the nurse manager reported a list of policies that needed to be reviewed and updated. One of them was the latex precautions policy. The perioperative nurse volunteered to participate in the policy review process. She thought that helping to update the policy would answer her clinical question and contribute to continuous quality improvement in her workplace.

First, the nurse reviewed her organization’s current policy. She discovered that it defined latex precautions and prescribed minimum requirements for the identification of latex-allergic patients and latex avoidance. She was disappointed, however, by the lack of clinical detail in the policy. She wondered about her patient’s tomato allergy and whether she had missed an opportunity to provide relevant education to the girl’s mother.

Next, the nurse conducted a search on the National Library of Medicine database at http://www.pubmed.gov using the search term ‘latex allergy.’ She was...
shocked to recover citations for more than 2,000 articles about latex allergy. The nurse knew she could never read and analyze that many articles in the time she had available for the task.

**Guidelines**

The scenario above exemplifies one of the major barriers to evidence-based practice: the constraint of time. The process of searching published literature and conducting integrative reviews is labor intensive. Practicing clinicians who believe that evidence-based practice requires them to conduct their own integrative review for answering every clinical question that arises will quickly become overwhelmed. Fortunately, there are numerous organizations around the world that have developed rigorous methods for integrating published research into evidence-based guidelines.

Guidelines are collections of practical information that assist providers and patients in making health care decisions under specific clinical circumstances. Historically, they have fallen under the titles of statements, standards, recommended practices, protocols, and guidelines. Experts in evidence-based practice consider guidelines to be clinical management tools. Guidelines are commonly used to disseminate best practices. Guideline development follows four basic methods:
- opinion,
- consensus,
- evidenced based, or
- combined evidence based with consensual validation.

All guidelines require frequent updating as new information becomes available. Guideline use is a methodology for continuous quality improvement that is still evolving. Early guidelines were developed by opinion leaders in various clinical specialties. Later, consensus guidelines represented collective expert opinions obtained through formal consensus methods. Since the advent of evidence-based methodologies, however, opinion and consensus methods have fallen out of favor.

Expert opinion does have appropriate uses in knowledge-based practice, such as providing prompt answers to questions about the etiology of disorders, the usefulness of diagnostic tests, the prognosis of diseases, and the effects of various therapies. The major reasons not to rely on opinion-based guidelines, however, were well described in a 1998 editorial by Pearsons and Beck. Following are some reasons they cited for avoiding reliance on opinion-based guidelines:
- experts can be wrong,
- consensus guideline methodology teaches clinicians to rely on experts rather than empirical evidence, and
- consensus guidelines blur the distinctions between clinical questions for which data are available and clinical questions for which no data are available.

In comparison, the information in evidence-based guidelines is obtained by rigorous review of clinical research. Evidence-based guideline development includes both a critique of the quality and an evaluation of the strength of the published evidence. Guideline developers such as the Scottish Intercollegiate Guidelines Network (SIGN) and the CPM Resource Center generate high quality, useful guidelines by combining both evidence and consensus methodologies.

**Sources of Clinical Practice Guidelines**

New organizations are being created to produce, maintain, and provide access to guidelines. National and international conferences are devoted to subjects pertinent to authoring, disseminating, and implementing them. Guidelines can be obtained from clinical content vendors, professional organizations, and
government agencies. Guidelines can be accessed through embedded clinical decision support software and by licensing them in print or via electronic databases. Some guidelines are available through free-access databases.

The American Organization of Nurse Executives and the US government envision that automated clinical decision support (CDS) tools, including guidelines, will provide clinicians with knowledge that is intelligently filtered and presented at an appropriate time to improve patient care. Because implementation of CDS...
History of Guideline Development: A Case Study (continued)

that what they had been calling standards of care was nothing like other standards published by professional nursing organizations. The CPM tool was intended to provide decision-making guidance in specific clinical situations. Therefore, the name was formally changed to Clinical Practice Guidelines.7

The next major milestone in the development of CPM Clinical Practice Guidelines was when they became interdisciplinary in 1995.7 Collaborative efforts between nurses and respiratory therapists while authoring a mechanical ventilation guideline and between nurses and pharmacists while authoring a latex allergy guideline revealed new issues of concern. Wesorick and her colleagues discovered that health care terms (eg, weakness, dehydration, oral supplements) mean different things to different disciplines. They also realized that for practicing clinicians, both independent competency and integrated competency were necessary for optimal patient outcomes. The CPM’s enthusiasm for reaching out to other disciplines has since broadened to integrate the practice of nine clinical disciplines.4

Today, the methodology for authoring CPM Clinical Practice Guidelines is formally structured, incorporating evidence-based techniques and two external review methods. Authoring Clinical Practice Guidelines at the CPM Resource Center begins with a systematic search for and appraisal of published evidence.9 Interventions are graded to indicate whether they are based on a body of research evidence, quality improvement data, or expert opinion. Then the guidelines are submitted for formal Consensual Validation.3 An additional review occurs when any organization first joins the CPM International Consortium. During the implementation of CPM, there is a formal analysis and adoption of the Clinical Practice Guidelines validating that the content is appropriate for use at the new clinical site.

The CPM Resource Center now uses international resources like the AGREE Collaboration to continuously improve its methodology for authoring Clinical Practice Guidelines. Wesorick’s seminal work has evolved into a guideline development process that is evidence based with consensual methodology. It is inclusive of stakeholders from nine clinical disciplines (ie, nursing, respiratory therapy, nutrition, physical therapy, speech–language pathology, occupational therapy, pastoral care, social work, pharmacy) with the intention of promoting interdisciplinary collaborative practice. On a daily basis, hundreds of thousands of clinicians provide evidence-based care using clinical decision support tools with embedded executable knowledge provided by CPM Clinical Practice Guidelines.


in some organizations has been problematic, the American Medical Informatics Association published a white paper in 2006 outlining a road map for national action on C.19 The paper identifies three key pillars of effective CDS:

- High Adoption and Effective Use; and
- Continuous Improvement of Knowledge and CDS Methods.

Recently, AORN announced plans to develop an online platform to enable electronic access to recommended practices and other
The implementation of guidelines has been promoted by the US Institute of Medicine and the British National Health Service. A major concern about guidelines is the inconsistency of quality among those published.

AORN documents, including the Perioperative Nursing Data Set. Electronic access will “set the stage” for use of AORN standards and recommended practices in automated CDS software. Other sources of guidelines that are relevant to perioperative and perianesthesia care include the American Society of PeriAnesthesia Nurses (ASPAN), the American Association of Nurse Anesthetists, the American Society of Anesthesiologists (ASA), and other specialty organizations. Guidelines from these organizations can be accessed through well-resourced hospital libraries; however, it is not always easy to obtain information about how these documents were developed to determine whether they are evidence based, consensus based, or opinion based.

Fortunately, perioperative nurses who work in settings where library and CDS resources are lacking now have free public access to registered evidence-based guidelines online through the National Guideline Clearinghouse (NGC). The NGC was established by the US Agency for Healthcare Research and Quality (AHRQ) in partnership with the American Medical Association and America’s Health Insurance Plans. This searchable public database of evidence-based guidelines was established to give health professionals access to detailed information on guideline development and to further the dissemination, implementation, and use of evidence-based guidelines.

Organizations such as ASA, ASPAN, and SIGN submit evidence-based guidelines to be registered in the NGC database. To meet criteria for inclusion in the NGC, guidelines must:
- be systematically developed recommendations, strategies, and information that helps providers and patients make clinical decisions;
- be developed under the auspices of a medical specialty association, not an individual;
- provide corroborating documentation of a systematic literature search and review of existing scientific evidence published in peer-reviewed journals; and
- be the current and most recent version, developed or revised within the last five years, and be available in an English, full text copy.

Concerns About Guidelines

Implementation of guidelines has been promoted by the US Institute of Medicine and the British National Health Service to make health care more consistent and efficient. A major concern about guidelines is the inconsistency of quality among those published. Empirical evidence has linked guideline development methodology with bias. Of particular concern is conflict of interest as a result of external funding such as that provided by the pharmaceutical and manufacturing industries to physicians who recommend medical interventions.

Evolution from opinion-based guidelines to evidence-based guidelines is incomplete in many organizations, making it necessary for guideline users to become skillful at critiquing a wide variety of guideline development methodologies. To assist with the critical appraisal of guideline development, several lists of evaluation criteria have been created. Perhaps the first was described by the US Institute of Medicine in 1990 to steer guideline development at the US Agency for Health Care Policy and Research (now the AHRQ).

More recently, the Appraisal of Guidelines for Research & Evaluation (AGREE) tool was developed by an international collaboration funded by the European Union. The AGREE tool is officially recommended by both the Council of Europe and the World Health
Organization (WHO). It has undergone reliability and validity testing, and adheres to various appraisal criteria (Table 1).

The AGREE criteria are used by guideline developers like the CPM Resource Center to update its development processes. Also, guideline users often use the AGREE criteria to evaluate the quality of published guidelines. The criteria are focused on methodology rather than clinical content, so they primarily appraise how well the guideline development process is reported.

Few, if any, guidelines meet all of the proposed criteria, and a low score on the AGREE evaluation tool may reflect failure to report the development methodology rather than a true lack of rigorous methods. Some organizations whose financial livelihood is based on development and dissemination of evidence-based guidelines (eg, clinical content vendors) may be reluctant to make public their proprietary methods or guideline development tools.

Because the AGREE criteria address only guideline development methodology, nurses who use them need to be sufficiently knowledgeable about current clinical practice to evaluate the clinical content of the guideline. Both evaluation of the method and evaluation of clinical content are required to determine whether a guideline should be implemented in the perioperative setting.

### Table 1

<table>
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<th>Domain</th>
<th>Criteria</th>
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| Quality and purpose         | 1. Overall objective specifically described.  
2. Clinical question(s) specifically described.  
3. Patient population specifically described. |
| Stakeholder involvement     | 1. Development group includes relevant disciplines.  
2. Patient’s views and preferences were sought.  
3. Target users have been defined.  
4. Target users piloted the guideline. |
| Rigor of development        | 1. Systematic methods used to search evidence.  
2. Criteria for selecting evidence clearly described.  
3. Methods for formulating recommendations clearly described.  
4. Health benefits, side effects, and risks have been considered.  
5. There is an explicit link between the recommendations and supporting evidence.  
6. Guideline has been externally reviewed.  
7. Procedure for updating the guideline is provided. |
| Clarity and presentation     | 1. Recommendations are specific and unambiguous.  
2. Options for management are clearly presented.  
3. Key recommendations are easily identifiable.  
4. Guideline is supported by tools for application. |
| Applicability                | 1. Barriers to application have been discussed.  
2. Cost implications have been considered.  
3. Presents criteria for monitoring and auditing. |
| Editorial independence       | 1. Editorially independent from the funding body.  
2. Conflicts of interest of the guideline development members have been recorded. |
EVALUATING GUIDELINES

There are three unique advantages to searching the NGC web site for evidence-based guidelines. First, the database crosses international, disciplinary, and specialty boundaries, so a specific search term may locate guidelines from authorities previously unknown to the searcher. Second, NGC postings include a full disclosure of the methodology used for guideline development. Third, the database will compare selected guidelines side by side. Although the list of AGREE evaluation criteria\textsuperscript{31} is not the organizing framework used by the NGC, the Complete Summary version of each evidence-based guideline posted in the NGC database provides answers to all of the evaluation questions posed by the AGREE tool.

QUALITY AND PURPOSE. The AGREE collaboration acknowledges that high quality guidelines have clear clinical questions and objectives.\textsuperscript{31} The clinical populations covered and the intended professional users should be clearly identified for potential users. A key question to ask is whether there are similarities or differences between the clients for whom guidance is being sought and the target population of the guideline being evaluated. Answers to these questions can be found for all guidelines published by the NGC in its Complete Summary version of the guideline under the section titled Scope.

For example, comparison of two atrial fibrillation guidelines showed that one included information about atrial flutter while the other did not.\textsuperscript{33,34} Also, one was intended for use by physicians only while the targeted users of the second guideline included physicians as well as advanced practice nurses, allied health personnel, health plans, hospitals, managed care organizations, nurses, and physician assistants.

This difference was reflected in the objectives of the second guideline. It was intended to support risk assessment, prevention, and diagnosis, as well as evaluation, management, and treatment.\textsuperscript{34} Patient education was a specific objective of the guideline with the broader list of targeted users. The guideline with broader focus might be more appropriate for use by an RN first assistant who has patient care responsibilities throughout the perioperative period, while the more narrowly focused guideline\textsuperscript{33} may give sufficient guidance to a circulating nurse who needs to anticipate medical practice decisions for patients during surgery.

STAKEHOLDER INVOLVEMENT. Bias is any influence that produces a distortion in a guideline’s recommendations. Multidisciplinary input decreases the potential for bias, which is why the AGREE Collaboration uses stakeholder involvement as a criterion indicating quality in guideline development.\textsuperscript{31} When a guideline lists target users whose disciplines were not represented on the authoring group, one may reasonably be concerned that the guideline authors may have omitted details that would be important information to users who were not represented. Also, when the patient’s view is included, guideline implementation is enhanced. An evidence-based plan of care might not be followed when there is a mismatch between the values of the patients being treated and the values of the author group.

One of the best ways that guideline developers can ensure stakeholder involvement is by having a group of the target users pilot test the guideline and incorporate their feedback into guideline development. In the atrial fibrillation guidelines compared above, both authoring groups were composed primarily of physicians with one advanced practice nurse and a pharmacist on each panel. The guideline that
was intended for broad interdisciplinary application was pilot tested for clinical validation.34

Rigor of Development. Although each NGC guideline has been published previously in a peer reviewed journal, the detailed methodology reported by NGC often is not fully published elsewhere. Key methodological components of evidence-based guidelines that can be evaluated by potential users include search methods, number of source documents reviewed, methods used to assess quality and strength of the evidence, methods used to analyze the evidence, and methods used to formulate recommendations.31

A published guideline document should make it easy for guideline users to connect the research evidence with specific recommended practices. Two commonly used evidence-based methods for connecting research to practice are systematic review and meta-analysis. Systematic review is a form of structured literature review that involves objectively searching the research literature, applying predetermined inclusion and exclusion criteria to the studies located, and critically appraising the literature that meets the inclusion criteria, then identifying and integrating pertinent data from the evidence base to form recommendations for practice.35 Meta-analysis (ie, data synthesis) is a statistical process for pooling data from many clinical trials and summarizing it through formal statistics. This combination of data from multiple studies may produce a stronger conclusion than can be supported by any individual study, especially when sample sizes are small.

In comparison, consensus methods use various forms of group judgment. A panel of experts formulates recommendations by vote or other process of reaching general agreement. Consensus methods may be informal or formal, using techniques such as the nominal group or Delphi technique.35 Current wisdom suggests that consensus methods are best saved for making recommendations after there has been formal appraisal of the research literature using evidence-based methods. Another effective use of consensus methods is for external peer review of a developed guideline.

Many organizations that produce high quality, evidence-based guidelines now have research methodologists to support the groups of expert clinicians who author their guidelines. Sometimes these methodologists are clearly identified in the list of authors. The methodologist’s expertise in research appraisal and guideline development methods adds scientific rigor to the process.

Because the health care knowledge base is constantly changing, guidelines must be regularly updated to remain current. The NGC requires that posted guidelines be the most current version. At the present time, guidelines that are more than five years old are removed from the NGC database.22

Clarity and Presentation. When using the AGREE criteria to appraise guidelines, practicing nurses may find the evaluation of clarity and presentation to be less challenging for them than the evaluation of scientific rigor of development. Basically, the AGREE queries are asking whether the body of the guideline is easy to comprehend and implement.31 Perioperative nurses must be able to clearly understand what is being recommended and whether other options are supported by the research literature. Guideline implementation is further enhanced when there are application tools available like worksheets, documentation systems, or staff and patient education tools. Information is listed about available application documents in the Identifying Information and Availability section of the Complete Summary of the guideline on the NGC web site.33,34

Applicability. When evaluating a guideline, a key question perioperative nurses should ask is, “Will this information help my patients?” If the recommendations cannot be implemented in the perioperative setting, they will not be helpful. During high quality guideline development, the authors will have identified and discussed any significant barriers to implementation of the recommendations.31

Organizational barriers to consider include
Organizational barriers to consider include whether the human and financial resources necessary for implementation of a guideline are available in the clinical setting. One common barrier that is difficult to overcome is high cost.

whether the human and financial resources necessary for implementation of a guideline are available in the clinical setting. One common barrier that is difficult to overcome is high cost. Analysis of cost compared with potential patient benefit (ie, cost/benefit analysis) will add to the practical applicability of any guideline recommendations. Guidelines published online by the NGC indicate whether a formal cost analysis was performed or reviewed. This information can be found in the Methodology section of the Complete Summary version of the guideline. For example, authors of a preoperative evaluation guideline developed by the Institute for Clinical Systems Improvement reviewed published cost analyses when formulating their recommendations.36

The AGREE collaboration suggests that guideline developers also include criteria for monitoring and auditing purposes. This includes quality measures that can be used to develop quality improvement (QI) monitoring tools. When a specific guideline is selected for implementation in a perioperative setting, any monitoring or auditing criteria identified by the guideline authoring group should be forwarded to the appropriate QI committee. This reduces workload for the QI committee by eliminating the need to create criteria and supports consistency between practice expectations and QI monitoring practices.

**EDITORIAL INDEPENDENCE.** According to the AGREE collaboration, the final domain for evaluating published guidelines addresses questions of editorial independence.31 Bias might be introduced into a guideline development process in two major ways:

- conflicts of interest may occur when funding sources have input or control over guideline recommendations, or
- when individual authors have a financial interest in the practices that are being recommended.

When perioperative nurses evaluate guidelines that are published on the NGC web site, information about editorial independence can be located in the Identifying Information and Availability section of the Complete Summary of each guideline. Information provided includes sources of funding, composition of the guideline authoring group, and financial disclosures or conflicts of interest declared by the authors.

**SUMMARY**

One of the major hurdles to evidence-based practice is time. Searching published literature and conducting integrative reviews is time consuming and labor intensive. Fortunately, myriad worldwide organizations have rigorous methods for integrating published research into evidence-based guidelines.7,8 Guidelines are collections of practical information that assist providers and patients in making health care decisions under specific clinical circumstances.31 Evidence-based guideline development includes both a critique of the quality and an evaluation of the strength of the published evidence.

Evolution from opinion-based guidelines to evidence-based guidelines with consensus methodology is incomplete in many organizations. This makes it necessary for perioperative nurses to become skillful at critiquing a wide variety of guideline development methodologies. The AGREE Collaboration has developed a set of guideline evaluation criteria that has undergone reliability and validity testing.31,32 It is officially recommended by both the Council of Europe and the World Health Organization.

When selecting best practices, perioperative
nurses have free public access to evidence-based guidelines that are registered online through the NGC. The NGC postings include a full disclosure of the methodology used for guideline development that is unlikely to be published elsewhere. The AGREE domains for guideline evaluation are not the organizing framework used by NGC, but the Complete Summary version of each evidence-based guideline posted in the NGC database will provide answers to all of the evaluation questions posed by AGREE. The AGREE Collaboration’s guideline evaluation instrument, available online at http://www.agreecollaboration.org/instrument/, is a useful tool for evaluating guideline development methodologies.

**References**


27. Choudhry NK, Stelfox HT, Detsky AS. Relationships between authors of clinical practice guidelines
The Joint Commission has announced the release of its 2009 National Patient Safety Goals (NPSGs) and related requirements for each of its accreditation programs, according to a June 17, 2008, news release from the Joint Commission. The updated requirements will affect hospitals, critical access hospitals, ambulatory care facilities, office-based surgical practices, and long-term care organizations.

Major changes in the 2009 NPSGs include three new hospital and critical access hospital requirements related to preventing health care-associated infections, including:

- multiple drug-resistant organisms,
- central line-associated bloodstream infections, and
- surgical site infections.

The infection-related requirements have a one-year phase-in period with defined milestones, and full implementation is expected by January 1, 2010.

Another change to the NPSGs is the requirement to eliminate transfusion errors related to patient misidentification. New program requirements focus on engaging patients in their care regarding:

- infection control,
- preventing surgical adverse events, and
- the patient identification process.

Requirements associated with the existing Universal Protocol were also improved for 2009 and address:

- procedure verification,
- marking the procedure site, and
- conducting a “time out.”

Revisions were based on feedback from the Medication Reconciliation and Wrong Site Surgery Summits, which convened in 2007. National Patient Safety Goals are reviewed on an annual basis, and compliance is required for continuing accreditation or certification by the Joint Commission. For more information, visit http://www.jointcommission.org/ PatientSafety/NationalPatientSafetyGoals/.

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