

ANCDS Bulletin Board

Nancy Helm-Estabrooks, Sc.D., BC-NCD

President, ANCDS, 2003-2004

Development of Evidence-Based Practice Guidelines: Committee Update

Carol Frattali, Ph.D.

*W.G. Magnuson Clinical Center
National Institutes of Health
Bethesda, Maryland*

Kathryn Bayles, Ph.D.

Pelagie Beeson, Ph.D.

*Department of Hearing and Speech Sciences
University of Arizona
Tucson, Arizona*

Mary R. T. Kennedy, Ph.D.

*Department of Communication
University of Minnesota
Minneapolis, Minnesota*

Julie Wambaugh, Ph.D.

*University of Utah
Salt Lake City, Utah*

Kathryn M. Yorkston, Ph.D.

*Rehabilitation Medicine
University of Washington
Seattle, Washington*

The Academy of Neurologic Communication Disorders and Sciences (ANCDS), by way of the mission, purposes, and activities of its Ad Hoc Practice Guidelines Coordinating Committee and respective Writing Committees, has embarked on a 5-year project to develop a range of evidence-based practice guidelines for specific neurologically impaired patient populations (i.e., dysarthria, dementia, acquired apraxia of speech, developmental apraxia of speech, aphasia, cognitive-communication disorders after traumatic brain injury, and cognitive and communication disorders after right-hemisphere brain damage). The project embraces a philosophy that quality of care is best supported by scientific evidence of treatment efficacy. This article, which details and

updates the proceedings from the Committee's presentation at the ANCDS annual educational and scientific meeting in 2002 in Atlanta, Georgia, summarizes the progress to date by the various Writing Committees responsible for developing these evidence-based practice guidelines.

An ambitious, wide-scale, and far-reaching enterprise by the Academy of Neurologic Communication Disorders and Sciences (ANCDS) has been officially underway since February 2001. This project, which comprises the development and dissemination of evidence-based practice guidelines for a range of neurological conditions, places science squarely and firmly at the root of speech-language pathology practice. The primary goal of the project is to improve the quality of services rendered by assisting clinicians in decision making about the management of specific populations through guidelines based on research evidence. The work is driven directly by the Academy's mission to encourage the highest quality of life for those with communication disorders. Structurally organized as the ANCDS Ad Hoc Practice Guidelines Coordinating Committee¹ and its various Writing Committees, the multilayered and collaborative infrastructure that supports this work is presented in Figure 1.

Each Writing Committee is pursuing its work under a common working definition of practice guidelines as follows:

Evidence-based practice guidelines are explicit descriptions of how patients should be evaluated and treated. The purpose of guidelines is to improve and assure the quality of care by reducing unacceptable variation in its provision. (Golper et al., 2001, p. 2).

Within the context of this definition, the main activities of each Writing Committee are to

- Conduct systematic and exhaustive literature reviews that are inclusive and balanced
- Assess levels of evidence against agreed-on objective criteria
- Craft guidelines based wholly on the reviews and assessments of levels of scientific evidence

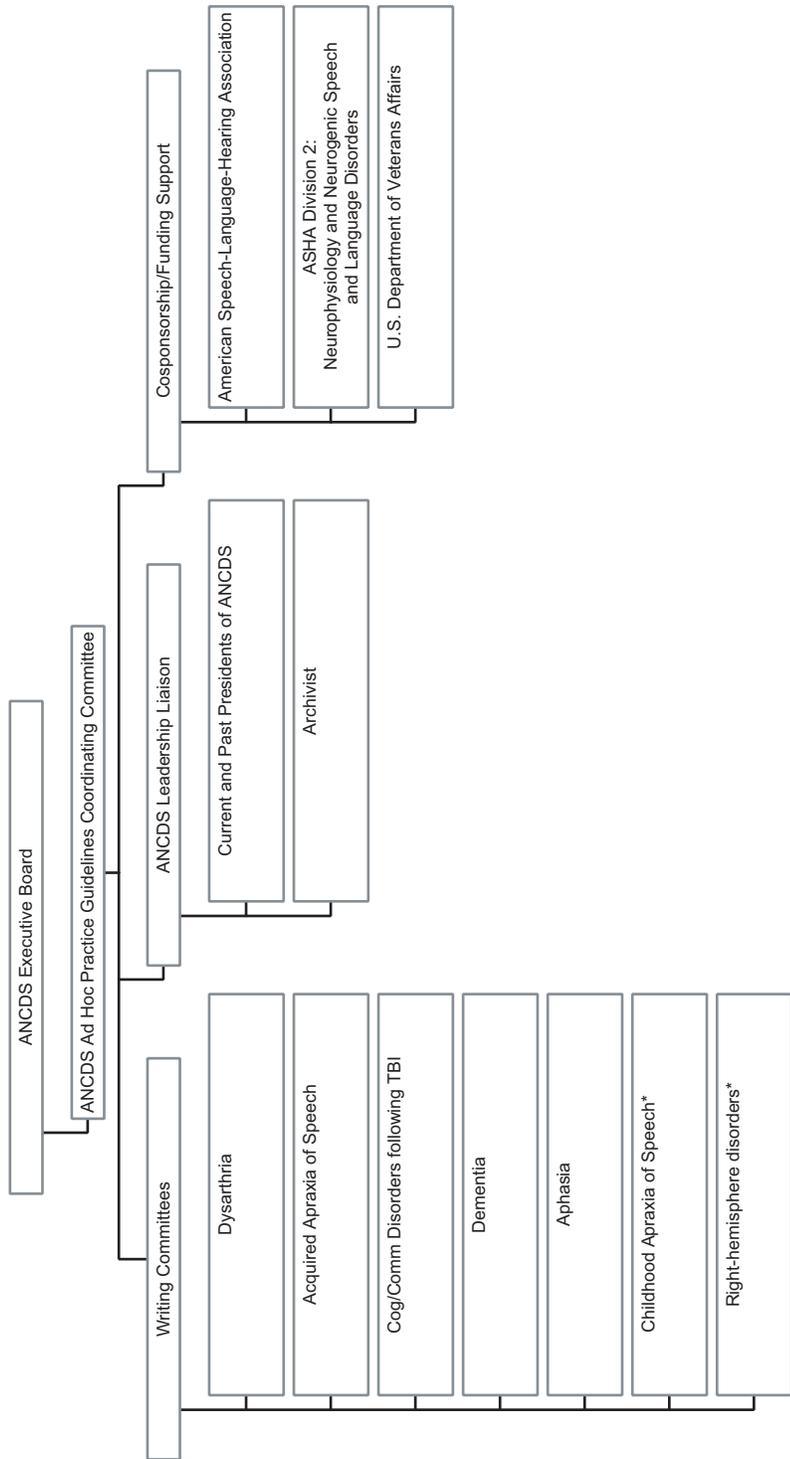
- Disseminate this information to clinicians in practice
- Delineate those areas for which additional research is needed

Although the Dysarthria Committee was the first to begin its work, the majority of Writing Committees began their work in 2002. The Childhood Apraxia of Speech Writing Committee (chaired by Dr. Donald Robin, Professor, School of Speech, Language, and Hearing Sciences at San Diego State University) was most recently established in 2003. The Writing Committee for Communication Disorders Following Right-Hemisphere Brain Damage is anticipated to become established in the Fall of 2003.

Three important points bear emphasis. First, although each Writing Committee follows the same thorough and systematic process of review of the scientific literature and assessment of levels of evidence against set objective criteria, sufficient latitude is taken by each committee to develop a guideline scope, format, and style that most closely aligns with the nature and extent of available evidence. Second, the Committees regard the practice guidelines as living documents that will be revised and expanded as new scientific knowledge becomes available. As such, each document will be on a schedule or rereview, with the intent of keeping all guidelines current. Third, the effective application of guidelines by clinicians is only as good as their wide dissemination and use. The Ad Hoc Committee is therefore placing equal weight on development and dissemination, as evidenced by the inter-agency collaborations formed, Web page postings, publications in professional and peer-reviewed journals, and presentations at national and international meetings.

A summary of the work progress of each committee (with the exceptions of the Writing Committees for Developmental Apraxia of Speech and Com-

¹Members include the chairs of Writing Committees as specified, chair (Carol Frattali), past presidents and the current president of ANCDS (Nancy Helm-Estabrooks [president], Robert T. Wertz, Lee Ann Golper (also first Ad Hoc Committee chair), and Richard Katz [past president], and archivist (Penelope Myers).



*Committees newly or to be established

Figure 1. Organizational infrastructure.

From Journal of Medical Speech-Language Pathology by La Pointe, Ed. (copyright 2000). Reprinted with permission of Delmar Learning, a division of Thomson Learning: www.thomsonrights.com <<http://www.thomsonrights.com/>>. Fax 800 730-2215.

munication Disorders Following Right-Hemisphere Brain Damage) in developing evidence-based practice guidelines follows.

PROGRESS REPORT

Dysarthria Practice Guidelines

Writing Committee members include Kathryn M. Yorkston (chair), Kristie Spencer, David Beukelman, Joseph Duffy, Lee Ann Golper, Robert Miller, Edythe Strand, Marsha Sullivan, and Elizabeth Hanson (adjunct member).

The committee has taken a modular approach to practice guidelines development, with modules developed or in process of development in (1) Management of Velopharyngeal Function, (2) Medical Interventions for Spasmodic Dysphonia, (3) Evidence for the Behavioral Management of the Respiratory/Phonatory System, (4) Speech Supplementation Techniques for Dysarthria: A Systematic Review, and (5) Techniques for Improving Speech Intelligibility and Naturalness. A summary of progress, by guideline module, follows.

Module 1: Management of Velopharyngeal Function (Leaders: K. Yorkston and K. Spencer). This module draws from both the research literature and expert opinion and addresses the issues of management of velopharyngeal impairment in dysarthria. A search of electronic databases (PsychINFO, MEDLINE, and CINAHL) and hand searches of relevant edited books yielded 33 intervention studies in the categories of prosthetics, surgery, and exercise. A summary of quality of evidence is provided along with a clinical decision-making flowchart for the management of velopharyngeal impairment in both degenerative and stable/recovering dysarthria. Palatal lift intervention was found to be effective in selected individuals with dysarthria. The best candidates have a flaccid soft palate, pharyngeal wall movement, good oral articulation and respiratory support, and a stable disease course. Recommendations for future research are provided.

Module 2: Medical Interventions for Spasmodic Dysphonia (Leaders: J. Duffy and K. Yorkston). This systematic review of the literature addresses the medical management of spasmodic dysphonia (SD) and some related conditions. A search of electronic databases (PsychINFO, MEDLINE, and CINAHL) and hand searches of relevant edited books yielded 103 intervention studies in the categories of recurrent laryngeal nerve (RLN) sec-

tion (20 references.), the use of botulinum toxin (Botox) injections for the management of SD (58 references), and miscellaneous interventions (25 references). A review of this literature suggests that RLN section as a treatment for adductor SD results in a sizable degree of improvement for a substantial percentage of patients, but that recurrence of SD signs and symptoms is common. Botox injection also results in a sizable degree of improvement for a substantial percentage of patients. Benefits generally last for 3 to 4 months, when reinjection is required to maintain the effect. The side effects of a weak or breathy voice and mild dysphagia last for several weeks in many patients. The effectiveness of Botox injection for abductor SD is less pronounced and occurs in a smaller percentage of patients than adductor SD. Other surgical techniques may be of benefit when Botox injection is not successful or as an alternative to Botox injection, but evidence for their effectiveness currently is limited. Directions for future research are provided.

Module 3: Evidence for the Behavioral Management of the Respiratory/Phonatory System (Leaders: K. Spencer, K. Yorkston, and J. Duffy). This module reviews behavioral techniques for the management of respiratory/phonatory dysfunction in dysarthria. A search of electronic databases (PsychINFO, MEDLINE, and CINAHL) and hand searches of relevant edited books yielded 35 intervention studies in the categories of biofeedback, device utilization, the Lee Silverman Voice Treatment (LSVT), and several miscellaneous studies. A review of this literature suggests that biofeedback can be effective in changing physiologic variables. However, the relationship between changes in specific physiologic variables and speech production or communicative participation has yet to be clearly established. Conclusions about the effectiveness of devices are limited by the small number of subjects studied; however, they may improve the speech loudness and, in most cases, intelligibility of individuals with hypokinetic dysarthria who have not experienced success with behavioral intervention alone. LSVT has been systematically studied in a relatively large number of individuals with idiopathic Parkinson disease. There is strong evidence to suggest immediate post-treatment improvement; there is some evidence of long-term maintenance of effect, but the data are complicated by the expected neurologic deterioration in this population and by the small number of studies that report long-term follow-up. Directions for future research are provided.

A flowchart of behavioral management options for respiratory/phonatory dysfunction from dysarthria was developed. Three general areas of respiratory/phonatory dysfunction are identified to provide an organizing framework for a clinician's approach to respiratory/phonatory management. Those areas include (a) decreased respiratory support, (b) decreased respiratory/phonatory coordination and control, and (c) reduced phonatory function. Within each area, behavioral techniques are delineated in terms of the available support from the dysarthria literature. Support for a particular treatment may stem from evidence-based intervention research or expert opinion. Behavioral techniques lacking support also are highlighted, as are areas in particular need of treatment efficacy research.

Module 4: Speech Supplementation Techniques for Dysarthria: A Systematic Review (Leaders: K. Yorkston, E. Hanson, and D. Beukelman). The review addresses a set of studies where dysarthric speech is supplemented by a variety of cues in order to increase speech intelligibility. Speech supplementation is a group of several different strategies that augment the speaker's natural speech by providing additional contextual information to convey the spoken message. It offers additional information, independent of the speech signal, to supplement the highly distorted acoustic signal associated with severe dysarthria. Three general types of speech supplementation are represented in this review: alphabet supplementation, semantic or syntactic supplementation, and illustrative gestures. A total of 19 studies were identified, obtained, and rated. A summary of this review is currently being prepared. Products in preparation include (a) a technical report, which will be ready for review in the Spring of 2003; (b) a proposal for a 2-hour seminar, which will be submitted to the ASHA convention; and (c) a clinical focus article, which will be prepared following the expert review of the technical report.

Module 5: Techniques for Improving Speech Intelligibility and Naturalness (Leaders: K. Yorkston et al.). The review of literature for this module will begin during the Summer of 2003. This review will be following by a Technical Report and a clinically focused article.

Acquired Apraxia of Speech Practice Guidelines

Writing Committee members include Julie Wambaugh (chair), Joseph Duffy, Malcolm McNeil, Margaret Rogers, and Donald Robin.

The Writing Committee for the Treatment Guidelines for Apraxia of Speech (AOS) began its efforts in December 2001. In its first year of work, the Committee completed literature searches, specified conditions for inclusion of published evidence to serve as a foundation for developing the guidelines, established criteria to rate the evidence, and completed the ratings of the identified publications.

As one of its initial steps, the Committee conducted data-based literature searches and gray areas searches and identified 73 publications relevant to the treatment of AOS. Those publications were then evaluated in terms of the following inclusion criteria: (a) that a treatment was applied that was intended to impact AOS or its effects, (b) that data concerning the results of treatment were reported for at least one individual, and (c) that minimal evidence supporting a correct diagnosis of AOS was presented. A total of 61 publications met all inclusion criteria.

The Committee developed operational definitions for rating and/or describing 32 aspects of the publications. Those aspects included design and experimental control issues, reliability and replication concerns, types of measurements, and subject description, including adequacy of diagnosis. The aspects selected for rating/description were based loosely on the evidence table developed by the Writing Committee for Dysarthria (Yorkston, Spencer, Beukelman et al., 2001). However, for the AOS ratings, considerable emphasis was placed on describing the level of evidence supporting an accurate diagnosis of AOS. To provide a rating of the AOS diagnosis, the Committee identified clinical characteristics that were considered to be necessary for a correct diagnosis (e.g., slow speech rate, speech sound distortions). Additionally, the Committee specified clinical characteristics that were thought to be nondiscriminative in terms of differential diagnosis (e.g., articulatory groping) and inappropriate for diagnosis (e.g., anticipatory sound errors). The Committee then defined levels of description to indicate the degree to which the subject(s)' speech characteristics were consistent with the required clinical characteristics.

Committee members independently rated and/or described randomly assigned publications according to the operational definitions. Each member's ratings/descriptions were verified prior to inclusion in the evidence table.

Overall, the evidence supporting various approaches to the treatment of AOS appeared to be meager and rather weak. Specifically, approximate-

ly half of the published investigations described case studies. Of the experimental studies, the majority were single-case investigations with replications being limited. The ratings of the diagnosis of AOS revealed that, for many reports, the raters were not confident that the subjects had been accurately diagnosed.

The types of treatments most commonly reported were classified as articulatory-kinematic in nature. Smaller percentages of the treatments fell into the classifications of rate and/or rhythm control and alternative/augmentative strategies. Although most of the treatments were reported to have positive results, few follow-up investigations were conducted to replicate findings and further examine treatment effects. Across all of the reports, most of the subjects were described as having severe AOS, and virtually all had coexisting aphasia.

The Committee's examination of the body of AOS treatment literature revealed that the state of the objective evidence is consistent with a developing technology of treatment for a relatively new clinical entity. That is, preliminary supportive evidence is available, but much more research is needed. The technical report summarizing the ratings and descriptions of the evidence is expected to be ready for expert review by May 2003.

Aphasia Practice Guidelines

Writing Committee members include Pelagie Beeson (chair), Randall Robey, Nancy Helm-Estabrooks, Audrey Holland, Alex Johnson, and Leslie Gonzalez Rothi.

The Aphasia Practice Guidelines Committee has been developing evidence tables that provide a comprehensive review of the aphasia treatment literature that includes a quantitative index of the level of evidence. To do so, over 700 articles have been reviewed to discern whether the scientific rigor and available information are adequate to allow for the calculation of a treatment effect value. Both group designs and single subject studies are being reviewed under the direction of Randall Robey using well-established criteria. The group treatment studies include within-group designs (e.g., pretreatment performance compared to posttreatment performance) and between-group designs (e.g., two or more treatments compared). Effect sizes are calculated to provide an index of the observed departure from the null hypothesis (i.e., no treatment effect). For group studies, the d statistic is being calculated, whereas the f statistic is being calculated

ed for single subject studies. These statistics essentially offer a standard score that allows for the comparison of treatment outcomes across studies (i.e., no effect, small, medium, and large effects). The Practice Guidelines document will rely on the information provided from this review, as well as meta-analyses of the average effect size for treatments. Specific attention will be given to treatment domains, such as lexical retrieval, speech production, auditory comprehension, syntax, reading, and writing, as well as computer-assisted treatments.

Dementia Practice Guidelines

Writing Committee members include Kathryn Bayles (chair), Cheryl Tomoeda, Esther Kim, Tammy Hopper, Stuart Cleary, Nidhi Mahendra, Audetter Rackley, Jennifer Zeintz, Sandy Bond Chapman, Tamiko Azuma, and Patrick McKnight.

The guidelines development process is focused in managing individuals with Alzheimer's dementia. At the first committee meeting, the scope of the enterprise, definition of terms, identification of key clinical questions, and specification of criteria for evaluating the literature were established.

Crucial Decisions

Dementia is a syndrome associated with many causes, the most common of which is Alzheimer's disease. The first decision made by the committee was to begin by focusing on the management of individuals with Alzheimer's dementia (AD). Five primary questions were identified as salient to clinicians:

1. What is the role of the speech-language pathologist?
2. What is the best method for screening for the cognitive-linguistic problems associated with AD?
3. What should be the form of the comprehensive evaluation?
4. What direct interventions have value? and
5. What indirect interventions have value?

Committee members were divided into five groups, each of which took responsibility for reviewing the literature on one of these questions.

Searching the Literature

A literature search has been completed on all five questions, and the following data bases have been accessed: MEDLINE, PsychINFO, CINHL, EBH

Reviews, HealthSTAR, ACP Journal Club, AMED, Academic Search Elite, Cochrane Database of Systematic Reviews, and the Database of Abstracts of Reviews of Effectiveness. Approximately 20,000 articles have been screened and a database created in which information about articles is entered after their review.

Reviewing the Literature Related to Interventions

All relevant articles have been reviewed independently by at least two committee members according to previously established markers of internal validity, external validity, construct validity, dose-response data, and characteristics of subjects. Related to internal validity, judgments were made about the type of research design, presence of randomization, presence of missing data, and the treatment of missing data. Related to external validity, judgments were made about treatment fidelity, sample generalizability, whether there was sufficient information for replication, and causal generalizability. Dose-response was evaluated in terms of amount of treatment, its frequency, and its duration. To judge construct validity, outcome measures were evaluated and note taken of whether there was pretesting, midway testing, posttesting, and follow-up testing. Ultimately the phase and class of the research were specified for every article. This key information about validity and dose-response data were entered into an evidence table along with information about subject characteristics and whether the authors had taken into account the ethnicity of subjects or diversity issues in terms of study design.

Reviewing the Literature Related to Testing

Many tests have been used with individuals with AD for a variety of purposes (diagnosis, staging dementia severity, as outcome measures for treatment studies). Members of the testing subcommittee have reviewed approximately 18,000 articles and sorted them by type of test. They are beginning their review by considering tests that would be administered by a speech-language pathologist to a patient. Tests routinely given by psychologists (e.g., Wechsler Adult Intelligence Scale [WAIS]; Wechsler Memory Scale-Revised [WMS-R]), and rating scales were not included in their first review. Approximately 25 tests meet these criteria.

The literature related to these 25 instruments are being reviewed by at least two subcommittee members in an independent fashion. Judgments are made about the intended use of the test (to classify or measure) and what the test is purported to measure (e.g., mental status, communicative function, verbal memory, etc.). The manuals for each test were studied and a record was kept of whether they included information about development of test items, whether the test is explicitly stated to be for dementia, whether performance of individuals with dementia is compared to that of other groups, presence of norms (central tendency and variance by group), if and when the test should be re-administered and how frequently. Additionally, judgments were made about the tests' validity including face, concurrent, convergent, discriminant, predictive, and overall construct. Information is kept about the test's reliability, specifically test-retest consistency, internal consistency, interrater reliability, comparability of multiple forms, and measurement error. When the test has subtests, evaluation is made of how they relate to each other. When the test is a screening measure, evaluation is made of the test's sensitivity and specificity and positive and negative predictive value.

Calibration of Committee Members

A second face-to-face committee meeting was held for discussion of issues related to evaluating the literature. The form of the evidence tables was revised, and emergent problems related to the database were resolved. A template for writing the technical reports on the aforementioned primary questions was discussed and agreed on. The various subcommittees set as their goal a draft of at least one technical report by mid-Fall. Some committees were able to meet this deadline, for others the amount of literature to screen (sometimes in excess of 10,000 articles) was sufficiently large that the deadline was unrealistic.

Drafts of Technical Reports

Many technical reports ultimately will be drafted, more than the number of aforesaid questions. For example, there will be one for every direct intervention and every indirect intervention. Likely, there will be several related to tests for screening and comprehensive evaluation. At the time of this writing, a draft has been created and reviewed within the writing committee for value of cognitive

stimulation programs, use of memory wallets/books, and validation therapy.

These drafts have been submitted to the oversight committee for peer review. When peer review is completed, the suggestions of the reviewers will be discussed by committee members and accommodated. At that point, the technical report will be put online together with its associated evidence table. Further, its substance will form the basis for a clinical article that will be written by committee members.

Timeline

Because of the breadth of the enterprise of developing guidelines for managing AD, Committee members expect to be working on the project for the foreseeable future. It is the intention of the Committee to steadily produce the drafts for review and transform the technical reports to clinical articles as they are reviewed.

Cognitive-Communication Disorders After Traumatic Brain Injury Practice Guidelines

Committee members include Mary Kennedy (chair), Jack Avery, Carl Coelho, McKay Sohlberg, Lyn Turkstra, and Mark Ylvisaker.

The initial task of this committee was to adopt definitions of traumatic brain injury (TBI) and cognitive-communication disorders (CCDs). A TBI was defined as a “nonprogressive, acquired traumatic injury to the brain including specific regions” (Kennedy et al., 2002, p. x). CCDs are common consequences following TBI and were defined as the disruption of “underlying cognitive processes (e.g., attention, memory, self-monitoring, executive function) as they interact and are manifested in communication behavior, broadly understood (listening, reading, writing speaking, gesturing), and at all levels of language (phonological, morphologic, syntactic, semantic, pragmatic)” (Kennedy et al., 2002, p. x). The scope of cognitive-communication rehabilitation (CCR) includes formal and informal assessment of cognition and communication, as well as various approaches to treatment intervention (e.g., behavioral, compensatory, skill training, process-specific).

The intent of this project is to provide SLPs with clinically relevant evidence that could assist them in everyday clinical decisions for individual clients across the lifespan (Ylvisaker et al., 2002). Similar to the Dysarthria practice guidelines project, this committee approaches the review of evidence in a modular manner, which reflects the current state of

the intervention research literature. Progress for each module is summarized below.

Module 1: Assessment of Cognitive-Communication Disorders (Leaders: L. Turkstra, M. Ylvisaker, and C. Coelho). Several sources were accessed to gather relevant assessment information: an electronic survey of the current tools SLPs use, test publishers and distributors, the published research literature, test manuals and protocols, and published expert opinion. Thirty SLPs, 4 test publishers, and 5 test distributors identified approximately 62 tests. The reliability and validity of tests are under review. A technical report is currently under construction.

Module 2: Direct Attention Training (DAT) (Leaders: M. Sohlberg and J. Avery). This module includes studies that evaluated intervention effects of attention training. An electronic search of PsychINFO, MEDLINE, CINAHL, Eric, and PubMed yielded 9 class I and class II studies. Evidence tables were created and clinical recommendations in the form of practice guidelines summarized the evidence using a key questions approach: Who is a candidate for DAT? What are the critical features of DAT? What outcomes can be expected? Are there methodological issues? (Sohlberg et al., 2003).

Module 3: Intervention for Metacognitive and Executive Dysfunction (Leaders: M. Kennedy and C. Coelho). This module examines intervention studies that addressed awareness of deficits, self-regulation of behavior and/or memory (i.e., self-monitoring, strategy decisions and strategy use), and problem solving. A search of electronic databases (PsychINFO, MEDLINE, CINAHL, Eric, and PubMed) yielded 26 studies classified as I, II, and III. Tables of evidence and the technical report are under construction.

Module 4: Managing Memory Disorders (Leaders: M. Kennedy, M. Sohlberg, and J. Avery). This module will review intervention studies for memory impairments. A review of the research literature is underway.

Module 5: Intervention for Social Skills and Behavior (M. Ylvisaker and L. Turkstra). This module will review management studies that address social communication skills or pragmatics, and behavioral issues. A review of the literature is underway.

CONCLUSIONS

The work of the ANCDS Ad Hoc Practice Guidelines Coordinating Committee and its Writing Committees continues to proceed forward and in-

crementally toward shifting the “bell curve” of quality of care to the right for neurologically impaired populations. The current 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 provides compelling reasons for the development of evidence-based practice guidelines. Most important, their routine and accurate application by practitioners provides perhaps the best answers to the pressing questions being asked internally by scientifically based professions and externally by consumers, payers, and policymakers (Frattali & Golper, in press).

The ANCDs project is but one example that supports a scientifically oriented approach to clinical management. As global models of care rely heavily on robust outcomes and efficacy data to drive service delivery patterns, practitioners are best advised to allow evidence-based practice guidelines to drive the state of their clinical art.

Address correspondence to Carol Frattali, Ph.D., BC-NCD, Research Speech-Language Pathologist, Rehabilitation Medicine Department, W.G. Magnuson Clinical Center, National Institutes of Health, Bldg. 10, Rm. 6S 235, MSC 1604 Bethesda, MD 20892-1604 USA.
e-mail: carol_frattali@nih.gov

BIBLIOGRAPHY

- Duffy, J. R., & Yorkston, K. M. (in press). Medical interventions for spasmodic dysphonia and some related conditions: A systematic review. *Journal of Medical Speech-Language Pathology*.
- Duffy, J. R., Yorkston, K. M., Beukelman, D. R., Golper, L. A., Miller, R. M., Spencer, K. A., Strand, E. A., & Sullivan, M. (2001). *Medical interventions for spasmodic dysphonia and some related conditions: A systematic review* (Technical Report 2). Minneapolis, MN: Academy of Neurologic Communication Disorders and Sciences.
- Frattali, C., & Golper, L. (in press). Evidence-based practice and outcomes-oriented approaches in speech-language pathology. In A. Johnson & B. Jacobson (Eds.), *Handbook of Medical Speech-Language Pathology* (2nd ed.). New York: Thieme.
- Golper L., Wertz, R. T., Frattali, C., Yorkston, K., Myers, P., Katz, R., Beeson, P., Kennedy, M. T., Bayles, K., & Wambaugh, J. (2001, September). *Evidence-based practice guidelines for the management of neurogenic communication disorders: An introduction*. [Online]. Available: <http://www.duq.edu/ancds>.
- Golper, L. (2001). ANCDs Practice Guidelines Coordinating Committee Report: Proceedings of the Academy of Neurologic Communication Disorders and Sciences. *Journal of Medical Speech-Language Pathology*, 9(4), ix–x.
- Kennedy, M. R. T. (Ed.). (2002, October). Cognitive-communication treatment after traumatic brain injury. *Perspectives: Special Interest Division 2 Newsletter*. Neurophysiology and Neurogenic Speech and Language Disorders. Volume 12(3).
- Kennedy, M. R., Avery, J., Coelho, C., Sohlberg, M., Turkstra, L., & Ylvisaker, M. (2002). Evidence-based practice guidelines for cognitive-communication disorders after traumatic brain injury: Initial committee report. *Journal of Medical Speech-Language Pathology*, 10(2), ix–xiii.
- Sohlberg, M. M., Avery, J., Kennedy, M. R. T., Ylvisaker, M., Coelho, C., Turkstra, L., & Yorkston, K. (2003). Practice guidelines for direct attention training. *Journal of Medical Speech-Language Pathology*, 11(3), xix–xxxix.
- Spencer, K. A., & Yorkston, K. M. (2002). Evidence for the treatment of respiratory/phonatory dysfunction from dysarthria. *Neurophysiology and Neurogenic Speech and Language Disorders*, 12(4), 4–16.
- Spencer, K. A., Yorkston, K. M., & Duffy, J. R. (2003). Behavioral management of respiratory/phonatory dysfunction from dysarthria: A flowchart for guidance in clinical decision-making. *Journal of Medical Speech-Language Pathology*, 11(2), xxxix–lxi.
- Spencer, K. A., Yorkston, K. M., Beukelman, D. R., Duffy, J., Golper, L. A., Miller, R. M., Strand, E. A., & Sullivan, M. (2002, October). *Practice guidelines for dysarthria: Evidence for the behavioral management of the respiratory/phonatory system* (Technical Report 3). Academy of Neurologic Communication Disorders and Sciences. Retrieved, from the World Wide Web: <http://www.ancds.duq.edu/guidelines.html>
- Ylvisaker, M., Coelho, C., Kennedy, M., Sohlberg, M., Turkstra, L., Avery, J., & Yorkston, K. (2002). Reflections on evidence-based practice and rational clinical decision making. *Journal of Medical Speech-Language Pathology*, 10(3), xxv–xxxiii.
- Yorkston, K. M., Spencer, K. A., Beukelman, D. R., Duffy, J., Golper, L. A., Miller, R. M., Strand, E. A., & Sullivan, M. (2001, April). *Practice guidelines for dysarthria: Evidence for the effectiveness of management of velopharyngeal function* (Technical Report 1). Academy of Neurologic Communication Disorders and Sciences. Retrieved from the World Wide Web: <http://www.ancds.duq.edu/guidelines.html>
- Yorkston, K. M., Spencer, K. A., & Duffy, J. R. (2003). Behavioral management of respiratory/phonatory dysfunction from dysarthria: A systematic review of the evidence. *Journal of Medical Speech-Language Pathology*, 11(2), xiii–xxxviii.
- Yorkston, K. M., Spencer, K. A., Duffy, J. R., Beukelman, D. R., Golper, L. A., Miller, R. M., Strand, E. A., & Sullivan, M. (2001). Evidence-based practice guidelines for dysarthria: Management of velopharyngeal function. *Journal of Medical Speech-Language Pathology*, 9(4), 257–273.

