

Upfront



I know of no country where everyone who needs AAC services and devices can get them. Despite remarkable progress and a plethora of favorable laws and public policies in nations around the world, funding streams for AAC devices continue to be clogged. This issue tells of ongoing efforts in the United States (U.S.) to enable people who need AAC devices to get them. Each section summarizes and excerpts information submitted to the Health Care Financing Administration (HCFA), the governmental agency that administers the Medicare program. This information was prepared by a working group of AAC professionals to expedite HCFA's review of the existing Medicare policy which currently denies AAC device coverage. While the information is clearly crucial for AAC professionals and people who rely on AAC in the U.S., others from the international AAC community who are working to tear down funding barriers may also find it helpful.

Background

Medicare, the largest health care program in the United States, serves more than 38 million adults over the age of 65, including many adults with disabilities, both developmental and acquired. Eligibility is based on age and/or health status, not on income level. More than 14 percent

of the U.S. population uses Medicare to meet their health care needs. A current Medicare guideline states that AAC devices are "convenience items." This means that Medicare does not buy AAC devices for its beneficiaries unless they (1) submit a claim for an AAC device; (2) receive a denial; (3) appeal the denial and (4) carry through with a three-tiered administrative appeals process. Over the past two decades, Medicare has funded one Canon Communicator, a RealVoice, one LightWriter, EZ-Keys software, a Macaw and a Vanguard. To date, every appeal filed for an AAC device or AAC software has been decided in favor of the Medicare beneficiary. However, the fact that only six appeals have been filed shows that people in need of AAC devices are not inclined to take part in this tedious process.

The AAC community acts

In November 1997, a working group of AAC professionals convened in Boston and developed strategies to tear down the barriers restricting access to speech output communication devices for individuals who rely on Medicare for their health care needs.¹ The goal was to get HCFA to replace the existing guidance with a professionally and programmatically sound national coverage standard for AAC devices in the U.S.:

Strategy #1: Ask for the evidence.

HCFA was asked to provide the records it relied on when it wrote the existing Medicare guidance decision in the

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mid-1980s. The agency reported it was unable to locate any records at all. In addition, the agency admitted it never conducted a review of the AAC or speech-language pathology (SLP) medical literature before the guideline was issued. Thus, HCFA admitted it has no rationale for the existing guidance on AAC devices.

Strategy #2: Use political pressure.

Because AAC devices are needed by relatively few people compared to the millions of individuals who are eligible for Medicare, a strategy was needed to raise the visibility of AAC device coverage within HCFA. To accomplish this, a lobbying effort was initiated to secure the support of key U.S. Senators and Congressman (those on committees that oversee HCFA) and to have them write to HCFA about the need to review its existing guidance related to AAC devices. Ultimately, more than a dozen members of

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Congress submitted such letters, as did coalitions of disability organizations.

Strategy #3: Increase the number of appeals using existing procedures.

Medicare beneficiaries and SLPs were encouraged to treat Medicare as an “inefficient payer,” rather than as “broken,” and to use the existing procedures to try to obtain funding for AAC devices. As more claims were approved, evidence of claims being mired down in a slow administrative appeals process increased. Two Medicare booklets are now available to assist clinicians in preparing a request for AAC device funding.²

Strategy #4: Educate funders regarding the functional benefits of AAC devices.

Meetings were held with the regional Medicare medical directors and with Medicare central office staff to educate them about AAC devices and to allow them to identify any concerns they might have regarding Medicare coverage of AAC devices.

HCFA responds

In June 1999, HCFA contacted Lewis Golinker, an attorney and longtime advocate for people with AAC needs, and provided notice that Medicare was now prepared to review its national coverage policy for AAC devices. HCFA staff asked for specific information and promised to review a request for coverage of AAC devices within 90 days of its submission.

Over the next six months, a working group of AAC professionals collected, compiled and, where necessary, developed information for the *Formal Request for an AAC Device National Coverage Decision*.³ The document consists of 100 pages of narrative and a 12 inch stack of appendices. The *Formal Request* was delivered to HCFA on December 30, 1999, on behalf of 13 organizations that represent the interests of Medicare beneficiaries, service providers, AAC device manufacturers and advocates.⁴

This issue of ACN summarizes and, in some cases, excerpts clinically important elements of this document. **For Consumers** addresses the medical conditions requiring AAC devices and cites efficacy and outcomes studies. **The AAC-RERC** section describes the Center’s role in disseminating information. The **Clinical News** and **Equipment** sections highlight information developed specifically for the *Formal Request* to guide speech-language pathologists through the AAC assessment process. Included are: (1) a six-step AAC clinical decision making paradigm, (2) nine clinical indicators that lead to AAC device and accessory recommendations and (3) three categories of AAC devices and five categories of AAC accessories that are technologically and clinically unique. **Governmental** contains the verbatim text of the proposed National Coverage Decision. Finally, **On the Web** announces the ACI website [<http://www.AugComInc.com>] where you can, among other things, access the entire 100-page narrative of the *Formal Request for an AAC Device National Coverage Decision*.

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Medicare coverage of AAC devices

AAC treatment is widely accepted by health benefits funding programs and should be covered by Medicare. However, according to existing Medicare guidance, AAC devices and device accessories, which are standard and preferred treatment for the functional communication difficulties associated with severe dysarthria, apraxia of speech and/or aphasia, are not covered.

The HCFA staff (see **Upfront**) asked the working group to provide: (1) a description of the diseases/conditions that underlie the need for AAC devices; (2) copies of the efficacy and outcomes studies that show AAC devices to be effective treatment and (3) an estimate of the number of Medicare beneficiaries who could benefit from AAC devices.

Who can benefit?

In preparing the *Formal Request for Coverage of AAC Devices*, the Medicare working group demonstrated that SLPs routinely recommend AAC devices as a component of treatment for individuals with dysarthria, apraxia of speech and/or aphasia so severe they are unable to meet their communication needs through natural modes of communication. AAC devices can enable these individuals to achieve their functional communication goals, be they the expression of simple wants and needs or the communication of complex thoughts and ideas across multiple settings.

1. People with Dysarthria. The *Formal Request* describes dysarthria as a group of motor disorders that

Table I. Characteristics of dysarthria among people with diseases/conditions that may require AAC
Adapted from Yorkston *et al.* (1999)⁵

Condition	Course	Age of Onset	Motor Symptoms	Prevalence of Dysarthria
Cerebral Palsy	Stable	Congenital	Spasticity, flaccidity, ataxia and/or dyskinesia	31% to 88%
Amyotrophic Lateral Sclerosis	Rapidly progressive	Mean age of onset mid-50's	Degeneration of motor neurons. Symptoms depend upon the course of disease	75% are unable to speak at time of death
Multiple Sclerosis	Slowly progressive	Between 18 - 40 years	Variable depending on age, activity, location of CNS lesions	40% to 44% report speech affected; Less than 20% report severe dysarthria
Parkinson's Disease	Slowly progressive.	Mean age 55 years	Resting tremor, rigidity, paucity of movement, impaired postural reflexes, dysarthria	22% - moderate dysarthria, 29% - severe dysarthria
Brain-stem Stroke	Improving with later stabilization	Age 45-64 - 998 per 100,000 Age 65+- 5,063 per 100,000	Variable depending on the site of lesion and amount of damage to the central nervous system	Severe dysarthria to anarthria for individuals with locked-in syndrome
Traumatic Brain Injury	Improving with later stabilization	Bimodal population with peaks at 15-24 years & 65-75 years	Variable, depending on nature of injury	60% in acute rehab setting to approximately 10% long-term

affects the ability of the vocal organs to execute the movements required to produce intelligible speech. Dysarthria interferes with speech intelligibility and is characterized by problems with articulation (production of speech sounds), voicing (volume and quality of speech) and prosody (speech rate, rhythm and naturalness). The causes of severe dysarthria and anarthria (no speech) include the degenerative, acquired and congenital neurological conditions listed in Table I.⁵ The type, prevalence and course of dysarthria varies with the condition.

AAC devices are widely recognized as efficacious treatment for individuals at Stages IV or V on the Dysarthria Rating Scale.⁵ The *Formal Request* cites the position of the National Joint Committee on the Communicative Needs of Persons with Severe Disabilities that AAC devices are appropriate treatment for people with severe communication impairments.⁶ It also references the ALS Care Consensus Conference which recommends AAC devices as treatment for the speech losses associated with ALS.⁷

2. People with apraxia. Acquired apraxia of speech is defined as a speech disorder resulting from injury to the brain. It is a deficit in the

planning and programming of movement sequences for speech, and occurs despite the normal movement of the same muscles when speech is not involved. Apraxia of speech is characterized by changes in articulation and prosody. The most common cause of apraxia is stroke, although apraxia of speech also occurs with tumors or traumatic brain injuries. As a clinical entity, apraxia is defined and distinguished from aphasia and dysarthria. However, severe apraxia almost always co-occurs with aphasia. AAC strategies and devices are effective treatment for some people with severe apraxia of speech.

3. People with aphasia. Language and communication skills are permanently altered as a result of severe aphasia. Aphasia is caused by brain damage typically involving the language-dominant cerebral hemisphere. By far the most common cause of aphasia is stroke, although aphasia may also result from brain tumors, head injuries or other insults to areas of the brain that mediate language processing.

With severe aphasia, individuals may not regain sufficient verbal communication skills to participate fully in adult communication

activities, e.g., talking with family members, conducting transactions in the community or sharing life experiences with others. Because such limitations result in social isolation, restricted activity and lesser autonomy,^{8,9} individuals with severe aphasia can benefit from using AAC devices that enable them to communicate functional needs more specifically, participate in social exchanges, become more independent in the community, talk on the telephone, communicate medical or emergency information and provide other information.

Efficacy and outcomes

HCFA staff requested copies of all published research articles from medical and allied health journals that confirm the efficacy of using AAC devices to treat severe dysarthria, apraxia of speech and aphasia. The working group scoured the literature and found outcomes and efficacy studies that clearly demonstrate the effectiveness of AAC devices with people with these conditions.¹⁰ Without these data, the HCFA staff would not have considered the *Formal Request*.

1. Dysarthria. The research that documents the impact of AAC

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devices on individuals with dysarthria reports on the efficacy of the treatment and the outcomes for individuals with various conditions. Degenerative conditions

- ◆ **Amyotrophic lateral sclerosis (ALS):** In a retrospective chart review of treatment data for 126 persons with ALS (61 males; 65 females), 72% of the men and 73% of the women had received some kind of AAC treatment. However, the type and nature of treatment seemed to vary by gender. Women used low-tech options (e.g., alphabet boards) three times as often as men (women=20%; men=6%). Women also reported using speech output devices more than men (women=49%; men=26%). However, men used AAC devices for both written and spoken communication more often than women (men=35%; women=12%).¹¹

In a consumer satisfaction study, Mathy found that individuals with ALS have a generally high level of satisfaction with their AAC devices. On a seven-point scale (with 1 being least satisfied and 7 being most satisfied), ratings ranged from 5 to 7. Subjects were more satisfied with their ability to create, store and retrieve lengthy messages to express needs/wants and exchange information with family and care providers than they were with using AAC devices as a means to conduct conversations (average rating 4).¹²

Books, articles, TV programs and personal websites offer a host of personal stories by or about individuals with ALS, who use AAC devices. Perhaps the most well known author is the physi-

There is a critical need for the AAC community to document the successful use of AAC devices.

- cist, Dr. Stephen Hawking. These stories make it clear that no one really “wants” to use an AAC device; rather, the AAC device is a “lifeline to the world.”¹³
- ◆ **Multiple Sclerosis (MS):** In a 1992 survey of 656 persons with a diagnosis of MS, researchers reported that 23% had speech deficits. However, only 4% (26 people) had such severe dysarthria that strangers could not understand them. Of those, only seven people (fewer than 2% of the 656 individuals with MS) had used an AAC device.¹⁴
- ◆ **Parkinson’s Disease:** While studies demonstrate the effectiveness of delayed auditory feedback devices, the working group was unable to find published studies describing the use of speech output devices with this population, despite personal knowledge of examples.

Acquired and congenital conditions

- ◆ **Locked-in Syndrome:** Culp and Ladtkow followed a series of 16 individuals with locked-in syndrome for a year or more. They documented the use of AAC techniques ranging from minimal eye movements to the successful use of computerized AAC devices. At follow-up, 80 percent had pursued electronic communication options. Half were using direct selection AAC devices and half relied on visual or auditory scanning techniques.¹⁵
- ◆ **Cerebral Palsy:** Outcome studies have documented a variety of

functional effects, including increased participation in conversations,¹⁶ spontaneously initiated requests,¹⁷ and increased percentage of time AAC devices are used.¹⁸ In an 1987 survey of 66 dysarthric adults with cerebral palsy, LaFontaine & DeRuyter found that more than half (58%) were using simple augmentative communication systems and accessing them through direct selection (62%).¹⁹

- ◆ **Traumatic Brain Injury (TBI):** Dysarthria generally resolves during the early and middle stages of recovery after TBI. However, a small number of individuals continue to require AAC devices to participate effectively in their rehabilitation programs and to meet ongoing communication needs.^{20,21}

Ladtkow and Culp reported on 132 individuals with TBI over an 18 month period. Approximately 20 percent were “nonspeaking” at some point during their recovery. Of these, 55 percent regained functional speech during the first 18 months. Less than ten percent (n=12) used AAC after the first 18 months.²²

2. Apraxia. A number of case studies describe the efficacy of AAC devices with people who have severe apraxia of speech.

- ◆ An early case report described three individuals who used speech output devices. One woman, who prior to AAC intervention would not leave her home, learned to use an AAC device and returned to many of the activities she engaged in pre-morbidly. She considered herself “communicatively independent” as a result.²³
- ◆ Yorkston & Waugh described an

individual who was unable to formulate an adequate yes/no response using natural speech or gestures. She learned to use an AAC device to indicate “yes” and “no.”²⁴

- ◆ A 47-year-old interior designer, who experienced a stroke with severe apraxia and moderate aphasia progressed through traditional speech therapy to a multicomponent, nonelectronic AAC system. Three years post stroke, when he wished to return to work, an AAC device programmed with conversational control phrases allowed him to initiate, direct and terminate conversations with his clients.²⁵
- ◆ Rogers described a five-year trajectory of communication impairment wherein speech symptoms progressed from apraxia to severe aphasia. Treatment strategies involved the identification of topic and key words, gestural and drawing systems, a communication book and an AAC device with symbol-based, pre-selected messages.^{26,27}

3. Aphasia. AAC devices are shown to be appropriate treatment for some persons with severe aphasia.^{28,29} According to Fox and Fried-Oken, outcome studies in AAC and aphasia fall into four broad classifications: comprehensive case studies, carefully controlled single-case experimental studies, group studies and other types of descriptive or comparative studies.³⁰

- ◆ Beukelman, Yorkston, & Dowden describe an aphasic adult who used a variety of communication methods at home and at work. The subject had severe verbal apraxia and a moderate-severe aphasia. He used an AAC device with synthesized speech to

communicate a restricted number of messages. The device enabled him to return to work.²⁵

- ◆ Garrett, Beukelman and Low reported on an individual with Broca’s aphasia (*i.e.*, limited expressive language skills and good receptive skills) who used a multicomponent AAC system in various community environments. The AAC device contained individualized messages that enabled him to obtain veteran’s benefits and community-based transportation. Also, when he used the AAC device during controlled clinical interactions, his communication breakdowns decreased from 50% to 17%. The number of his successful communication turns also increased with the device, compared to when he relied solely on speech and gestures.³¹
- ◆ In 1989, Steele and colleagues trained a person with global aphasia to express syntactical forms using an AAC device. Later, they compared an aphasic person’s ability to comprehend instructions given in three different language modalities. The synthesized speech device was found to be a superior input modality for this type of task with this type of patient.³²
- ◆ Beck and Fritz tried to determine whether people with aphasia could learn iconic encoding. The aphasia group had five people with anterior aphasia and five with posterior aphasia. The second group consisted of non-brain-damaged controls (n=10). Some people with aphasia did learn iconic encoding under specific conditions. The type of aphasia, level of abstraction and length of icon sequence influenced learning.³³

- ◆ Stuart reported a case in which a man with severe expressive aphasia resumed several life activities with the assistance of a digitized speech AAC device.³⁴
- ◆ Hopper and Holland described a man who learned to use an AAC device to get emergency help over the phone.³⁵
- ◆ Cress and King documented the use of AAC strategies and devices with two individuals with primary progressive aphasia. They described an ability to communicate by phone using an AAC device and the use of symbols to “chat,” express preferences and opinions and identify storytelling topics.³⁶
- ◆ Researchers in the United Kingdom evaluated an AAC system called *TalksBac* with four nonfluent adult aphasics. This word-based software exploits the ability of some nonfluent aphasics to recognize familiar words and short sentences. After a 9-month training period, two subjects had improved in their conversational abilities.³⁷
- ◆ Fox, Sohlberg & Fried-Oken investigated the outcomes of AAC intervention for adults with severely limited spoken language abilities and moderate-to-mild auditory comprehension impairments. Results showed that their use of conversational communication aids improved over time in a clinical environment.³⁸
- ◆ Finally, Kagan reported that individuals with aphasia can communicate effectively with medical professionals who are trained to use AAC strategies in ways that support conversations with their patients.³⁹ Studies also document the importance of

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appropriate partner training and support for successful AAC use in aphasia.^{40,41}

Who will benefit?

HCFA asked the AAC working group to estimate the number of Medicare beneficiaries who might benefit from AAC devices. The *Formal Request* states that the current demand for Medicare reimbursement of AAC devices is severely constrained by two factors: (1) Medicare’s existing AAC guidance and (2) the limited number of SLPs who have expertise in AAC. Thus, any future change in demand for reimbursement will depend primarily on the withdrawal and/or replacement of the current AAC device policy and will require a period of education and training for SLPs who are unfamiliar with AAC treatment options.

Estimating need. There are over 38 million people in the U.S. eligible for Medicare. The 1990 Bloomberg

Table II. An estimate of AAC device requests over time


	# of Devices	Cumulative Total
YEAR 1	100 - 200	100 - 200
YEAR 2	150 - 300	250-500
YEAR 3	225-450	475-950
YEAR 4	337 - 675	912-1625
YEAR 5	505 - 1013	1317-2638

and Johnson study in Australia (selected because of the comprehensiveness of its data gathering) shows a .12 percent prevalence of severe communication impairments (SCI) in the general population.⁴² Hence, the prevalence of Medicare beneficiaries with SCI in the U.S. is estimated at 45,600 persons.

Because there is a need for AAC education and training among the SLPs who serve Medicare beneficiaries, the demand for AAC devices will grow slowly. In addition, not everyone with a severe communication impairment wants to use an AAC device. Thus, the working group estimated that in the first year after Medicare changes its coverage

policy, 100 to 200 beneficiaries will submit device claims. Then, if coverage for AAC devices is forthcoming, a 50 percent increase in the number of AAC device claims each year can be expected. Table II shows that by year five, 505 to 1,013 beneficiaries may request AAC devices, making the cumulative five-year estimate to be no more than 2,638 AAC device claims.

Estimating cost. The types of AAC devices requested will vary and so will the cost. AAC devices cost from less than \$500 to more than \$7000, with the majority falling somewhere in the middle.

The AAC working group concluded that compared to other Medicare coverage programs, the cost implications are minimal. The potential benefits to Medicare beneficiaries and their families will far outweigh the costs of the program. 

The AAC-RERC




improving the design characteristics and, ultimately, the appropriateness, efficiency and effectiveness of AAC devices and accessories.

Dissemination and training

The AAC-RERC, which is funded by the National Institute of Disability and Rehabilitation Research, has entered the second year of its five year cycle of funding. Research partners at Duke University, Penn State University, Temple University, the State University of New York at Buffalo, the University of North Carolina and the University of Nebraska are working together on a number of exciting research and development projects aimed at

An important component of the AAC-RERC’s mission is to provide training and disseminate information that has the potential to improve the lives of people with severe communication impairments. Several members of the AAC-RERC contributed their time and expertise during the preparation of the *Formal Request for an AAC Device National Coverage Decision*. Now, through the publication of this document, the AAC-RERC is supporting efforts to disseminate clinically relevant information about the *Formal*

Request. Our hope is that Medicare beneficiaries with AAC needs (and the service providers and manufacturers who support them) can be ready to respond if HCFA replaces the existing guidance with a professionally and programmatically sound national coverage standard for AAC devices in the U.S. This could occur as early as March 31, 2000. Look for updates on the AAC-RERC website [<http://www.aac-rerc.com>]

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The AAC assessment process

The *Formal Request for an AAC Device National Coverage Decision* focuses on AAC devices. In reality, however, clinical decisions regarding AAC intervention are made in the context of a comprehensive speech and language assessment. Speech-language pathologists (SLPs) gather data which enable them to make a diagnosis, a prognosis for improvement and decisions about appropriate treatment. When a SLP determines an AAC assessment is necessary, a device may be considered to meet functional communication goals.

The outcome of an AAC assessment is a narrative report that describes the clinical facts relevant to the speech-language impairment, the need for and type of AAC treatment and a detailed treatment plan (which may include AAC services, training and an AAC device). When a device is recommended as part of the treatment plan, the report specifies the functional communication goals that will be achieved using the AAC device. The AAC treatment plan is based on the clinical facts presented and the SLP's professional judgment.

To assist SLPs in the assessment and decision making process that leads to the selection of an AAC device, the Medicare working group developed a clinical decision making paradigm and identified nine clinical indicators, as described below.

Clinical decision making

During the course of the AAC assessment, six major clinical decisions are made regarding the need for AAC treatment and the type

treatment required. See Table III.

1. Determining current functional communication levels.

The SLP first determines the type, severity and anticipated course of the individual's communication impairment, *i.e.*, dysarthria, apraxia of speech and/or aphasia.

Assess current communication needs. The SLP seeks to identify the individual's daily communication needs in order to establish functional communication goals. The scope of an individual's communication needs may range from simple expressions of wants and needs to a caregiver, to the communication of complex thoughts and ideas to people in multiple settings. The needs assessment will result in an individualized profile of communication needs and will indicate the importance of each needs category.⁵

Assess communication effectiveness. Using the individualized communication needs profile, the SLP considers whether, given the severity of the individual's current level of speech and language impairment, daily communication needs can be met using natural modes of communication. The assessment determines whether an individual is able to communicate effectively using natural speech in everyday conversations and occurrences.

2. Predicting future levels of communication effectiveness. When communication needs are met, no treatment is recommended. When the assessment process shows that individuals are able to meet all their daily communication needs through speech and other natural communication methods, and their condition is not expected to deteriorate further, then no AAC treatment is recommended.

Table III. Clinical decision making for AAC assessment

1	Determining current functional communication levels.
2	Predicting future levels of communication effectiveness.
3	Identifying functional communication goals and treatment approaches.
4	Selecting specific AAC treatment approaches.
5	Selecting an AAC device and accessories.
6	Determining procurement, training and follow up.

Assess potential for deterioration in natural communication skills. If the SLP determines that the individual's communication effectiveness is likely to deteriorate due to the natural course of the disease/condition (*e.g.*, speech is becoming unintelligible) and communication through natural modes will become impossible, the SLP may recommend that AAC treatment begin.

3. Identifying functional communication goals and treatment approaches. Identify functional communication goals. When recommending AAC treatment, the SLP needs to define a list of functional communication goals. Medicare says functional communication goals "reflect the final level the patient is expected to achieve, are realistic, and have a positive effect on the quality of the patient's everyday functions."⁴³ Functional goals can result in a "small, but meaningful change that enables the beneficiary to function more independently in a reasonable amount of time."⁴⁴ Examples are to: indicate yes/no responses; communicate basic physical needs or emotional status; communicate self-care and medical needs; use a basic spoken vocabulary and short phrases; engage in social communication with family and friends; engage in communicative interactions in the community; utilize conversational language skills;

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talk on the telephone and respond to emergencies.

Assess potential to improve natural communication methods. SLPs determine whether functional communication goals can be achieved using natural communication methods (speech, writing or gestures). If the assessment suggests they can, then treatment to improve natural speech or language performance will begin.

When individuals with severe dysarthria, apraxia of speech and/or aphasia do not demonstrate the potential to meet their communication needs using natural speech, the SLP will often recommend AAC approaches to achieve functional communication goals and improve communication effectiveness.

4. Selecting specific AAC treatment approaches. The next steps of the assessment lead the SLP to decide about the type of AAC treatment required and whether an AAC device and accessories are necessary.

Select AAC treatment options. AAC treatments may include three different approaches to augmenting spoken communication: (1) a speech output AAC device; (2) nonelectronic aids such as alphabet, word and picture boards; and (3) unaided communication strategies such as gestures, speech approximations, listener-supported AAC techniques and sign language. Most individuals use a combination of these approaches. However, the *Formal Request* focuses only on the part of the AAC assessment that leads to the selection of a speech output communication device.

Determine message formulation capability. An important first step in selecting an AAC device and other AAC treatment approaches is to determine whether an individual has

the potential to generate messages independently using language symbols, e.g., pictographs, words, letters or other types of symbols. If the SLP determines the person can, then the assessment will determine the individual's most efficient and effective method of doing so using an AAC device. If the assessment results indicate that the individual will be unable to use language symbols independently, then the SLP may investigate ways in which the individual can express messages with the assistance of a communication partner rather than an AAC device.

5. Selecting an AAC device and accessories. For individuals who are able to formulate messages independently using words, letters or graphic symbols, the assessment process focuses on which kind of AAC device and accessories to recommend. The process of selecting an AAC device requires that the SLP takes into consideration the person's language capabilities and needs, representational abilities, message storage and retrieval requirements, rate enhancement features, ability to access the device efficiently, visual skills, ability to use a dynamic display, portability issues, training needs and so on.

Determine need to generate messages by use of spelling. As part of the AAC assessment for an AAC device, the SLP ascertains whether a person can spell sufficiently well to generate messages independently. If so, a synthesized speech device will be needed.

Determine if person generates language most efficiently and effectively with a device that has extensive storage and rate enhancement features. The AAC assessment process also determines whether individuals who can generate lan-

guage independently have the need to store and retrieve a large amount of language to meet their functional communication goals. For example, individuals wishing to prepare messages in advance, as well as those who need to provide large amounts of information (e.g., describe changes in their medical condition, reactions to a medication or quickly ask questions related to a shopping list) require AAC devices with the capacity to store previously created messages and to retrieve their stored messages efficiently and effectively.

Determine ability to use direct selection access. It is important to determine how an individual will access an AAC device. The SLP may collaborate with other allied health professionals to assess whether direct selection access is possible. There are two direct selection techniques: (1) direct physical contact using a finger, another body part, stylus, hand-held pointer, head stick or mouth stick and (2) direct selection techniques using an electronic accessory.

Determine ability to use indirect access (switches). When individuals have severe physical impairments or other difficulties that preclude direct access to AAC devices, the SLP considers indirect selection techniques to access an AAC device. This portion of the AAC assessment is often conducted in collaboration with other allied health professionals. It produces information about scanning-based selection techniques, Morse code and the use of switches.

Specific AAC device recommendation. After determining that a voice output AAC device will be appropriate for the individual and identifying the appropriate device category (see the **Equipment** section), the SLP matches the capabilities of the individual to the characteristics of a specific AAC device and accesso-

ries. Typically, the matching process yields a short list of AAC devices and accessories from which the individual, family and allied health professionals can select.

At this point, the SLP also determines the extent to which specific no-tech strategies and low-tech aids will be used to complement the use of a speech output AAC device in ways that help the individual achieve his or her functional communication goals and optimum communication independence.

6. Determining procurement, training and follow up. Because the AAC device will be new to the beneficiary and caregivers, a period of instruction and practice is required if the individual is to become communicatively effective using the device. SLPs sometimes encourage a trial use period prior to recommending the purchase of an AAC device.

After a device is purchased and delivered and an initial instruction and practice period has been completed, the SLP conducts another communication needs assessment to determine whether the individual's current communication system, which now includes an AAC device as well as residual natural communication and typically no-tech and low-tech AAC strategies, allows the person to communicate more effectively and to achieve functional communication goals.

Over time, modifications may be required to the AAC treatment plan. Some individuals require follow-up to resolve technical difficulties, train new support personnel and monitor the achievement of functional communication goals.

Clinical indicators

Table IV lists the nine clinical indicators. The working group developed these indicators/criteria to

Table IV. Nine clinical indicators for AAC device sub-categories

1	Does the individual have a communication disability with a diagnosis of severe dysarthria, apraxia and/or aphasia?"	6	Does the individual require an AAC device that provides extensive language storage capacity and efficient retrieval techniques?"
2	Will natural communication methods be sufficient for the individual to meet the communication needs that arise in the course of current and projected daily activities?"	7	Can the individual effectively access the device by physical contact direct selection techniques and use any of the following: a finger, another body part, stylus, hand held pointer, head stick, mouth stick?"
3	Does the individual require a speech output communication device to meet his/her functional communication goals?"	8	Can the individual access the device by direct selection techniques using an electronic accessory?"
4	Does the individual possess the linguistic capacity to formulate language (messages) independently?"	9	Can the individual access the AAC device by indirect selection techniques (switches)?"
5	Does the individual produce messages most efficiently and effectively using spelling?"		

guide the AAC device selection process, at least for Medicare coverage. The three categories of AAC devices are explained in the **Equipment** section.

Clinical indicators 1 and 2 lead the SLP to consider whether AAC is an appropriate approach to treatment. Both the first indicator (*Does the individual have a communication disability with a diagnosis of severe dysarthria, apraxia of speech and/or aphasia?*) and the second indicator (*Will natural communication methods be insufficient for the individual to meet the communication needs that arise in the course of current and projected daily activities?*) require a positive response before AAC treatment of any kind is considered.

The third clinical indicator (*Does the individual require a speech output communication device to meet his/her functional communication goals?*) considers whether an AAC device is required. A positive response leads to an AAC device assessment.

From this point, for Medicare purposes, the AAC assessment focuses on the kind of AAC device to recommend. For example, the fourth clinical indicator (*Does the individual possess the linguistic capacity*

to formulate language (messages) independently?) requires consideration of the kind of language the person is capable of generating independently. Some individuals will require a "whole message" AAC device; others can select preprogrammed components of messages; and some can construct their messages independently using words, letters or graphic symbols.

The fifth clinical indicator (*Does the individual produce messages most efficiently and effectively using spelling?*) requires that the SLP ascertain whether a person can spell sufficiently well to generate messages independently. If the answer is "yes," then the individual will require a synthesized speech device to generate spoken messages using spelling. If "no" is the answer, the individual will need an AAC device that doesn't require spelling to formulate messages.

The sixth clinical indicator (*Does the individual require an AAC device that provides extensive language storage capacity and efficient retrieval techniques?*) addresses whether the individual wishes to prepare messages in advance and provide large amounts of information in an efficient man-

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ner. If so, an AAC device with the capacity to store previously created messages and retrieve the messages efficiently and effectively is needed. If the answer is “no,” then an AAC device without extensive storage and retrieval capacity is sufficient.

Another important component of the AAC device selection process determines the most efficient and effective method of access to an AAC device. The initial focus is on direct selection. The seventh clinical indicator (*Can the individual effectively access the device by physical contact direct selection techniques and use any of the following (a finger, another body part, stylus, hand held pointer, head stick, mouth stick)*) and the eighth clinical indicator (*Can the individual access the device by direct selection techniques using an electronic accessory?*) seek

to determine the most efficient and effective methods of direct selection access. If the answer to the seventh clinical indicator is “yes,” then an electronic accessory will not be required. However, if the answer is “no,” then the SLP, with assistance from other health care professionals, considers the eighth clinical indicator and evaluates a range of electronic accessories, such as a head mouse, track ball or infrared pointer.

When direct access is not possible, or when it is not the most efficient and effective method of access, then the ninth indicator is considered (*Can the individual access the AAC device by indirect selection techniques?*) The AAC assessment determines which indirect selection technique the individual can use to access an AAC device and whether the person can use switches to do visual or auditory scanning or Morse code.

Final comment

For Medicare reimbursement purposes, after the SLP has considered all nine clinical indicators and made decisions about the subcategory of AAC devices that is appropriate for the individual and the need for device accessories, if any, the process ends. But for the SLP, the individual who will use the AAC device and the family, the assessment process continues. 

Equipment



technologically and clinically distinct categories of AAC devices:

◆ Digitized speech AAC devices.

- ◆ AAC devices with synthesized speech output, which require that messages be formulated by spelling using physical contact direct selection techniques.
- ◆ Synthesized speech AAC devices with multiple message generation and multiple access options.

Each category offers features that can be matched to an individual’s profile of physical, cognitive, linguistic, sensory and motor deficits and to the person’s communication needs. They are described below and depicted in

AAC device categories

Because individuals with severe communication disabilities present a wide range of physical, cognitive, linguistic, sensory and motor deficits, as well as different daily communication needs, a variety of AAC device configurations exist. As a practical matter, no single device can offer the number of features required to enable all individuals with AAC device needs to achieve effective and efficient communication.

For the purposes of Medicare funding, the working group developed a paradigm that created three

Table V.

The main feature that distinguishes AAC devices are the type of speech output they offer:

◆ Digitized speech is essentially the natural speech of an individual other than the AAC device user—a spouse, SLP or other person selected by the user—that is recorded, stored and recalled. AAC devices with digitized speech are recognized in the professional literature as “closed” systems because they reproduce only those words or messages that have been prestored for their user. Digitized speech devices also are called “whole message” systems because the user can access an entire phrase, sentence or message by a single switch selection on the AAC device.

◆ × Speech synthesis is a technology that translates the user’s input into device-generated speech using algorithms representing linguistic rules, including rules for pronunciation, exceptions, voice inflections, and accents of the language. Synthesized

Table V. Clinical indicators for selecting AAC devices from three device categories.

CLINICAL INDICATORS		Category 1	Category 2	Category 3
1	The individual has a communication disability with a diagnosis of severe dysarthria, apraxia and/or aphasia.	Y	Y	Y
2	The individual's communication needs, which arise in the course of current and projected daily activities, cannot be met using natural communication methods.	Y	Y	Y
3	The individual requires a speech output communication device to meet his/her functional communication goals.	Y	Y	Y
4	The individual possesses the linguistic capacity to formulate language (messages) independently.	N	Y	Y
5	The individual will produce messages most efficiently and effectively using spelling.	N	Y	Y or N
6	The individual will require an AAC device with extensive language storage capacity and rate enhancement features.	N	N	Y
7	The individual will access the device most effectively by means of a physical contact direct selection techniques, such as a finger, other body part, stylus, hand held pointer, head or mouth stick.	Y or N	Y	Y or N
8	The individual will access the device most effectively and efficiently by means of an electronic accessory that permits direct selection.	Y or N	N	Y or N
9	The individual will access the AAC device most effectively and efficiently by means of an indirect selection techniques e.g., scanning, Morse Code.	Y or N	N	Y or N

speech AAC devices are described as offering “generative speech capability” or as being “open systems” because users can construct original messages as their communication needs dictate.

Category 1

Digitized speech AAC devices. AAC devices with digitized speech require messages to be prestored. The amount of language (words, phrases or sentences) that can be stored in the device, and thus selected by the user, varies greatly. The memory capacity of AAC devices with digitized speech output ranges from devices that offer a minute or two of speech to devices that are configured to store an hour or more of speech. The *Formal Request* lists five configurations: (1) less than 4 minutes; (2) 4 to 8 minutes; (3) 9 - 16 minutes; (4) 17-32 minutes and (5) more than 32 minutes of recording time.

Typically, individuals with cognitive or language impairments who are unable to generate messages through spelling and/or word-by-

word development of their messages (such as people with severe aphasia due to cortical stroke) find that digitized AAC devices meet their needs and enable them to achieve their functional communication goals. Thus, if the AAC assessment process determines that the responses to clinical indicators #1, 2 and 3 are “yes” and #4, 5 and 6 are “no,” the SLP considers a digitized speech AAC device. Because this category of AAC devices offers both direct and indirect selection techniques, the responses to clinical indicators #7, 8 and 9 may be either “yes” or “no.” Examples are included on page 16.

Category #2.

AAC devices with synthesized speech output which require that messages be formulated by spelling, using physical contact direct selection techniques. The synthesized speech AAC devices in this category have a keyboard for message formulation. These devices require that

individuals construct messages *only* by spelling. They also require the use of physical contact direct selection techniques, such as use of a finger, hand-held stylus, head stick or mouth stick. Devices in this category do not have extensive language storage or rate enhancement features that can support a user’s ability to construct, store and retrieve lengthy messages. Individuals with ALS or cerebral palsy who do not have very extensive communication needs and who have lost the ability to speak but are good spellers and retain good fine motor dexterity often select AAC devices in this category to meet their functional communication goals. Clinical indicators for this category include positive responses to #1, 2, 3, 4, 5 and 7, and negative responses to indicators #6, 8 and 9.

AAC devices in this category are appropriate for individuals who have communication needs that do not require production of lengthy messages, who can spell sufficiently well to generate their messages and who will be able to make direct physical contact with the keyboard. Examples of devices in this category are listed on page 16.

Category 3

Synthesized speech AAC devices with multiple message generation and multiple access options. Synthesized speech AAC devices in this category permit multiple methods of message formulation and rate enhancement. They allow users to take advantage of text words and/or pictographic symbols to formulate messages or parts of messages and to spell others. These AAC devices also aid individuals who are not literate but who have the cognitive and linguistic abilities to generate messages independently. Devices in this

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category permit individuals to store a large number of messages, as well as to create messages in real-time, store lengthy messages and retrieve them efficiently. It is important to note that AAC software (which is included as an AAC accessory in the *Formal Request*) falls within this category.

This category of AAC devices enables individuals with a very wide range of physical limitations to use AAC devices by offering multiple access methods. Individuals can access the devices by physical contact direct selection. However, if that is not an effective or efficient means of access, e.g., due to quadriplegia or locked-in-syndrome, individuals can use an electronic accessory, such as a head mouse, optical head pointer, light pointer, infrared pointer, eye-gaze or joystick. If none of these accessories are appropriate, these devices will support access by indirect selection methods, such as switch-based scanning techniques and Morse code.

For individuals who need a synthesized speech device with extensive language storage capacity and rate enhancement features, or for someone who needs to access a device by means of direct selection using an electronic accessory or an indirect selection technique, a device from the third subcategory will be required. Clinical indicators for this category require positive responses to #1, 2, 3, 4 and 6. Indicators for #5, 7, 8 and 9 may be either “yes” or “no.” See page 16 for some examples.

AAC Accessories

AAC device accessories support effective and efficient access to devices and provide proper positioning of an AAC device, safety during transport and an adequate power

supply to meet an individual’s communication needs throughout the day. A SLP will recommend AAC device accessories when they are necessary.

AAC accessories also include specific AAC software for individuals who already have access to a computer and other necessary accessories and only require communication software to meet their functional communication needs.

AAC Software: Some manufacturers of AAC technology offer AAC software that is sold separately or in conjunction with a multipurpose hardware platform. See page 16 for examples. This means that when AAC software is loaded and running on the computer, the computer “becomes” an AAC device. The primary clinical indicator for recommending AAC software alone (rather than packaged with a hardware base) is when the beneficiary already has the hardware that suits his/her needs (e.g., a notebook computer, speech synthesizer) and only requires the AAC software. Clinical indicators for AAC software are the same as those for the device category #3.

Alternative access accessories. Decisions about alternative access relate to the physical capabilities of the user, such as motor skills and visual abilities, as well as the device category the user needs for communication. When considering alternate access accessories, the goal is to match the user’s physical abilities and limitations with the accessory most likely to allow the individual to achieve effective and efficient communication with the AAC device. Three types of alternative access accessories exist:

1. Nonelectronic aids that support direct selection. For individuals who have the hand, arm, or head

control required to use the device using a hand-held stylus, pointer, splint, keyguard or mouth stick.

2. Electronic aids that support direct selection. For individuals who can use a light pointer, infrared pointer, eye-gaze, joystick or optical head pointer.

3. Electronic aids (switches) that facilitate indirect selection. For individuals who are unable to use either of the direct selection techniques to operate a AAC device effectively and efficiently, switch-operated indirect selection techniques (scanning) are considered.

Mounting systems. Mounting systems are necessary to place AAC devices, switches and other access peripherals in a stable position relative to the user. Without appropriate mounting for a device and/or switches, individuals with severe motor or visual impairment are unable to use the appropriate AAC device to communicate.

Carrying cases. Carrying cases are a critical feature in the identification and recommendation of appropriate AAC devices. While they often are needed for individuals who are ambulatory, they may also be necessary for someone in a wheelchair whose AAC device is not mounted and must be carried. For example, a person with traumatic brain injury may have a very unsteady gait or use a walker or cane to aid ambulation. A carrying case may aid the person’s balance in walking, provide protection for the AAC device as the person moves from place to place, and facilitate the individual’s use of the device when and wherever a communication need will arise. Because ongoing daily access to the AAC device is necessary, and because the technology in AAC


devices is sophisticated and difficult to repair or replace, protection of the device to ensure its ongoing functioning is important.

Power. Because individuals obviously cannot be tethered to a wall outlet in order to communicate, all electronic AAC devices rely on batteries to supply power. For this reason, all AAC devices are designed with rechargeable batteries to enable the user to communicate in any setting. Typically, batteries are recharged over night when the user is sleeping. In some cases, an individual will require an additional battery to communicate throughout the day, just as some individuals install a second battery into a laptop computer, or have a second battery for their cellular telephone. For these

individuals, the additional source of power is needed to accommodate their ongoing, heavy use of the device, and ongoing daily activities or physical limitations that do not permit them to recharge batteries during the course of the day. Heavy, ongoing usage also may create needs for other power-related accessories, such as a battery charger, auto-adaptor, or AC adaptor.

Summary

The sequential nature of the assessment process enables the SLP to consider important clinical indicators that can lead to a recommendation for AAC treatment and for a device from one of the three proposed AAC device categories. Speech-language pathologists

recommend an AAC device when the first three clinical indicators are met. From there, decisions are made about which type of AAC device can most effectively and efficiently meet the individual's needs, based on responses to the remaining six clinical indicators as shown in Table V. 

On the Web



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Augmentative Communication Inc. (ACI) announces the launch of its new website. Please check it out. The address is [<http://www.AugComInc.com>]. Here are some of the highlights:

- ◆ The entire 100-page document of the *Medicare Formal Request*. Click on **“What’s New?”** on the Home Page.
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- ◆ Information about the AAC-RERC and articles from recent issues of ACN about the research underway. Click on **AAC-RERC** on the Home Page.
- ◆ Links to other websites in the area of augmentative communication. Click on **AAC Links** on the top or bottom of the Home Page.

- ◆ A list of upcoming topics in both newsletters, and an opportunity to share information and opinions. Click on **AugCommentary** on the top or bottom of the Home Page.
- ◆ Workshop and conference presentations by Sarah Blackstone and Michael Williams. Click on **Presentations** on the top or bottom of the Home Page. 

Governmental



Benefit category

Durable Medical Equipment

Definitions

Proposed National Coverage Decision

To replace the current Medicare national coverage decision (NCD) for AAC devices, the following has been proposed.

Equipment (HCPCS codes)

AAC devices

E xxx 1. AAC devices with digitized speech output.

E xxx 2. AAC devices with synthesized speech output that require message generation by typing and access by direct selection techniques.

E xxx 3. AAC devices with synthesized speech output which permit multiple methods of message generation and multiple access methods.

AAC accessories

E xxx 4-1 AAC software*

E xxx 4-2 AAC accessories: access technologies, direct and indirect

E xxx 4-3 AAC accessories: mounting systems

E xxx 4-4 AAC accessories: carrying cases

E xxx 4-5 AAC accessories: power supplies

*** Note:** For accessory code E xxx 4-1 (AAC Software) to be covered, the beneficiary must meet criteria 4 and 6, and have access to a computer and related computer accessories such that communication needs will be met solely by use of AAC software.

HCPCS modifiers - Digitized devices**

ZV less than 4 minutes of recording time.

ZV 4 - 8 minutes of recording time.

ZV 9 - 16 minutes of recording time.

ZV 17 - 32 minutes of recording time.

ZZ more than 32 minutes of recording time.

****Note:** Appropriate use of the Z_ modifier is the responsibility of the supplier billing the DMERC. This modifier identifies the device that fits within the HCPCS code Exxxx1.

Augmentative & Alternative Communication (AAC) devices are electronic devices that provide treatment for severe dysarthria, apraxia of speech, or aphasia, when, due to those communication impairments, an individual is not able to meet the communication needs that arise in the course of current and projected future daily activities. AAC devices are covered as durable medical equipment when incorporated into a speech-language pathology treatment plan, and when it is determined by a speech-language pathology assessment that an individual is unable to meet the communication needs arising in the course of daily activities using natural communication techniques.

AAC devices include electronic devices that are: a) dedicated communication devices and b) portable computers that have been modified to serve as an individual's communication device. The term AAC accessories means device-related components, software and accessories that are necessary additions to an AAC device, based on the nature and severity of the beneficiary's disability, to permit its effective and efficient use.

AAC devices will be covered by Medicare as an item of durable medical equipment when all of the following are met: a) the AAC device is recommended by a speech-language pathologist in a narrative report based on a complete assessment; b) it is incorporated into a speech-language pathology treatment plan stating the functional communication goals to be achieved with the AAC device; c) it is prescribed by the beneficiary's physician and d) it is supported by a completed certificate of medical necessity.***

***** Note:** The speech-language pathology narrative report also must establish whether an individual for whom HCPCS Codes E xxx 1, 2 or 3 are recommended will require any AAC accessories.

Coverage and Payment Rules

1. **Digitized speech devices** (Code E xxx 1) are covered if the patient meets: (a) criterion 1, 2, 3, but not

(b) criterion 4, 5 or 6.

2. **AAC devices with synthesized speech output that require message generation by typing and access by direct selection techniques** (Code E xxx 2) is covered if the patient meets: (a) 1, 2, 3 and 4, 5 and 7 but not

(b) 6, 8 and 9.

3. **AAC devices with synthesized speech output which permit multiple methods of message generation and multiple access methods** (Code E xxx 3) is covered if the patient meets (a) criterion 1, 2, 3 and

(b) 4 and 6.

Clinical Criteria

1. The individual has a communication disability with a diagnosis of severe dysarthria, apraxia and/or aphasia.

2. The individual's communication needs that arise in the course of current and projected daily activities cannot be met using natural communication methods.

3. The individual requires a speech output communication device to meet his/her functional communication goals.


4. The individual possesses the linguistic capacity to formulate language (messages) independently.

5. The individual's will produce messages most efficiently and effectively using spelling.

6. The individual will require an AAC device with extensive language storage capacity and rate enhancement features.

7. The individual will access the AAC device and produce messages most efficiently and effectively by means of a physical contact direct selection technique, such as with a finger, other body part, stylus, hand held pointer, head stick or mouth stick.

8. The individual will access the AAC device most efficiently and effectively by means of an electronic accessory that permits direct selection.

9. The individual will access the AAC device most effectively and efficiently by means of an indirect selection technique (e.g., scanning, Morse Code). 

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Device Category Examples

Category 1: Digitized speech devices: the MessageMates (Words+, Inc.); Macaws (Zygo); Hand Held Voice (Mayer Johnson Co.); Alphatalker (Prentke Romich Co.); SpeakEasy (AbleNet, Inc.); Dynamo (Dynamox Systems, Inc.).

Category 2: Synthesized speech devices (message formulation by spelling, access by physical contact direct selection): LightWriters (e.g., SL25, SL35, SL35C) (Zygo); Link (Assistive Technology Inc.).

Category 3: Synthesized speech devices with multiple methods of device access. Freestyle (Assistive Technology, Inc.; Vanguard (Prentke Romich Co.); Dynamyte 3100 (DynaVox Systems, Inc.); Freedom 2000 (Words+, Inc.); Optimist 100 (Zygo); Synergy mAAC 2 (Synergy).

AAC Software: EZ Keys (Words+, Inc.); Speaking Dynamically (Mayer Johnson).



Augmentative Communication News

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