A Guide to Guidelines for Pulmonary, Sleep, and Critical Care Medicine Clinicians

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Both the Institute of Medicine and the Guidelines International Network have recently published standards for trustworthy guidelines. The standards address multiple aspects of guideline development, including being transparent about funding and methodology, minimizing bias related to conflicts of interest, assembling writing committees with broad stakeholder representation, using rigorous and systematic methods to synthesize evidence and formulate recommendations, and periodically assessing guidelines for currency and updating them as required. In this article, we present the perspective of the Documents Development and Implementation Committee of the American Thoracic Society (ATS) on these and other guideline-related topics of relevance to ATS members. In addition, we summarize the many important take-home messages from a workshop that was jointly sponsored by the ATS and the European Respiratory Society, and attempt to place these messages in the context of a methodology that is rapidly evolving and a landscape in which clinical practice guidelines are subjected to ever-increasing scrutiny by clinicians, patients, and other third-party stakeholders.

Keywords: standards; evidence-based medicine; information dissemination

Scientific evidence is generated at a pace that continues to accelerate rapidly, and busy pulmonary, sleep, and critical care clinicians struggle to keep current with new developments in their fields. Clinical practice guidelines are an essential feature of this landscape. Awareness of guidelines is high, even if adherence with guideline recommendations is not. One potential barrier to adherence is lack of confidence in the recommendations and how they were derived. How do clinicians know whether a guideline is worthy of their trust?

Across international societies, policies for developing clinical practice guidelines differ in several important respects that bear directly on how a guideline is developed and ultimately used. These include strategies for identifying and managing conflicts of interest among guideline panel members; the methodology used to synthesize evidence and grade recommendations; and procedures guiding peer review, publication, and updating. The absence of common standards contributes to substantial variability in quality, transparency, and objectivity of existing guidelines. In the face of such variability, decision makers often struggle to identify the preferred guideline, particularly when choosing among guidelines that may conflict in their recommendations (1). The lack of consistency also stifles collaboration between independent developer groups, each of which may adhere to standards that differ in rigor.

In an effort to better define the qualities of a trustworthy guideline and address heterogeneity in guideline quality, several groups around the world have created standards for guideline development. In the United States, the Institute of Medicine (IOM) recently published recommendations for guideline development in its report, Clinical Practice Guidelines We Can Trust (2), Commissioned by the U.S. Congress, the report outlines eight recommendations for creating trustworthy guidelines, encompassing many aspects of development from panel composition to the formatting and updating of recommendations (Table 1). The IOM standards have been praised for their rigor, but also criticized because they may be difficult (and expensive) to implement in practice (3). Perhaps in response, the Guidelines International Network (G-I-N), an international group of guideline developers representing over 90 organizations in more than 40 countries, specified their minimum criteria for high-quality guidelines (4). By targeting the minimum criteria, G-I-N provides a potentially more feasible alternative to the IOM while preserving the necessary components for high-quality guidelines. For example, both G-I-N and IOM standards suggest that guideline developers disclose financial and nonfinancial conflicts of interest and describe how conflicts are managed. However, the IOM goes further to recommend that panel members divest themselves of financial interests and that panel chairs should have no conflicts.

While both the G-I-N and IOM standards will likely improve the trustworthiness of guidelines produced by professional societies, together they bring several additional challenges. First, development groups must choose between the minimum G-I-N standards and the more rigorous IOM standards, or perhaps something in between. Professional societies in the United States, including the American Thoracic Society (ATS), are already experiencing pressure from third parties to adhere to the IOM standards. The ATS currently adheres to virtually all G-I-N standards and 4 of the 8 IOM standards and is working toward meeting all 8. Second, adherence with one set of standards may hinder collaboration with international partners who choose an alternative. Finally, while the standards codify the desiderata for a trustworthy guideline, neither describes how to operationalize the criteria to accomplish day-to-day tasks when developing guidelines. For example, the standards do not provide specific answers to questions such as “Who should be included in a guideline panel?” or “How should guidelines be kept up-to-date efficiently?”
Additional food for thought appears in a series of articles from a workshop that was sponsored jointly by the ATS and the European Respiratory Society (ERS). Almost 10 years ago, the ATS moved decisively in the direction of developing trustworthy guidelines by launching a new standing committee, the Documents Development and Implementation Committee (DDIC). Since that time, the DDIC has led the ATS from an era of expert consensus-based guidelines to a brave new world of evidence-based medicine and to guard against stakeholder engagement should be “inclusive, equitable, and adequately resourced” (8). Mechanisms should be put in place to train participating stakeholders in the basic principles of evidence-based medicine and to guard against stakeholder bias.

3. Assemble a multidisciplinary panel that includes a respected Chair who has experience with group facilitation, members with expertise in clinical content and methodology, and stakeholders to represent the views

Each paper in the series has at least one key message for guideline developers, using guidelines for chronic obstructive pulmonary disease (COPD) as an example:

1. Define the target audience specifically, to ensure relevance and facilitate adherence (6). A single guideline is unlikely to meet the diverse needs of generalists, specialists, nurses, and others practicing in different healthcare settings in different parts of the world. That said, given the substantial resources required to develop a single guideline, it is desirable for guidelines to target multiple constituencies whenever possible.

2. Engage stakeholders to help select topics for guideline development and prioritize questions to address within guidelines (7). Most guidelines cannot cover every possible question. Priorities should reflect such considerations as the prevalence and burden of illness, demonstrated gaps between current practice and best practice, and the potential to improve health outcomes. Stakeholder engagement should be “inclusive, equitable, and adequately resourced” (8). Mechanisms should be put in place to train participating stakeholders in the basic principles of evidence-based medicine and to guard against stakeholder bias.

### TABLE 1. IOM AND G-I-N STANDARDS FOR TRUSTWORTHY GUIDELINES

<table>
<thead>
<tr>
<th>Standard</th>
<th>IOM</th>
<th>G-I-N</th>
<th>ATS adherence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transparency</td>
<td>• Funding and process for development described and public</td>
<td>• NA</td>
<td>IOM: Complete G-I-N: NA</td>
</tr>
<tr>
<td>COI</td>
<td>• Disclosure of COI</td>
<td>• Disclosure of COI</td>
<td>IOM: Partial; ATS allows 50% of chairs to have COI; does not require divestment G-I-N: Complete</td>
</tr>
<tr>
<td>Group composition</td>
<td>• Co-chairs have no COI</td>
<td>• Process for recording and resolving COI</td>
<td>IOM: Complete</td>
</tr>
<tr>
<td>Literature review</td>
<td>• Minority of panel with COI</td>
<td>• Disclosure of funders</td>
<td>G-I-N: Complete</td>
</tr>
<tr>
<td>Strength of recommendations</td>
<td>• Divestment</td>
<td>• Multidisciplinary</td>
<td>IOM: Complete</td>
</tr>
<tr>
<td>Articulation of recommendations</td>
<td>• Funders no role in development</td>
<td>• Includes patient advocate</td>
<td>G-I-N: Complete</td>
</tr>
<tr>
<td>External review</td>
<td>• Literature monitored and guidelines updated when new evidence suggests need</td>
<td>• Includes patient(s)</td>
<td>IOM: Complete G-I-N: Complete</td>
</tr>
<tr>
<td>Updating</td>
<td>• Literature should include guidelines based on IOM standards for systematic review</td>
<td>• Guidelines based upon systematic reviews</td>
<td>IOM: Partial; ATS allows pragmatic use of existing systematic reviews, and review and development team are not separate G-I-N: Complete</td>
</tr>
</tbody>
</table>

**Definition of abbreviations:** ATS = American Thoracic Society; COI = conflict of interest; G-I-N = Guidelines International Network; IOM = Institute of Medicine; NA = not applicable.
of patients, health systems, and payers (9). For a condition such as COPD, which primarily affects older smokers and former smokers, it may be especially important to include representatives from other specialties who can help weigh the impact of recommendations on common comorbid conditions (10). However, broad representation should be balanced with manageable size.

4. Guideline consumers, including clinicians, regulators, and payers, are increasingly concerned about financial and other conflicts of interest and the potential for recommendations that are biased (11). Although public funding of guideline development, however desirable, does not appear to be a realistic possibility any time soon in the United States, current ATS and ERS policies help guard against the introduction of bias. Furthermore, while translation from bench discovery to clinical practice ultimately requires collaboration between academicians, clinicians, and representatives from industry, even the appearance of conflict of interest can compromise the integrity of guidelines if not properly disclosed, vetted, and managed.

5. **Formulate specific questions** using the patient, intervention, comparator, and outcome (PICO) format, and **use transparent and systematic methods** to identify, appraise, and synthesize information about both benefits and harms of interventions (12).

6. **Incorporate considerations of resource utilization**, when feasible and when material to clinical decision making. For information sources about costs, the workshop panel favors randomized trials that report resource consumption over formal models of cost-effectiveness, but each of these approaches has advantages and disadvantages (13).

7. **Use a systematic method to rate the quality of** the entire body of evidence for each outcome of importance to patients, considering factors such as study design, risk of bias, directness, precision, and consistency of results across studies (14). Contrary to popular belief, it is still possible to develop an evidence-based guideline when the evidence is limited in quantity and/or low in quality, as long as these limitations are acknowledged transparently. This is often a consideration when developing guidelines for the diagnosis and/or treatment of uncommon or rare diseases. In such cases, when high quality evidence from large randomized, controlled trials is likely to be absent, it is typically necessary to make weak recommendations that are based on lower quality evidence from case series.

8. **Take into account variation in how patients and caregivers value outcomes** when weighing tradeoffs between benefits and harms of interventions (15). When such values are thought to vary substantially between patients, it is prudent to make weak recommendations.

9. **To grade the strength of a recommendation, consider both the quality of evidence and the balance between desirable and undesirable outcomes**, along with variation in values and preferences and implications for resource utilization (16).

Three additional papers cover the important and often neglected topics of reporting (17), dissemination and implementation (18), and updating of guidelines (19). It is important to remember that no matter how rigorously developed and trustworthy, a guideline is only helpful if clinicians actually use it. Dissemination and implementation often do not receive the same attention and care as development, in part because the roles that the professional society can play in local implementation efforts are not well defined.

For readers who desire additional information, several of the workshop participants contributed to a 6-part series in the *British Medical Journal* (20) that provides an introduction to using GRADE for rating the quality of evidence and grading the strength of recommendations, and a 20-part series in the *Journal of Clinical Epidemiology* (21) that provides greater practical detail about the use of GRADE. Although these latter series focus on GRADE specifically, many principles outlined in the two series will be relevant to developers and consumers regardless of the system being employed to rate evidence and grade recommendations.

Clinical practice guidelines have come a long way—once derided as “cookbook medicine,” the place for trustworthy guidelines in clinical practice is now firmly established. In fact, the role of guidelines in clinical practice will only increase as clinicians and third parties, including payers, litigators, quality advocacy groups, and the lay public, seek the best evidence to define standards of care. Like any unfinished science, however, methods for guideline development and implementation will continue to evolve, and organizations such as the ATS and the ERS will strive to stay abreast of new developments to better serve their members and the patients for whom they care.

To be both trustworthy and useful, guidelines ultimately need to be not only rigorously developed, but also easy to understand and execute, up to date with the most current evidence, and relevant to the burning questions that arise in clinical practice.

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**References**


