Issue Editors' Note: The authors for the series of papers in 2006 Perspectives Issues 3 and 4 were given discretion in the manner in which they addressed the topic. Dr. Buzolich has selected the approach of adding detail to the clinical description and illustrating clinical problem solving through discussion of a model assessment and its application under a set of specific clinical assumptions. The same level of detail is not present in all papers.

Augmentative and Alternative Communication (AAC) Assessment: Adult Aphasia

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Individuals who sustain a CVA may have multiple problems, including dysarthria, apraxia of speech, aphasia, or dysphagia. Traditional speech-language pathology treatment can improve speech, language, and communicative functioning for clients with mild-moderate aphasia. However, for those clients who have more severe impairments, alternative intervention (AAC) must be considered (Fox & Fried-Oken, 1996). Table 1 lists several communication problems for which a client may require AAC in the form of a Speech Generating Device (SGD). The table includes the ICD-9 diagnosis code for each of the qualifying conditions, definitions, associated medical diagnosis, speech and language characteristics, differential diagnosis, and SGD implications.

Contemporary treatments for severe aphasia address functionality of communication, as opposed to remediating deficits and relearning skills in a clinical context. Functional approaches to aphasia treatment (Aten, 1986; Davis & Wilcox, 1985; Kagan et al., 2004) focus on developing multiple communication modalities (unaided and aided), training partners to recognize and validate multi-modality communication behavior, and providing treatment in the natural setting. In order to develop a functional communication intervention for individuals with aphasia, it is necessary to conduct a comprehensive assessment, including a needs assessment, in natural contexts (Garrett & Lasker, 2005). The comprehensive assessment may include a variety of formal language tests, functional informal communication measures, and direct observation of the client and partners in the natural setting (Aten). The consensus in the literature is to use an ecological approach to evaluation and treatment when serving adults with severe aphasia who may require AAC (Fox & Fried-Oken, 1996).

In November 2000, Medicare issued a National Coverage Decision for Speech Generating Devices, effective January 2001, and a Regional Medical Review policy for evaluations conducted by state licensed and ASHA certified speech-language pathologists. This assessment protocol and guidelines set the standard for all state, Medicare, and private health plans to follow. Prior to 2001, there was no established format in augmentative / alternative communication evaluations. The evidence-based practitioner (Schlosser, 2000) sought to apply best practices in AAC evaluation based on the available literature in the field. The current challenge for speech-language pathologists is to use AAC evaluation processes that are based on research and clinical educational expertise, and that report results in a standard format that obliges the funding policies for public and private payers. This is necessary for ensuring the provision of speech-language pathology services (assessment and intervention) and equipment (speech-generating devices). The SGD may represent only a part of the solution for an individual with severe aphasia. The speech-language pathologist must nonetheless build a strong case for funding the device before an intervention plan that addresses multiple communication systems and strategies can be put in place.

The evaluation report must address all seven of Medicare's device coverage criteria (see Table 2 on page 5) in order to qualify a client for a speech-generating device. Of the seven criteria, the least understood is the comprehensive evaluation. Since 2001, speech-language pathologists have often focused on completing a report formatted in accordance with Regional Medical Review Guidelines and procuring devices through public or private medical insurance, rather than on conducting an assessment that is model-driven and client-specific. The goal of this paper is to describe a model for AAC assessment that is guided by research and clinical evidence and that is effective and efficient for the adult with severe aphasia. The model will be illustrated through the case of TW (see Figure 1 in Avent & Patterson, this issue, for a description of the client).

The Case of TW

TW is a 67-year-old woman who was referred for a comprehensive Augmentative / Alterative Communication Evaluation by her primary care physician due to her inability to use speech following a left cerebral vascular accident (CVA). Demographic information, such as the client's name, address, birth-date, insurance identification information, and ICD-9 Medical Diagnosis

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Table 1. Common diagnoses and functional needs and SGD implications for impairments necessitating an SGD

Diagnosis and ICD9-Code	Common Medical Diagnoses	Functional Needs and SGD Implications
Dysarthria ICD-9 784.5	Amyotrophic lateral sclerosis, multiple sclerosis Guillian-Barre syndrome Parkinson's disease, Wilson's disease Progressive supranuclear palsy Huntington's disease Myasthenia Gravis Friedreich's ataxia Stroke (CVA) Traumatic brain injury, cerebral palsy Moebius syndrome, encephalitis	Intelligible speech output Communicate complex language intelligibly in multiple settings with a variety of partners Determined based on needs and abilities
Apraxia ICD-9 784.69	Stroke Traumatic brain injury, Parkinson's disease	Support language generation in the presence of other expressive problems Communicate with care provider and family Communicate medical and physical needs Device features: • word and grammatical prediction • core vocabulary • clear display • scaffold for language
Aphonia ICD-9 784.41	Locked-in syndrome Traumatic brain injury Ventilator dependent Laryngectomy Myasthenia gravis Parkinson's disease Multiple sclerosis Neurogenic voice disorder Spastic dysphonia	Functional communication to meet basic medical and physical needs Specific to medical facility
Aphasia ICD-9 784.3	Stroke Traumatic brain injury CNS infection or disease	Communicate functional needs Engage in social exchanges Communicate with medical professionals and care providers Communicate on the phone

Table 2. Medicare device coverage criteria

A comprehensive evaluation was conducted by a licensed speech-language pathologist.
The client has a medical diagnosis resulting in a severe motor speech or expressive language impairment.
The client cannot use speech to meet daily communication needs.
Other treatments have been ruled out.
Given the severity of the speech impairment, the client will benefit from the recommended SGD.
The speech-language pathologists' report was sent to the physician (and a prescription was obtained).
The speech-language pathologist is not an employee of and has no financial relationship to the supplier of the SGD.

Note: Based on Regional Medical Review Policy for Speech Generating Devices (2001). Retrieved August 6, 2006 from http://www.aac-rerc.com/pages/medicare/RMRP.htm.

Adult Aphasia
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codes (primary and secondary) was obtained on intake. TW has Medicare (Part B) as her primary insurance and MediCal as her secondary insurance. As part of the referral process, a treatment authorization request for an Evaluation for a Speech Generating Device (CPT Procedure Code 92607 & 92608) was submitted to MediCal for prior authorization and approved for up to 10 visits.

Evaluation visits were all conducted in the home, where the client lives with her daughter, son-in-law, and three young grandchildren. Providing the evaluation sessions in the natural environment is consistent with the functional communication treatment approach (Aten, 1986) and allows the evaluator to conduct the needs assessment and determine what communication systems and strategies will be most effective for TW in her environment and with her specific communication partners.

Current Communication Impairment

At the time of referral, TW had a diagnosis of left CVA (ICD-9 436), dysphagia (ICD-9 787.2), aphasia (ICD-9 784.3), and a possible motor speech disorder, and relied entirely on gestures for communication. Additional diagnostic measures were necessary to definitively diagnose the nature and severity of the speech and language problems, which is required in a medically based evaluation for a speech-generating device. An oral motor examination was conducted and the patient had intact structure, but impaired function. TW had difficulty handling secretions and had a history of impaired swallowing. She was on a soft diet and drank only thickened liquids. Oral motor movement was limited, slow, and lacked coordination. She attempted imitation of non-speech and speech sounds, but had limited control and mobility, with obvious oral motor weakness, especially on the right side. TW had difficulty phonating on command, due to poor respiratory control for speech. Vocal quality was guttural and wet. On the basis of the oral motor evaluation, it was determined that the patient had a severe dysarthria (ICD-9 894.5) in addition to aphasia. There was no evidence of articulatory groping, dysfluencies, or inconsistent productions characteristic of apraxia.

In order to further evaluate the severity of the client's aphasia, the Communicative Abilities of Daily Living-Second Edition (CADL-2; Holland, Frattali, & Fromm, 1999) was administered. Adults with aphasia are often able to demonstrate their skills on this measure, as well as experience some of the challenges they face communicating in daily activities. TW earned a raw score of 73, a percentile of 45 and a stanine score of 5, placing her in the moderate range of impairment. She used pointing and gestures to convey information. She had essentially no verbal output during testing and had difficulty with reading and spelling. TW has moderate receptive/expressive aphasia and a severe dysarthria rendering speech nonfunctional. The nature and severity of TW's impairments are such that she is not likely to benefit from traditional speech and language therapy and requires augmentative/alternative communication (including a Speech Generating Device) to meet daily communication needs.

Comprehensive Assessment

Several areas must be included in a comprehensive evaluation. The sections below describe those areas and information that must be obtained to contribute to a decision regarding the need for an SGD.

Sensory status. The comprehensive AAC evaluation begins with gathering information regarding the client's sensory status. TW reportedly failed a hearing screening at 25 dB and was referred for an audiological evaluation. The AAC evaluation continued, however, as TW responded appropriately to speech at conversational levels, suggesting that she possesses adequate hearing to effectively use an SGD to communicate functionally.

Visual status was assessed using a variety of displays (8.5" by 11.5") varying in symbol type, size, and number. Figure 1 presents an example of the main page display

Figure 1. Items displayed on the Main Page for TW—Sample

prepared for TW. In the actual display, the top line of the display indicates communication control mechanisms (e.g., initiate, politeness markers) and the symbols have a red background. The next three rows contain content category information (e.g., medical information and family) and the symbols have a blue background. The bottom row contains keyboard control mechanisms (e.g., go back, something is wrong) and the symbols in this row have a yellow background. TW was asked to identify named symbols or characters by pointing with her left nondominant index finger. TW wore reading glasses. While her vision was sufficient to locate and select 1.25" characters, she preferred a display with larger (1.5"-2") symbols and a display size of no more than sixteen. For text reading, TW required a large font size (18-24 pt) and a limited amount of text per page (one phrase or sentence at a time). TW demonstrated right visual field neglect, which was associated with her left CVA, therefore visual materials must be positioned at midline and to her left.

Motor abilities. It is necessary for the speech-language pathologist to determine, on intake, the method by which a client may access an aided communication system. Typically, this is accomplished by using equipment specifically designed to evaluate access. For example, an evaluator's tool kit for an adult with aphasia may include a laptop or touch screen computer with expanded keyboards, key guards, trackballs, and mouse emulation devices. These tools are versatile enough to help define the specific access needs of the client.

It is also important to evaluate motor abilities for success in using a gestural system. For example, in the case of TW, her hemiplegia limits gestures to one-handed conventional, representational, or referential gestures, which rules out signing as a viable alternative. TW is right hand dominant, but was able to use her left, non-dominant hand for direct selection purposes. She accessed keys on a keyboard with one hand and used a standard mouse and track pad with her left hand. She was also able to activate a touch sensitive keyboard or screen with her left index finger.

TW was ambulatory, but used a cane when she walked outside her home. While she was premorbidly very active, since her CVA, she rarely ventures outside the home. TW's hemiplegia and use of a cane lead to

Table 3. Severity of impairment

Severity Type	Description
Mild Impairment	Problem is present less than 25% of the time.
Moderate Impairment	Problem is present less than 50% of the time and is interfering in the person's day-to-day life.
Severe Impairment	Problem is present more than 50% of the time and is disrupting the person's day-to-day life.
Complete Impairment	Problem is present more than 95% of the time and is totally disrupting the person's day-to-day life.

Note: Adapted from the World Health Organization International Classification of Functioning, Disability, and Health (World Health Organization, 2001).

Table 4. Functional communication goals: Short-term

Client and family member(s) will demonstrate basic maintenance and operation of SGD (e.g., adjusting volume & display, charging procedure) with 100% accuracy.
Client will demonstrate the ability to access the vocabulary and navigate custom displays with 90% accuracy.
Client will demonstrate the ability to encode words and simple phrases using her keyboard page with word prediction with 80% accuracy.

Table 5. Functional communication goals: Long-term

Client will use her SGD to engage in social communication exchanges with family (daughter, son-in-law, grandchildren) and friends at home at least three times daily.
Client will use her SGD to communicate basic physical needs and emotional status when opportunities arise 80% of the time.
Client will use her SGD to use the phone for medical, household maintenance, and social interactions with family members independently 80% of the time.
Client will be able to give identifying information using her SGD in any potential emergency or medical situation with 95% accuracy (name, address, phone number, emergency contact name, pertinent medical information).

the conclusion that she would not be able to safely carry a speech-generating device while ambulating, unless the device was very small. However, TW's visual needs require a larger display with small field of larger (2") symbols / characters, which rules out any small handheld device or device that TW would wear / carry on her body.

Speech and language abilities. The medically based AAC evaluation requires a comprehensive assessment of speech, language, and communication. Consistent with functional communication treatment, the evaluator is concerned with measuring and reporting what the client is able to do independently, using speech, and what the client cannot do unless using a speech generating device. Using this information, the evaluator assigns a severity rating based on the loss of functionality. A commonly used severity scale is displayed in Table 3 and is based on the World Health Organization International Classification of Functioning, Disability, and Health (ICF; World Health Organization, 2001). The ICF relates to impairments in body functions, structures, activity limitations, participation restrictions, and environmental factors that have an influence. It is a useful reference in describing the functional impact of language impairment. This severity rating scale also compliments the functional communication treatment approach. The development of functional communication goals in the evaluation report should address the activity and participation limitations associated with the client's speech and language impairments. The expectation is that when a client uses an SGD, it will serve to compensate for the structural and functional impairments in speech and language, and help overcome activity and participation barriers.

Prior to determining the need for a specific SGD, and in order to evaluate how a client may communicate with aided means, the evaluator must arrive at the evaluation sessions equipped with manual communication board displays, a laptop computer with dynamic screen communication software, word prediction software, and text to speech word processing software. These programs serve as "standard solutions" for adults with aphasia and can be customized to the needs of clients, who range from Transitional Communicators to Generative Message Communicators (Beukelman & Mirenda, 2005). This method of evaluation is preferable over using speech-generating devices directly to evaluate a client, as the protocol for determining the need for speech-generating devices requires that the comprehensive assessment and needs assessment be conducted before introducing devices for clinical trial purposes.

Language comprehension and production must be determined in a comprehensive evaluation. TW communicated primarily through gesture (pointing and conventional gestures, such as "Bye," "Come here," "Go away"). She had virtually no speech, due primarily to her severe dysarthria and, secondarily, to her moderate aphasia and the functional impact of her multiple disabilities was severe and made assessing language comprehension difficult. TW was bilingual in Tagalog and English, and English was the primary language spoken in the home. According to TW's daughter, speech and language problems were of equal severity in both languages. Using informal measures, it was determined that TW could follow simple directions and general conversation; read and comprehend words, phrases, and simple sentences; express needs explicitly using aided means; generate messages using graphic symbols combined with text; and formulate a few words using text with word prediction.

The speech-language pathologist who treated TW in the skilled nursing home developed a manual communication board for her. The manual board included the following items: drink, food, nausea, pills, toilet, glasses, tissue, pillow, cane, phone, TV, pen, and paper. TW had adequate mobility to retrieve any items she needed and therefore did not need to use the manual board. What she was not able to do was communicate with her family members about important matters related to her physical and emotional well being, as well as theirs. During the comprehensive evaluation, TW was very specific about what her expressive language needs were and what would best meet these needs. She selected graphic symbols and text to initiate, ask, answer, comment, and terminate conversations with her daughter, son-in-law, and grandchildren. She produced some messages using an ABC keyboard (with auditory preview for each letter) and word prediction menus that made it easy for her to recognize the words she was trying to spell. The combination of prestored words, phrases, and messages using graphic symbols, text, and spelling (with prediction and auditory feedback) served as language scaffolds and were successful strategies for TW to generate language. While TW's receptive language skills were impaired, she was able to process conversational speech if it was presented at a slow pace. She benefited from partners who adjusted the pace, spoke slowly, and provided gestural cues and visual supports. TW demonstrated that her comprehension was significantly enhanced when these accommodations were made for her.

Cognitive abilities. TW was college educated and employed full time as a nurse prior to her stroke. She was a hardworking woman who was devoted to her family. She was most comfortable in the role of caretaker and was having difficulty adjusting to the loss of her independence and control that accompanied her inability to speak. TW reportedly had a good memory and was receptive to

learning. She was alert—oriented to person, place, and time. She demonstrated the cognitive abilities necessary to use a speech-generating device to communicate and achieve functional communication goals.

Daily Communication Needs

This section of the report is also commonly referred to as the Needs Assessment and can easily be conducted through client and family member interviews. The evaluator gathers information to determine the client's specific functional communication needs with different partners, in various contexts (home, work, community) and in a variety of interactive settings. Light (1988) suggested that interaction might serve the purpose of conveying wants and needs, establishing and maintaining social closeness, relaying information, or participating in social etiquette. The very nature of a needs assessment requires that the evaluator examine participation, opportunity, and access barriers in the natural environment (Beukelman & Mirenda, 2005) and determine systems and strategies to enhance the ability of an adult with aphasia to actively participate in life activities.

An important issue to address in this section is whether or not an individual's communication needs are being met with speech and / or other aided systems (low technology or an existing high technology system). If not, the evaluator must specify how an SGD that is within the capabilities of the user can overcome barriers imposed by the environment and / or partners.

Social needs. TW was previously employed full time and is now living with her daughter, son-in-law, and grandchildren. TW has six children living in the Philippines. They call frequently, and she is frustrated at not being able to speak with them. She is also concerned about being a burden on her daughter and would very much like to be able to help take care of the grandchildren. However, without a means for communication, she is limited in what she can do to help. Not being able to communicate with the people she loves and cares about, and being confined to her home, contributed to TW's feelings of isolation and depression.

Home maintenance and personal care. TW is responsible for some of her personal care. She keeps track of her daily medicines and lets her daughter know when refills are needed. She expressed a desire to participate in family decision-making, particularly regarding her care and living situation. TW needs a means to express her personal wishes, participate in home decisions, and express her needs when she requires assistance from others.

Interaction with medical personnel. TW cannot effectively interact with medical personnel to report on her medical status, make inquiries, and take part in treatment decisions. She is unable to make phone calls regarding medical concerns or to report an emergency.

Current communication limitations and specific impact. TW has a severely reduced ability to interact socially in face-to-face interactions with family and friends. She has a reduced ability to direct caregivers and medical professionals and participate in medical care decisions. She has also lost the ability to use the telephone, which isolates her from her family in the Philippines. She spends a great deal of time in the home without social interactions and is consequently depressed.

Use of SGD and Non-SGD Treatment

Best practices in treatment for adults with severe aphasia require multi-modal communication (aided and unaided). For the purposes of procuring funding for an SGD, the relative importance of low technology communication systems must be minimized. The speech-language pathologist must clearly establish a need for a speech-generating device by reporting the limitations of non-technology methods.

Although there is a requirement to emphasize the value of the SGD, there is overwhelming clinical and research evidence to support the use of multiple systems and strategies to meet the full range of the client's needs. This includes maximizing the use of gesture and any other nonverbal or vocal communication behavior. In addition, manual communication displays, remnant and pictographic books (Ho, Weiss, Garrett, & Lloyd, 2005), written word choices (Beukelman & Mirenda, 2005), and light technology devices with single or multiple digitized message capability can all serve defined purposes in a given setting with an "audience" or partner in mind. Beukelman and Mirenda's Participation Model is the framework for developing intervention for individuals with severe aphasia. The speech-language pathologist determines what systems and strategies are required across contexts, settings, and partners to ensure that the client has access and opportunities to communicate and participate to the fullest extent possible.

In TW's case, an SGD was recommended in order to communicate prestored messages quickly and efficiently with voice output. An SGD was also necessary for use with the telephone to communicate with her family members in the Philippines and to arrange medical appointments, or pursue medical inquiries. In addition, it was a necessary safety measure, since TW was periodically home alone and needed to be able to make emergency phone calls.

Setting Functional Goals

Long-term and short-term functional goals and objectives that are medically necessary include (a) communicating basic physical, medical, and emotional needs; (b) interacting with family members and care pro-

viders; (c) engaging in social interaction with family members; and (d) using the telephone to call for emergency care, make appointments, or order food delivery. Anything that is directly related to the safety and well being of the client is medically necessary. The medical review guidelines require that both short-term and long-term goals be specified. Long-term and short-term goals and objectives developed for TW are displayed in Tables 4 and 5, respectively. In the area of AAC, the expectation is that the device can be customized at a level that is immediately functional for the client and enables immediate communication without a great deal of training. Intervention services for individuals with acquired neurological injuries are limited and must be prior authorized by a physician prescription. For Medicare, services which extend past 60 days post-evaluation require reauthorization (prescription) by a physician. After that, another prescription is required every 30 days. With private insurance, the authorization periods do not exceed 3-4 months post evaluation and are limited in terms of the number of visits permitted.

In the area of AAC, speech-language pathologists often do not have the option of long-term treatment for adults with severe aphasia. Given these constraints, speech-language pathologists must focus on functional communication in the natural environment, training partners to support the client, and customizing the systems for communication success. With a comprehensive assessment, the speech-language pathologist will determine exactly how to configure a communication system to support comprehension and expression.

Rationale for Device Selection

In this section of the evaluation report, the speech-language pathologist delineates the features and specifications that are necessary in an SGD in order to meet the needs and abilities of the individual. A rationale for feature selection must be provided, and a Medicare category code associated with an SGD type must be selected. This requires that the speech-language pathologist be familiar with the SGD product line and know the various features and their importance in system fitting. It is at this stage of the evaluation process that the candidacy model for AAC assessment is applied (Fox & Fried-Oken, 1996).

System features needed for TW. Graphic symbols and text are appropriate for TW. She is able to select from a field of up to 16 pictographic adult symbols and text. Each dynamic screen communication page must be designed with consistent layout, including links for initiating, terminating, conversational control, quick responses, and comments. There should also be access for keyboard, basic needs, and system control functions, such as clear display. The customized pages should permit topical interaction with family, friends, and community members (doctors, therapists), so that TW can access messages with the single activation of a key. Font size on the keyboard page and in the display window should be 18 pt. The keyboard page should be arranged in alphabetical order and provide auditory preview feedback for each letter / key selection.

TW requires rate enhancement techniques. Using text-to-speech is challenging for TW, however, with auditory preview of letters and words in the prediction menu, she has the appropriate supports (scaffolds) to generate language to a limited extent. The keyboard will be a supplement and provide her with a means to generate words and phrases that may not be preprogrammed in her custom pages. TW will have both instant message generation, which will allow her to access whole phrases for timely communication, and word prediction, which offers a list of words based on the previous letter or word encoded.

The display characteristics of TW's device must be of high contrast with good resolution. As noted during the evaluation, color-coding on the displays was helpful in supporting expressive language. TW preferred simpler layouts, which were highly consistent from one page to the other.

TW requires high quality synthesized and digitized voice output. The digitized feature will allow for custom pages in her native language (Tagalog) for phone conversations with family members in the Philippines. Device portability is not a primary concern for TW. Because she has difficulty ambulating, it is not realistic to expect her to carry her device. Also, her display needs require a larger screen and thus she requires a device which is of tabletop size. TW has adequate motor control to access a keyboard, touch membrane, or touch screen directly with her left non-dominant index finger. She demonstrated a preference, however, for accessing displays with a traditional mouse. Therefore, it is necessary that the SGD have a USB port so that mouse access is possible.

Outcomes of Clinical Trials

Medicare requires that at least three devices (preferably from the same Medicare category code) be considered that have the necessary features and specifications, as determined in the needs assessment. Clinical trials range from demonstration trials (one day) to an extended rental period (up to 3 months). After the trials, a final recommendation is made and justification for the device selected is provided. The manufacturer of the SGD should provide a price quote for the device, mounting system (if appropriate), and accessories.

TW participated in demonstration trials with the Dynavox DV4,

Dynavox MT4, and the Mercury. She demonstrated a clear preference for Speaking Dynamically Pro Communication Software, bundled with the Mercury, as the display characteristics on it were clear and easy for her to handle. In contrast, the Dynavox DV4 and MT4 had the Dynavox dynamic screen communication software. The devices were otherwise very similar in terms of size and capabilities, except the MT4 was smaller in size than the other two devices. The Dynavox had a longer battery life than the Mercury; however, this was not a priority for TW, who spent most of her time at home.

During the third evaluation visit, TW was able to communicate what she wanted in the design of each page. The Main page had graphic symbols which opened pop ups for greetings (Hi, Good Morning, Good Night, How are you? How was your day?), which she closed after selecting her message. She could also terminate conversations (Bye, See you later, Call me, Have a good day, Have a good night, I love you, I love you too), or control the conversation (Repeat that, That's not what I meant, What I want to say is not on my device, I don't understand). When appropriate, she used politeness markers (Thank you, Please, Excuse me) or comments (positive comments, negative, or neutral). There were symbols on the main page representing topics such as Philippines, Playing with Grandchildren, Daughter, Phone, Health, Food, Feelings, Keyboard, and Dictionary. During the trial, TW was able to easily use the simple custom displays to interact with her family members. For example, on one occasion she called another daughter in the Philippines and used her Phone page with assistance. She was also able to move her mouse across the keyboard, and receive auditory feedback as she scanned each letter and word in the prediction menus. She was able to complete phrases using the keyboard by providing the missing lexical item (e.g., I would like to walk).

The Mercury II was obtained for a one-month rental period and further customized to meet her medical, social, and emotional needs. TW's daughter was trained in programming and basic use of the device and software. TW was able to independently communicate and negotiate control in her environment. She directed the programming and customization of the device and communicated more frequently with family members. Her affect improved, and this reduced the impact of her disability. When asked how she felt about using the device, TW responded with a big smile, thumbs up, and nodded her head.

Final Equipment Recommendation

The Mercury II falls in the E2510 medical device category according to the FDA (21 CFR section 890.3710). TW's type and severity of speech impairment makes her eligible for this type of Durable Medical Equipment according to Medicare / MediCal. The speech-language pathologist prepares the evaluation report and submits the report, price quote for the recommended equipment, and a letter to the physician summarizing the outcome of the evaluation and the need for a prescription for the recommended device and accessories.

Patient and Family Support of SGD

In order to promote acceptance of the SGD, the family must acknowledge the medical necessity for the device and be willing to support the individual in his / her use of the device. This is important not only in terms of reducing the possibility of device abandonment (Lasker & Bedrosian, 2001), but for insuring funding approval through Medicare / MediCal.

Treatment Plan

A treatment plan specifies who will provide service once the device is delivered, and how much service is required to insure that the goals are met. The family members and care providers are responsible for participating in the intervention. This is both good practice and essential for securing funding for the device and services. The requested services will also have to be authorized (prescribed) by the physician. Once services are approved, the speech-language pathologist can also implement other unaided and aided means that are likely to be necessary for a successful outcome. In TW's case, increasing the use of transparent gestures will have a significant benefit in her interactions in the home with family, especially with the young grandchildren. In addition, compiling remnant and pictographic books (Ho et al., 2005) for story telling or sharing information about family events and TW's life would supplement the SGD and provide opportunities for social closeness, especially with friends and grandchildren.

Speech-Language Pathologist Assurance Statement

The final section of the evaluation requires that there be a statement from the speech-language pathologist assuring the reviewer that the evaluator is not an employee and does not have a financial relationship with the supplier of an SGD. AAC is the role of a state licensed and ASHA certified speech-language pathologist.

Summary

The evidence-based practitioner seeks to apply research evidence and clinical expertise to the assessment of individuals who require augmentative and alternative communication. In this case, a 67-year-old woman sustained a CVA resulting in aphasia and severe dysar-

thria, both qualifying disabilities that necessitate a speech-generating device as an appropriate treatment. Given her severe disabilities and the fact that she would not likely benefit from traditional speech therapy, a functional communication treatment approach was applied. The evaluation was conducted in accordance with the Medicare Assessment Protocol to comply with the Regional Medical Review Policy using processes derived from the Beukelman and Mirenda (2005) Participation Model.

Marilyn Buzolich is the founder and director of Augmentative Communication and Technology Services (ACTS). In addition to administering the agency, Marilyn continues to maintain an active clinical practice, teaches a graduate level course in AAC, assists school districts in developing AAC/AT programs and services, mentors other speech/language pathologists, and continues to write and present on a wide variety of topics in AAC. Marilyn is also the co-founder of the Bridge School in San Francisco.

References

Aten, J. L. (1986). Functional communication treatment. In R. Chapey (Ed.), Language intervention strategies in adult aphasia (pp. 266-276). Baltimore: Williams & Wilkins.

Beukelman, D., & Mirenda, P. (2005) Augmentative and alternative communication: Supporting children and adults with complex communication needs (3rd ed.). Baltimore: Paul H. Brookes.

Davis, G. A., & Wilcox, M. J. (1985). Adult aphasia rehabilitation: applied pragmatics. San Diego, CA: College Hill Press.

Fox, L., & Fried-Oken, M. (1996). AAC aphasiology: Partnership for future research. Augmentative and Alternative Communication, 12, 257-271.

Garrett, K., & Lasker, J. (2005). Aphasia needs assessment. Retrieved August 7, 2006, from http://aac.unl.edu/

Ho, K. M., Weiss, S. J., Garrett, K., & Lloyd, L. (2005). The effect of remnant and pictographic books on the communicative interaction of individuals with global aphasia. Augmentative and Alternative Communication, 21, 218-232.

Holland, A., Frattalli, C. M., & Fromm, D., (1999) Communicative abilities in daily living. Austin, TX: PRO-ED.

Kagan, A., Winckel, J., Black, S., Duchan, J. F., Simmons-Mackie, N., Square, P., et al. (2004). A set of observational measures for rating support and participation in conversation between adults with aphasia and their conversation partners. Topics in Stroke Rehabilitation, 11, 67-83.

Lasker, J., & Bedrosian, J. (2001). Promoting acceptance of augmentative and alternative communication by adults with acquired communication disorders. Augmentative and Alternative Communication, 17, 141-151.

Light, J. (1988). Interaction involving individuals using augmentative and alternative communication systems: State of the art and future directions. Augmentative and Alternative Communication, 4, 66-82.

Schlosser, R. (2003). The efficacy of augmentative and alternative communication. San Diego, CA: Academic Press.

World Health Organization. (2001). International Classification of Functioning, Disability and Health (ICF). Geneva, Switzerland: Author.

Continuing Education Questions

1. Contemporary treatments for severe aphasia address
   a. remediation of deficits.
   b. re-learning skills.
   c. functionality of communication.
   d. strengthening a single communication modality.

2. Based on the WHO-ICF, it can be expected that a client will use an SGD to
   a. remediate functional speech / language impairments.
   b. compensate for structural and functional speech / language impairments.
   c. eliminate activity barriers.
   d. reduce the effects of environmental factors.

3. A needs assessment requires an evaluator to examine
   a. the severity of impairment.
   b. structural changes.
   c. functional changes.
   d. participation, opportunity, and access barriers.

4. Functional goals that are medically necessary include
   a. communication of medical needs only.
   b. anything directly related to a client's safety and well-being.
   c. completing medically-related paperwork.
   d. understanding medical lingo.

5. The candidacy model for AAC assessment is applied at which stage?
   a. Comprehensive speech / language assessment
   b. Needs assessment
   c. Rationale for device selection
   d. Outcomes of clinical trials