In attempting to provide exemplary services to their clients, speech-language pathologists (SLPs) regularly seek new or improved evaluation and treatment methods. Clinicians are continually searching for the answers to questions such as the following: How do I evaluate a child with Aspergers syndrome? Is Vitalstim a viable treatment option? What are the best practices for language remediation of children who have been identified as falling in the autistic spectrum disorder range? Is SpeechEasy right for my client who stutters? Will blowing and sucking exercises improve velopharyngeal function? What should I do for this child who is exhibiting pragmatic language disorders? Is cue speech preferable to total communication for the child with hearing impairment? Is inclusion or pull-out the appropriate service model? How can I evaluate the research I find about applied behavioral analysis or floortime? Is group therapy preferable to individual therapy? Do I need to drill children in phonological awareness or will a natural approach using rhyming games and predictable literature benefit the child as well or better?

Some strategies for answering these questions include identifying historical practices, seeking “expert” advice at a highly publicized workshop, considering one’s own clinical judgment that “feels” right, or purchasing a “canned” program packaged in a glitzy box published by a well-known publisher of speech-language pathology materials. This article provides an account of a more scientific, or evidence-based practice (EBP), approach to decision making—evidence-based clinical practice guidelines (EBCPGs or, more simply, CPGs). CPGs are widely available in the literature of related health care professions (e.g., medicine, nursing) but are relatively uncommon in communication sciences and disorders (CSD). Appendix A, however, lists several CPGs that are relevant to school-age children with communication disorders. Perusal of the list reveals that not all CPGs are called CPGs. Other terms for CPGs include practice guidelines, practice parameters,
practice policies, practice recommendations, appropriateness criteria, and consensus statements (Guyatt et al., 2002; Nicholson, 2002).

The focus of this article is on describing CPGs and providing a guide for evaluating them, thereby facilitating the application of CPGs to clinical practice. The focus does not extend to recommendations for developing CPGs because CPG development is a time-consuming and exacting task and, just as with primary research, it is unlikely that one needs to create CPGs to be able to critique them. Those wishing to learn about CPG development may consult the Scottish Intercollegiate Guidelines Network (SIGN) recommendations that are available at the SIGN Web site (http://www.sign.ac.uk/index.html), Nicholson (2002), or Snowball (2005).

Why CPGs?

Practitioners of EBP use the best available evidence, clinical expertise, and family/client values to facilitate clinical decision making (Straus, Richardson, Glasziou, & Haynes, 2005). EBP is beginning to receive widespread attention in the field of CSD (e.g., Bernstein Ratner, 2006; Johnson, 2006; Justice & Fey, 2004; Meline & Paradiso, 2003). To date, however, most CSD explanations of EBP have focused on reviewing primary (i.e., original) research as evidence (e.g., Gillam & Gillam, 2006; Johnson, 2006). As Gillam and Gillam have noted, this analysis of individual reports of primary research requires an investment in resources and time that SLPs reportedly lack (Mullen, 2005).

CPGs may contribute to solving the limited resources/time dilemma because they contain secondary research that enables practitioners to access literature easily and quickly that has already been identified, summarized, and critiqued. This “prereviewed” literature allows SLPs to expend fewer resources and less time on the “evidence” part of EBP (i.e., they are more efficient). In addition, CPGs are likely to reduce error and bias (i.e., increase accuracy) in summarizing and critiquing the literature because CPGs are based on organized systematic literature selection and predetermined analysis strategies. Increased efficiency and accuracy can foster increased accountability. Increased efficiency, accuracy, and accountability allow SLPs to be more competitive professionally and may facilitate the meeting of demands “for scientific proof of evidence across the spectrum of clinical care, as well as the increasingly competitive spirit spurred by expanding scopes of practice and shrinking dollars for service” (Frattali et al., 2003, p. xvii).

What Is a CPG?

Three general types of secondary research can provide “evidence” in EBP: traditional clinical practice guidelines (TCPGs), systematic reviews (SRs), and EBCPGs. (Table 1 lists several factors that differentiate TCPGs, SRs, and EBCPGs.) TCPGs are clinical recommendations that have been developed by experts that can take the form of decision-making trees, flowcharts, intervention/assessment guides, tables, best practice guides, and graphics (e.g., American Speech-Language-Hearing Association [ASHA], 2004; Goldberg, 1997; Yoder & Kent, 1988). Although the experts may reference clinical research, they typically do not provide comprehensive reviews, nor do they provide ratings of the strength of evidence supporting recommendations. Readers are expected to trust that TCPG experts have selected and analyzed the literature in an unbiased manner. EBP quality indicators (i.e., levels of evidence) generally rank TCPGs near the bottom of the scale (e.g., Centre for Evidence-Based Medicine, 2001; Sackett, Straus, Richardson, Rosenberg, & Haynes, 2000).

SRs involve comprehensive surveys of high-quality research using predetermined criteria for specifying what literature can be included in the reviews and how the literature will be reviewed (Hargrove, Lund, & Griffier, 2005; McCauley & Hargrove, 2004). Well-executed SRs are considered to be the highest level of evidence used in EBP (Law & Philip, 2002; Straus et al., 2004). SRs usually are restricted to high-quality research such as randomized clinical trials or prospective, randomized group designs. Currently, there are only a limited number of SRs available in the CSD literature (but see Johnson, 2006, and McCauley & Hargrove, 2004, for lists of relevant SRs).

EBCPGs are based on reviews of the literature that have (a) followed clearly delineated selection and analysis procedures and (b) produced recommendations linked overtly to the evidence provided in the review and a rating of that evidence. EBCPGs differ from TCPGs in their use of systematic procedures, rating of evidence, and linking of evidence; they differ from SRs primarily in the quality of the evidence that is considered. SRs generally consider only higher quality evidence, whereas EBCPGs consider evidence from a variety of levels, including case studies and even expert opinions. Although we were unable to identify a system of grading levels of evidence that included EBCPGs, one could infer that they generally would fall between TCPGs and SRs.

Sackett et al. (2000) compared EBCPGs to the routines that clinicians develop for assessment and treatment. Clinicians, they claim, rarely enter into an assessment or treatment session without

<table>
<thead>
<tr>
<th>Required characteristic</th>
<th>TCPG</th>
<th>SR</th>
<th>EBCPG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Based on a comprehensive, methodical review of the literature</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Based on the consensus of a panel of experts</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Can include expert opinion</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Identifies evidence that supports recommendations</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Evaluates the quality of the literature used to support the recommendations</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Expertise of the expert or group of experts is disclosed</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Can include case studies, retrospective, nonrandomized research designs</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
</tr>
</tbody>
</table>
for evaluating CPGs (i.e., methods for analyzing them, and may profit from a definition of CPGs and a description of practitioners have not yet developed strategies for critiquing them. Moreover, the relative novelty of CPGs suggests that many professional literature. will need to learn to decipher and evaluate yet one more type of evidence and to the quality of that evidence. Accord-
ingly, as CPGs become increasingly available in CSD, clinicians without criticism and analysis. Despite all of the safeguards inherent to evidence and detailed instructions. For the EBCPG evidence review, an expert panel identifies and then evaluates sources using predetermined criteria for selecting and critiquing the literature. Following the critique of the literature, the expert panel presents specific recommendations for applying the reviewed evidence to a specific population of clients. These instructions are overtly linked to evidence and to the quality of that evidence.

CPGs, like all other professional literature, cannot be accepted without criticism and analysis. Despite all of the safeguards inherent in them, CPGs can be of varying quality or even wrong. Accordingly, as CPGs become increasingly available in CSD, clinicians wishing to increase their efficiency, accuracy, and/or accountability will need to learn to decipher and evaluate yet one more type of professional literature.

Although most SLPs have enrolled in coursework pertaining to research during their academic preparation, it is only recently that ASHA has required exposure to EBP in the curriculum (ASHA, 2006a). Moreover, the relative novelty of CPGs suggests that many practitioners have not yet developed strategies for critiquing them and may profit from a definition of CPGs and a description of methods for analyzing them.

Therefore, the purpose of this article is to present a framework for evaluating CPGs (i.e., “A Guide to Evaluating Clinical Practice Guidelines”). Because it is important that different clinicians obtain similar results when evaluating CPGs, interjudge reliability of the guide is explored. A secondary aim of this article is to demonstrate how the guide can be used to evaluate a CPG.

METHOD

Development of a Guide to Evaluate CPGs

“A Guide to Evaluating Clinical Practice Guidelines” was developed because no single format existed to guide the evaluation of CPGs for individuals with only limited previous exposure to research and to EBP (such as graduate and/or continuing education students). Using a variety of sources (AGREE Collaboration, 2001; Guyatt et al., 2002; Nicholson, 2002; Pinsky & Deyo, 2000; Sackett et al., 2000; Snowball, 2005), the first author developed a guide (Appendix B) with accompanying explanations for each item of the guide (Appendix C). The guide contains a total of 19 questions addressing three major sections: composition of the expert panel, identification of financial support, and validity of recommendations.

Raters

Two of the authors and one graduate student in speech-language pathology, who served as a graduate assistant to one of the authors, independently reviewed a CPG in order to evaluate the guide. None of the raters had participated in development of the guide.

Instructions to Raters

Using the explanations (Appendix C) of the guide (Appendix B), each of the raters reviewed the same CPG (see below). No other information about the terminology in the guide was provided to the raters.

The CPG Used to Evaluate the Guide

The CPG entitled “Clinical Practice Guideline. Report of the Recommendations. Communication Disorders, Assessment and Intervention for Young Children (Age 0–3 Years)” (i.e., the NYS CPG), which was sponsored by the New York State Department of Health Early Intervention Program (NYS Dept. of Health EIP) and published in 1999, was selected for evaluation. The NYS CPG was divided into two major sections: assessment and intervention. Within each section, there were subtopics such as general approach to early identification of communication disorders, general principles of screening for communication disorders (including abstracts of recommended tests), the cultural context of the child’s environment, group speech/language therapy approaches, and formal parent training. Subtopics were further partitioned into sections such as guideline recommendations, description of the clinical method, evaluation of evidence on efficacy (including detailed abstracts of the articles used as evidence), information about harms and costs, panel conclusions about the usefulness of this assessment/intervention method, and summary conclusions.

Clinical recommendations within the subtopics were directly linked to evidence. Rather than endorse a particular approach, the expert panel generally recommended that certain components be included in intervention/assessment. For example, it was recommended that parent training programs include (a) direct instruction in general treatment techniques, (b) direct instruction in targets and treatment approaches to be used with the child, (c) demonstration of intervention techniques, and (d) feedback. Within each subtopic, there were detailed abstracts of the articles used as evidence for recommendations associated with that particular subtopic.

RESULTS

Percentage of Agreement

There was agreement among the three raters’ evaluations of the NYS CPG on 18 of the guide’s 19 items, which is indicative of strong intrarater reliability (18/19 = 94.7%). The item for which there was not initial consensus was Question 3c: “Which sources did the authors of the SR explore?” The disagreement was the result of one rater identifying more relevant sources than the other raters. Following a discussion, the discrepant rater agreed with the others.
Item-by-Item Analysis

An item-by-item analysis of the guide revealed problems with two items (2/19 or 10.5%). All three raters had responded positively to Item 3a (“Did the CPG explicitly address a sensible and clear clinical question?”). However, when asked to describe the clinical question, none of the raters could identify a clinical question. Subsequent discussion revealed that the purpose, rationale, and scope of the NYS CPG were clearly delineated and that each of the raters had inferred a similar question from that information.

In addition, the three raters responded to Item 3h (“Were the treatment options current and appropriate?”) affirmatively despite the fact that the NYS CPG was published in 1999 and, therefore, it was highly likely that it was not current. Moreover, the response to Item 3h appeared to conflict with the response to Item 3c that evaluated the search as “not exhaustive.” Discussion with the raters revealed that they interpreted “current” as “current at the time of the publication.” Moreover, they contended that it was not clear that “currency” and “not exhaustive” were not mutually exclusive. One, for example, could consider that the expert panel had not explored a sufficient variety of sources but also not be aware of any sources other than those that were identified by the expert panel.

DISCUSSION

The interrater reliability of the guide is strong (94.7%). The raters’ problems with the interpretation of two of the items (3a and 3h) most likely reflect problems with the wording of the items or the explanations because all three raters misinterpreted the items in the same manner. Although this is a concern, it should be noted that 89.5% of the items were interpreted in the manner that the guide developer intended.

Overall, the guide in Appendix B is suitable for use in evaluating CPGs. However, it is not yet clear if the guide is suitable for the population for which it was designed (individuals with limited exposure to research and EBPs) because only one rater matched the population description. Future research should explore the use of the guide with the target population of graduate and continuing education students.

To deal with problems associated with the validity or the interpretation of item-by-item analysis, revisions of the guide and the explanations are in order. To prevent inferencing, revisions may include a more thorough explanation of “clear and sensible” and a space in Item 3a for raters to quote the clinical question from the CPG under review. Items 3c and 3h and their explanations also should be rewritten (a) to emphasize that judgments should pertain to the status at the time of the CPG review and (b) to direct raters to consider their response to item 3h in light of their response to Item 3c. Finally, a question should be added to the guide to rate completeness of the CPG at the time of publication. This should reduce the likelihood of errors when responding to Item 3h.

Illustrative Example

To illustrate how CPGs can be used in the context of EBPs and how the guide can be used to evaluate CPGs, a fictional case was developed. To facilitate continuity, the fictional case was constructed so that the NYS CPG was selected for analysis and the fictional local team’s evaluations of the NYS CPG were consistent with the final evaluations of the raters.

The fictional case involved an SLP, with many years of experience in the schools, who was hired as the lead SLP for the communication disorders (CDIS) section of an early intervention (EI) unit. The district administrator charged the lead SLP with the task of moving the CDIS section to a more coordinated, scientific model.

The SLPs in the section exhibited considerable diversity in their assessment and intervention strategies. The lead SLP wished to honor the expertise of the current staff and, accordingly, sought to identify broad-based, evidence-based assessment and intervention models that allowed for diversity. The lead SLP enlisted volunteers from the staff (i.e., a local team) to form a review panel and undertake the five classic EBP steps of (a) developing a question, (b) searching the literature, (c) evaluating the literature, (d) developing a plan that includes clinical expertise/constraints and client/family values, and (e) re-evaluating the project.

Step 1: Developing a question. The fictional local team was interested in identifying a broad assessment and intervention model that would allow individual practitioners freedom to construct their clinical practice based on their clinical experience, client/family values, and the evidence. The local team was not sure if such a model existed. Therefore, they designed the following question: Does a cohesive, single model of communication disorders assessment and intervention for children from birth through 3 years provide evidence of improved communication skills?

Step 2: Searching the literature. The fictional local team searched several databases and search engines including the National Guideline Clearinghouse (www.guideline.gov), the ASHA Web site (www.asha.org), the Educational Resources Information Center (www.eric.ed.gov/), and the Cochrane Collaboration (www.cochrane.org/reviews/). They used permutations of the following general search terms: preschool, language, speech, communication disorders, assessment, intervention, models, and guidelines. The search yielded 62 possible sources. The local team decided to review the NYS CPG because it was the only one that was a broad guideline for preschool-age children; that is, it was not focused on a specific problem such as autism spectrum disorder, attention deficit hyperactivity disorder, or traumatic brain injury. (Searches conducted after the review of the NYS CPG had been completed revealed another broad-based guideline for young children with communication problems; the newer guideline is discussed in Step 4: Developing a Plan.)

Step 3: Evaluating the literature. The fictional local team evaluated three major factors before deciding whether or not to apply the NYS CPG to their own district: (a) the composition of the expert panel, (b) the source of funding, and (c) the validity of the recommendations. The local team selected the form in Appendix B to guide the CPG assessment process. The number and letters following the section headings below represent the corresponding items on the guide.

Composition of the expert panel (1). The fictional local team answered Item 1a of the guide as “yes.” The team determined that the composition of the expert panel from the NYS CPG consisted of SLPs (some of whom were regarded as child language specialists and others as generalists), an audiologist, researchers, academicians, consumers, and other health care professionals (e.g., physicians, nurses). More specifically, the members included at least one parent, three physicians, three SLPs (two were clearly university
faculty), one audiologist (university faculty), three unspecified university faculty, and two educators from educational agencies.

Identification of financial support (2). The fictional local team noted that financial support for the development of the NYS CPG was provided by the New York State Department of Health. This evaluation suggested that there was no evidence of conflict of interest.

Validity of recommendations (3).

Quality of the clinical question (3a). The fictional local team agreed that the NYS CPG did not offer an explicit clinical question. Although they agreed that a question could be inferred from the purpose, rationale, and definitions, item 3a required that the question be explicit. Accordingly, the local team responded “no” to this item.

Inclusion and exclusion criteria for the literature search (3b). The fictional local team noted that inclusion and exclusion criteria for the NYS CPG were established before the beginning of the literature search. Criteria for selecting sources for review included research published in English, primary research about assessment or intervention, method availability to clinicians in the United States, method adequately described, participants included at least some children under 6 years of age, and the presence of measures of sensitivity and specificity for sources pertaining to assessment.

Detailed and exhaustive search (3c). The fictional local team concluded that the search for relevant sources in the NYS CPG was not detailed and exhaustive because it was limited to the Internet and traditional databases, peer-reviewed journals, references from identified literature, hand searches, and books. Many sources were of expert opinion. The search did not include searches from funding agencies, registries, conference proceedings, abstracts from conferences, personal files, theses/dissertations, or international sources. The timeline for sources ranged from 1980 to 1999.

Overall level of evidence of the sources (3d). The fictional local team determined that the overall level of evidence of the sources was clearly identified and the expert panel’s decisions were justified. In the NYS CPG, the expert panel evaluated each article according to pre-established criteria to determine if it was of sufficient quality and applicability. They assessed quality by noting the study’s design, strategies for minimizing bias, and reports of replication by independent researchers. They judged applicability by determining how similar research participants were to the target population. Moreover, the expert panel provided explanations of rubrics that they used in the NYS CPG to evaluate the sources and summaries of their reviews.

Linkage between recommendations and evidence (3e and 3f). The fictional local team determined that the expert panel’s recommendations included in the NYS CPG were linked directly to evidence from the professional literature. Each recommendation was paired with a ranking from the system cited in Table 2. For example, the recommendation listed in the subsection titled “Formal Parent Training Programs” is “It is important to recognize that some parents can be successful primary intervention agents, provided…. there is ongoing monitoring of the child’s progress by the professional providing the consultation to the parent [A]” (NYS Dept. of Health EIP, 1999, pp. IV–26). This recommendation earned a rank of “A — Strong Evidence,” as indicated by the [A] at the end of the statement. Additionally, the local team determined that the expert panel had organized the NYS CPG to allow for easy identification of the sources for this rating.

Description of targeted client population (3g). The fictional local team noted that the authors of the NYS CPG clearly described the target population as children between birth to 3 years with speech and language disorders but not with hearing loss or other developmental disabilities (NYS Dept. of Health EIP, 1999). In addition, the local team judged that the expert team analyses clearly described the participants in the sources.

Current and appropriate treatment options (3h). Members of the fictional local team were familiar with research relevant to the NYS CPG that had been published after 1999. Therefore, the local team graded item 3h as “no.”

Costs and benefits (3i). The fictional local team found that although the overall costs and benefits of the intervention were considered when developing the NYS CPG, costs and benefits were not discussed for each recommendation. Therefore, they judged the cost–benefit analyses to have been applied inconsistently.

Peer review (3j). The fictional local team noted that a draft of the CPG was submitted to a larger group of experts for their criticism and feedback; however, it was unclear as to whether consumers were contacted to determine their perspectives regarding the NYS CPG. Accordingly, they rated this question as “unclear/variable.”

Consumer values (3k). As noted in the previous section, the fictional local team could not determine if consumers’ values were explicitly explored in the NYS CPG.

Plans for widespread dissemination (3l). The fictional local team determined that the extent to which the NYS CPG was to be distributed was not clear. However, a general statement about distribution was provided, and the NYS CPG was published in three formats, which suggested that the expert panel had considered dissemination issues.

Plans for updates (3m). The fictional local team determined that although a general statement about updates appeared in the

Table 2. Grades for recommendations for the New York State CPG.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Strong Evidence: at least two studies • present “adequate” support, • are moderately related to the clinical question, and • provide results that can be interpreted as strongly supporting CPG recommendations.</td>
</tr>
<tr>
<td>B</td>
<td>Moderate Evidence: at least one study • presents “adequate” support, and • is moderately related to the clinical question, and • provides results that moderately support CPG recommendations.</td>
</tr>
<tr>
<td>C</td>
<td>Limited Evidence: at least one study • presents “adequate” support, • is minimally related to the clinical question, and • provides results that moderately support CPG recommendations.</td>
</tr>
<tr>
<td>D1</td>
<td>Panel Opinion: expert panel consensus supports the recommendations but no evidence could be found to support the evidence.</td>
</tr>
<tr>
<td>D2</td>
<td>Panel Opinion: expert panel consensus supports the recommendations but the literature was not systematically reviewed.</td>
</tr>
</tbody>
</table>

NYS CPG, no specific timeline was stated. This resulted in an “unclear/variable” rating. It was further noted that the NYS CPG was already almost a decade old.

**Summary of the review of the NYS CPG.** The fictional local team concurred that overall, the NYS CPG was a valuable tool that should be considered when making clinical decisions regarding young children with communication disorders for their district. Their conclusion was corroborated by a review in ASHA’s National Center for Evidence-Based Practice (N-CEP; ASHA, 2006b), which rated the NYS CPG as “highly recommended.”

**Step 4. Developing a plan.** The fictional local team believed that for EBP to be effective, the results of the NYS CPG needed to be integrated into the local clinical context. The local team attempted to foster integration of the NYS CPG in two ways: (a) by adapting the NYS CPG to meet local needs and resources and (b) by providing clinicians with guidance in applying the NYS CPG to their own clinical practice. The following sections summarize the procedures the local team used to accomplish these tasks. A more thorough discussion of the issues is presented in Gillam and Gillam (2006); Graham, Lorimer, Harrison, and Piercianowski (2000); Nicholson (2002); Pinsky and Deyo (2000); Taylor (2000); and Wolf (2000).

**Adapting the NYS CPG to the local environment.** The fictional local team modified the original NYS CPG to reflect the strengths, challenges, and needs of the district. All modifications were clearly marked using the same formatting as the NYS CPG. The local team also planned a staged updating of the relevant literature because the NYS CPG was published in 1999. As the team progressed through the stages of updating, it made new revisions available to the SLPs in the district. The updating took two forms: review of a newer CPG and a topical review.

During the review process, the local team identified a more recent CPG pertaining to a broad-based assessment/intervention model for preschoolers (RCSLP CPG; Royal College of Speech and Language Therapists, 2005). N-CEP (ASHA, 2006b) had rated the RCSLP CPG as “recommended;” therefore, the local team reviewed the RCSLP CPG in a comprehensive and systematic manner using procedures described in the guide and integrated the information into the NYS CPG, as appropriate.

The local team also selected topics in need of review and ordered the topics to reflect their consensus. The first topic the local team reviewed was use of the language development survey (LDS; Rescorla, 1989). Several members of the team had been using the LDS and were aware of recent primary research conducted on the LDS (e.g., Rescorla, 2005; Rescorla & Achenbach, 2002; Rescorla & Alley, 2001). Again, the local team reviewed the literature and made necessary changes in the NYS CPG.

There were several topics on the review list and the local team anticipated that updating of the CPG could contribute to their ongoing professional development. Therefore, team members formed a journal club and were able to earn ASHA continuing education credits for reviewing the literature.

**Providing guidance in applying CPGs.** The fictional local team recognized that using CPGs is not without its challenges. They identified two major barriers to the implementation of CPGs: (a) time constraints and (b) the need to adapt CPGs to one’s own clinical context. The local team decided that the first of these barriers could be dealt with by adopting some of Sackett et al.’s (2000) recommendations for physicians. The local team, for example, offered the following recommendations to the SLPs in the district: (a) put aside 1 half hour per week directed to application of the NYS CPG, (b) select a single student with whom to apply the NYS CPG, and (c) identify one recommendation at a time from the NYS CPG to implement with the student.

The second barrier was associated with the need to adapt the NYS CPG to each SLP’s clinical context. Even though the NYS CPG had been vetted through the local team, recommendations, even from well-designed and well-documented CPGs, may not be viable in all clinical contexts because of parent/student or clinician/agency issues. Thus, the local team offered a formal procedure to facilitate application of the NYS CPG to the clinical practice of individual SLPs.

The local team’s formal procedure for SLP implementation of the NYS CPGs was based on an adaptation of Gillam and Gillam’s (2006) strategy for integrating the different aspects of EBP (evidence, parent/student values, and clinician/agency values). The local team developed forms that noted recommendations, the quality of the evidence supporting the recommendation, clinician/agency values, and parent/student values.

The local team developed the first form to facilitate the summarization and interpretation of a completed guide for the evaluation of CPGs. The form provided a section for listing a recommendation and the level of support for that recommendation. The ranking used a four-point scale with a rank of 4 representing the lowest level of support and 1 signifying strong support. It was agreed that lower numbered rankings would be afforded more weight in decisions than higher numbered rankings.

The local team developed a second form that listed the recommendation from the evidence (i.e., the first form) and ranked the similarity between the students on the SLPs’ caseloads and the targeted population of the CPG. Again, the ranking was holistic, and 1 represented that the students and the targeted group were similar and 4 signified that there were marked differences between the participants of the sources and the student(s) on the SLPs’ caseloads.

The third and fourth forms were developed to facilitate the identification of factors (a) in the clients’ backgrounds, lifestyles, or cultures and/or (b) in the clinical environment that could render assessments and interventions ineffective or interfere with compliance. The local team sought to provide SLPs with scales that explored parent/student preferences and clinician/agency issues. However, the members of the local team had not previously developed such forms; therefore, they adopted Gillam and Gillam’s (2006) scales that rank parent/student preferences and clinician/agency issues. Table 3 summarizes the rankings for the two scales.

<table>
<thead>
<tr>
<th>Table 3. Gillam and Gillam’s (2006) levels of evidence for parent/student and clinician/agency factors (internal evidence).</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parent/Student factors</strong></td>
</tr>
<tr>
<td>1 = the cultural beliefs of the family</td>
</tr>
<tr>
<td>2 = procedures were attractive and interesting to the student</td>
</tr>
<tr>
<td>3 = the costs of the procedure were of concern to the family</td>
</tr>
<tr>
<td>4 = the amount of family involvement required</td>
</tr>
<tr>
<td>5 = the family/student belief (not based in evidence) about a</td>
</tr>
<tr>
<td>treatment</td>
</tr>
<tr>
<td><strong>Clinician/Agency factors (no clinician/agency factor should</strong></td>
</tr>
<tr>
<td><strong>outweigh family cultural beliefs)</strong></td>
</tr>
<tr>
<td>2 = the knowledge and skills of the clinician</td>
</tr>
<tr>
<td>3 = costs to the agency</td>
</tr>
<tr>
<td>4 = data collected by the clinician</td>
</tr>
<tr>
<td>5 = theoretical views of the clinician</td>
</tr>
</tbody>
</table>
In addition, on each of the forms, there was a section for listing the recommendation from the parent/student or from the clinician/agency.

Finally, the local team enlisted Gillam and Gillam’s (2006) strategy for integrating the information from the forms. SLPs were instructed to complete a form that listed the “recommendation” from each component of EBP (evidence, parent/student factors, clinician/agency factors) and the rank that had been entered on the corresponding form. When the recommendations did not agree, SLPs were advised to give preference to recommendations that received the lowest ranks.

**Step 5: Re-evaluating the project.** Applying CPGs to clinical practice is an ongoing process. Therefore, the fictional local team set up a timeline for re-reviewing the NYS CPG and for searching for additional related CPGs. They planned to meet monthly to review individual studies as well as annually to review and update the NYS CPG. In addition, the local team developed a survey to be administered biannually to determine how often and how faithfully the clinicians were using and complying with the NYS CPG and its local adaptations (i.e., a measurement of fidelity).

**CONCLUSION/IMPlications**

As the research database improves, the potential exists for SLPs to increase their application of research to clinical practice. However, SLPs must have the knowledge base to evaluate the quality of the research. One important form of secondary research that SLPs need to understand and be able to evaluate is the CPG. CPGs can improve clinical decision making by identifying, summarizing, and critiquing the body of literature on a specific topic. In addition, CPGs can offer efficiency with respect to expenditures of time and effort, and they have the potential to increase accountability. By using “A Guide to Evaluating Clinical Practice Guidelines,” SLPs can critique CPGs and implement more objective or data-based interventions, practice assessing a CPG and, perhaps, feel more comfortable with this form of secondary research.

**Acknowledgment**

This article is derived, in part, from a poster session that was presented at the 2004 annual convention of the America Speech-Language-Hearing Association.

**References**


Hargrove et al.: Clinical Practice Guidelines 295


Received July 28, 2006
Revision received February 16, 2007
Accepted June 14, 2007
DOI: 10.1044/0161-1461(2008/028)

Contact author: Patricia M. Hargrove, AH 103, Department of Speech, Hearing, and Rehabilitation Services, Minnesota State University, Mankato, Mankato, MN 56001. E-mail: patricia.hargrove@mnsu.edu.
APPENDIX A. CLINICAL PRACTICE GUIDELINES RELEVANT TO COMMUNICATION DISORDERS IN YOUNG CHILDREN

Available at www.guidelines.gov

- Diagnosis and evaluation of the child with attention deficit hyperactivity disorder
- Diagnosis and management of acute otitis media
- Evidence-based clinical practice guideline for medical management of otitis media with effusion in children 2 months to 13 years of age
- Evidence-based practice guideline for outpatient evaluation and management of attention deficit hyperactivity disorder
- Hearing assessment in infants and children: Recommendations beyond neonatal screening
- Parameters for evaluation and treatment of patients with cleft lip/palate or other craniofacial anomalies
- Practice parameter: Diagnostic assessment of the child with cerebral palsy
- Practice parameter: Evaluation of the child with global developmental delay
- Practice parameter for the assessment and treatment of children and adolescents with reactive attachment disorder of infancy and early childhood
- Practice parameter: Screening and diagnosis of autism
- Prescribing therapy services for children with motor disabilities
- Preventive services for children and adolescents
- School-based mental health services
- Screening for otitis media with effusion
- Specific guidelines for disease—pediatrics
- Summary of policy recommendations for periodic health examinations
- Supporting and strengthening families through expected and unexpected life events
- Treatment of the school-aged child with attention deficit hyperactivity disorder

Available at www.rcslt.org/resources/RCSLT_Clinical_Guidelines

- Royal College of Speech and Language Therapists clinical guidelines

Other Sources

- Selected reviews (with links and/or contacts) of TCPGs and EBCPGs. Available at www.asha.org/members/ebp/compendium/guidelines.
### APPENDIX B (P. 1 OF 2). A GUIDE TO EVALUATING CLINICAL PRACTICE GUIDELINES


**REVIEWER(S):** Griffer, Lund, and Remington

**DATE:** May 15, 2006

<table>
<thead>
<tr>
<th>QUESTIONS</th>
<th>yes</th>
<th>no</th>
<th>unclear/variable</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. COMPOSITION OF EXPERT PANEL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1a. Was the identity of the members of the expert panel provided?</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1b. Panel members reported the following professional/clinical experiences (check appropriate categories)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– clinicians</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– consumers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– researchers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– academicians</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– administrators</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– other health care professionals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– third party payers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– educators</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– psychologists</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– linguists</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– SLPs (specialty child language)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– SLPs (generalists)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– other(s): (list)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2. IDENTIFICATION OF FINANCIAL SUPPORT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Who provided financial support for the development of the CPG?</td>
<td>List: NYS Department of Health</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>3. VALIDITY OF RECOMMENDATIONS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3a. Did the CPG explicitly address a sensible and clear clinical question?</td>
<td>x*</td>
<td>x**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3b. Were criteria for inclusion and exclusion of the literature clear and reasonable?</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3c. Was the search for relevant sources detailed and exhaustive? Which sources did the author(s) of the SR explore?</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– internet based databases</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– experts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– traditional databases</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– hand searches</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– funding agencies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– registries</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– conference proceedings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– personal files</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– abstracts from conferences</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– theses/dissertations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– peer reviewed journals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– books</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– references from identified literature</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did the search include sources in languages other than English?</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Was the timeline for the potential sources reasonable?</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3d. Did the CPG identify overall level of evidence of the sources?</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### A GUIDE TO EVALUATING CLINICAL PRACTICE GUIDELINES

**QUESTIONS** | **yes** | **no** | **unclear/variable** | **COMMENTS**
--- | --- | --- | --- | ---
3e. Were each of the recommendations of the CPG linked to evidence? | x | | | 
3f. If ‘lower quality’ evidence (e.g., expert opinion) was used to support recommendations in the CPG, was it clearly labeled? | x | | | 
3g. Was there a clear description of the client population for the CPG? | x | | | 
3h. Were the treatment options current and appropriate? | x* | x** | | 
3i. Were the costs and the benefits of the intervention factored into the guideline? | x | | | 
3j. Was a draft of the CPG submitted to a larger group of experts for criticism and feedback? | x | | | 
3k. Have consumers (clients and their families) been surveyed to determine their views regarding the CPG? | x | | | 
3l. Is the CPG being widely distributed? | x | | | 
3m. Are there plans for periodically updating the CPG? | x | | | 

This form was derived from work of the AGREE Collaboration (2001), Guyatt et al. (2002), Nicholson (2002), Pinsky and Deyo (2000), and Sackett, Straus, Richardson, Rosenberg, and Haynes (2000).

*Although the raters agreed on this response, subsequent analyses did not support their initial decision.

**This is the “corrected” response for the initial rating and the response used in the illustrative case.

Copyright 2006 by Patricia Hargrove and Bonnie Lund.
APPENDIX C (P. 1 OF 3). EXPLANATIONS FOR “A GUIDE TO EVALUATING CLINICAL PRACTICE GUIDELINES”

#1: Composition of Expert Panel

1a. Was the Identity of the Members of the Expert Panel Provided?

1b. Panel Members Reported the Following Professional/Clinical Experiences

Item 1 has two queries: “Was the identity of the members of the expert panel provided?” (Item 1a) and a request to identify the background of the panel members (Item 1b). The guide addresses these queries because of the importance of including practicing clinicians and individuals with a variety of experiences on the expert panel. Generally, diverse expert panels (i.e., those made up of members from a variety of backgrounds such as speech-language pathologists, occupational therapists, academicians, researchers, physicians, administrators, third-party payers, consumers, etc.) are preferred to panels consisting of representatives from a single specialty area within a profession (e.g., speech-language pathologists who specialize in early child intervention). Diverse expert panels are more likely to present recommendations with broad relevance and application due to their concerns about a variety of issues, such as clinician/family communication, cost–benefit analysis, and realistic treatment protocols (Guyatt et al., 2002; Pinsky & Deyo, 2000).

#2: Identification of Financial Support

2. Who Provided Financial Support for the Development of the CPG?

Item 2 of the guide addresses the fact that the undertaking of a CPG is a long, involved process requiring substantial financial commitment to ensure that the expert panel has access to funds sufficient to complete all phases of the CPG. Full disclosure of the source of funding for the CPG should be presented clearly to allow clinicians to judge whether there is a possibility that members of the panel have been exposed to outside influences (i.e., conflicts of interest).

#3: Validity of Recommendations

3a. Did the CPG Explicitly Address a Sensible and Clear Clinical Question?

Item 3a on the guide examines several factors that need to be considered when attempting to determine the usefulness and appropriateness of the recommendations offered by the panel: the quality of the clinical question, inclusion and exclusion criteria of the literature search, the extent of the search, level of evidence, and linkage between the recommendations and the evidence.

3b. Were Criteria for Inclusion and Exclusion of the Literature Search Clear and Reasonable?

Item 3b of the guide addresses inclusionary and exclusionary criteria for searching the literature that were specified by the expert panel. Before searching the literature, expert panels typically agree on the characteristics of the sources to consider for review. Potential characteristics include the design of the research, ages of the participants, severity of the communication impairment, date of publication, and so forth. Clinicians should review the expert panel’s inclusion and exclusion criteria and determine if the criteria are capable of yielding appropriate and current literature based on their knowledge of the literature.

The nature of inclusion and exclusion criteria is important because the criteria can shape the selected literature, thereby influencing the outcome of the CPG. For example, the exclusion of single-subject experimental designs (SSEDS) from the search could influence the outcome of a CPG if researchers from one approach to intervention traditionally used SSEDS while researchers from another approach used other research designs.

3c. Was the Search for Relevant Sources Detailed and Exhaustive?

Item 3c evaluates the extent to which the expert panel documents strategies used to identify potential sources that met their inclusion and exclusion criteria. Ideally, the expert panel will have used numerous traditional (journals, internet databases) and nontraditional (experts, funding agencies) strategies to identify published as well as unpublished research.

Sackett et al. (2000) recommend that searches should be as broad as possible and include secondary research (e.g., systematic reviews and other CPGs) and that searching extend to international resources to avoid ethnocentrism. Clinicians must rely on their knowledge of the professional literature to determine if the expert panel has extended the characteristics of their search for potential sources sufficiently. Factors to consider when evaluating searches include the amount of literature, quality of the literature, and changes in technology that would render the findings of certain sources outdated (e.g., a perception-only approach to the assessment of prosody might be rendered obsolete if an inexpensive, portable, accessible, valid, and reliable acoustic analysis system were to become available).

3d. Did the CPG Identify Overall Level of Evidence of the Sources?

Item 3d of the guide evaluates the overall level of evidence of the sources that the expert panel reviewed. Rating may be concerned with factors such as characteristics of participants, construct validity, design type, treatment schedule, external validity, internal validity, and supporting measures. Table A contains examples of factors that may be considered in rating the quality of the evidence.
Table A. Factors for evaluating the quality of evidence.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characteristics of patients</td>
<td>• ethnicity • age • gender • classification of disorder • severity of disorder • socioeconomic level • comorbid problems</td>
</tr>
<tr>
<td>Construct validity</td>
<td>• quality of outcome measures • timing of testing (pre, midway, post, follow-up)</td>
</tr>
<tr>
<td>Design type</td>
<td>• randomized clinical trial • case series • prospective randomized research • prospective nonrandomized group research • narrative review • case study • systematic review • expert opinion</td>
</tr>
<tr>
<td>Treatment schedule</td>
<td>• treatment frequency • session length • treatment duration • group or individual therapy</td>
</tr>
<tr>
<td>External validity</td>
<td>• generalizable sample • reactive/interactive effects of pretesting • reactive arrangements • replicability • effects of multiple treatments • evidence of treatment fidelity</td>
</tr>
<tr>
<td>Internal validity</td>
<td>• history • maturation • statistical regression • participant selection (e.g., randomization, matching) • mortality • treatment of missing/outlining data • masking of group membership • number of participants • similarity of participants before intervention</td>
</tr>
<tr>
<td>Outcomes</td>
<td>• nature of measures used to depict progress • measures of significance of difference • measures of magnitude of difference (e.g., number needed to treat, standardized mean difference, effect size correlation, relative success rate)</td>
</tr>
</tbody>
</table>

3e. Were Each of the Recommendations of the CPG Linked to Evidence?

3f. If “Lower Quality” Evidence Was Used to Support Recommendations in the CPG, Was it Clearly Labeled?

Items 3e and 3f examine how the expert panel explicitly relates each recommendation to at least one source (Sackett et al., 2000) as well as rates or grades the strength of each recommendation. Such grading represents a composite score or rating that can consider numerous factors including validity of the reviewed sources, magnitude of any reported treatment effects, and cost–benefit analysis.

As noted previously, sources reviewed in CPGs generally are not subjected to the same methodological rigor as stand-alone systematic reviews (Sackett et al., 2000). Accordingly, some of the recommendations within a CPG may be based on lesser quality evidence, including expert opinion, because strong empirical evidence may not be available at the time of the writing of the CPG. The ratings alert clinicians to the quality of recommendations, which allows them, in turn, to make informed decisions regarding whether or not to employ the recommendations.

3g. Was There a Clear Description of the Client Population for the CPG?

Item 3g of the guide evaluates the extent to which the authors of the CPG provide relevant characteristics of the participants in the research or the targeted populations in primary and secondary works reviewed in the CPG. The descriptions permit clinicians to decide the feasibility of generalizing the findings to their clients.

3h. Were the Treatment Options Current and Appropriate?

Item 3h of the guide addresses the currency and the appropriateness of treatment options. Specifically, the interventions studied in the CPG should reflect current models of treatment, and they should be appropriate for the participants in the studies. Guyatt et al. (2002) warn that even if a CPG is appropriate at the time of publication, changes in the research base of the profession could render the recommendations outdated. Thus, clinicians need to remain current with the existing literature and CPGs in order to make these decisions.

3i. Were the Costs and Benefits of the Intervention Factored Into the Guideline?

Item 3i of the guide evaluates the extent to which expert panels not only explore the benefits of an intervention but also address possible costs of the intervention. Cost–benefit considerations need not be limited to financial issues; they can also focus on issues such as time expenditure, familial stress, distraction from other tasks/responsibilities, and the utility of outcomes.
3j. Was a Draft of the CPG Submitted to a Larger Group of Experts for Criticism and Feedback?

Item 3j of the guide recommends the review of CPGs by individuals from a broad range of perspectives (e.g., clinicians, researchers, third-party payers, etc.) before submission for review for publication. Prior peer review provides the expert panel with feedback from those who were not involved in the process about issues such as readability, validity, and feasibility.

3k. Have Consumers (Clients and Their Families) Been Surveyed to Determine Their Views Regarding the CPG?

Item 3k of the guide addresses the fact that CPGs should clearly state if consumer preference has been explored and incorporated into recommendations. This recommendation is based on Guyatt et al. (2002), who noted that while consideration of consumers’ preferences is important to all EBP, it is especially important to CPGs because of the focus on application.

3l. Is the CPG Being Widely Distributed?

Item 3l of the guide is based on the importance of a thorough plan for dissemination as an essential component of CPGs because CPGs that are not readily available to practitioners probably will not be used. Options for dissemination include technical reports, convention presentations, focused clinical journal articles, and Web page publications (Frattali et al., 2003).

3m. Are There Plans for Periodically Updating the CPG?

The final item of the guide (3m) examines the expert panel’s plans to update the CPG. Because the research bases of communication sciences and disorders continue to expand, CPGs can quickly become outdated. Therefore, one clear hallmark of a good CPG is regular revision, allowing for new knowledge to be incorporated into the recommendations.