



American Speech-Language-Hearing Association

Making effective communication, a human right, accessible and achievable for all.



Augmentative and Alternative Communication

Collapse All

Overview

The scope of this page is augmentative and alternative communication across the lifespan.

See ASHA's Augmentative and Alternative Communication evidence map for summaries of the available research on this topic.

Augmentative and alternative communication (AAC) is an area of clinical practice that supplements or compensates for impairments in speech-language production and/or comprehension, including spoken and written modes of communication. AAC falls under the broader umbrella of assistive technology, or the use of any equipment, tool, or strategy to improve functional daily living in individuals with disabilities or limitations.

AAC uses a variety of techniques and tools to help the individual express thoughts, wants and needs, feelings, and ideas, including the following:

- manual signs
- gestures
- finger spelling
- tangible objects
- line drawings
- picture communication boards and letter boards
- speech-generating devices

AAC is **augmentative** when used to supplement existing speech, **alternative** when used in place of speech that is absent or not functional, or **temporary** as when used by patients postoperatively in intensive care (Elsahar et al., 2019).

Key Issues

Incidence and Prevalence

It is difficult to estimate the prevalence of AAC users due to wide variability across this population in terms of diagnosis, age, location, communication modality, and extent of AAC use. Overall, the more severe an individual's communication deficit, the more likely the individual would benefit from AAC support (Brown et al., 2021; Funke et al., 2018; Iacono et al., 2016; Kristoffersson et al., 2020).

- Beukelman and Light (2020) estimated that approximately 5 million Americans and 97 million people in the world may benefit from AAC.
- In the United States among students who need support when communicating, a national survey of special educators across all 50 states reported that 18.2% of their students use a form of AAC for their communication mode: 6.9% use gestural modes, 6.5% employ pictorial supports, and 4.8% use a speech-generating device (SGD; Andzik et al., 2018). According to the 2009–2010 National Survey of Children with Special Health Care Needs, 4% of U.S. children with developmental disabilities and 10.5% of children with special health care needs did not have their assistive technology (AT) communication needs met (Lin et al., 2017).
- In the United Kingdom, Creer et al. (2016) estimated that 0.5% of the population requires the use of AAC based on the prevalence of conditions associated with the use of AAC in the United Kingdom. The largest populations of individuals who could benefit from AAC had diagnoses of Alzheimer's/dementia (23%), Parkinson's disease (22%), autism spectrum disorder (ASD; 19%), learning disabilities (13%), and stroke (11%). A survey of U.K. service providers conducted by Judge et al. (2017) reported an average of 0.0155% of individuals known to be using powered communication aids (e.g., voice output communication aids).
- Across specific pediatric populations, Iacono et al. (2016) estimated that 25%–30% of Australian children with autism have limited speech skills and would benefit from AAC. Kristoffersson et al. (2020) found that 44.4% of Swedish children with cerebral palsy used a form of AAC either exclusively or to supplement their speech. Brown et al. (2021) identified 6.9% of U.S. children with cleft palate or craniofacial anomalies as AAC users.
- A review of medical records at the University of Iowa Hospitals & Clinics found that 33% of intensive care unit (ICU) patients met the AAC candidacy criterion, whereas 3% of non-ICU patients met the AAC candidacy criterion (Zubow & Hurtig, 2013). Similarly, in the ICU setting, an Australian cohort study found that patients were unable to communicate verbally 17% of the time and staff reported difficulty communicating with patients 35% of the time. Despite these communication breakdowns, ICU patients used alternative modes (e.g., gestures, mouthing, personal electronic device) during only 11% of their time in the ICU (Freeman-Sanderson et al., 2019).
- Among adults with amyotrophic lateral sclerosis (ALS) in Scotland, Elliott et al. (2020) found 17.3% of ALS patients acquired AAC equipment for speech augmentation, speech replacement, or written communication support. In Germany, 46% of patients demonstrated the need for AAC, yet 39% failed to access an AAC device (Funke et al., 2018).

Roles and Responsibilities

Speech-language pathologists (SLPs) play a central role in the screening, assessment, diagnosis, and treatment of persons requiring AAC intervention. The professional roles and activities in speech-language pathology include clinical/educational services (diagnosis, assessment, planning, and treatment), advocacy, education, administration, and research.

Appropriate roles for medical/clinical SLPs include the following:

- Provide training for medical and allied health professionals, educators, family members, and community members about AAC use and the impact of AAC on quality of life.
- Educate other professionals and caregivers on the needs of persons using AAC and the role of SLPs in meeting the needs of individuals who use AAC.

- Serve as a liaison between the family and the SGD provider.
- Screen individuals who may benefit from AAC intervention.
- Conduct a culturally and linguistically relevant, comprehensive assessment of the individual's speech, language, and overall communication abilities.
- Conduct a comprehensive, transdisciplinary, culturally and linguistically relevant AAC assessment.
- Develop and implement culturally and linguistically relevant intervention plans to maximize effective communication between individuals who use AAC and their communication partners across the life span.
- Determine the need for further assessment and/or referral for other services.
- Refer to other professionals (rehabilitation engineer, AT professional, occupational therapist, physical therapist, music therapist, vision specialist, special educator, respite care worker) to facilitate access to comprehensive services, reduce barriers, and maximize opportunities for successful AAC use.
- Involve individuals and family members in decision making to the greatest extent possible throughout the assessment and intervention process.
- Document progress, determine appropriate AAC modifications, and determine dismissal and follow-up criteria, if indicated.
- Provide programming support, technical support, trialing of additional systems, and AAC/language development strategies, as necessary.
- Generate reports to help with funding and collaborate with funding agencies.
- Counsel persons who use AAC and their families/caregivers regarding communication-related issues and provide education aimed at preventing abandonment and other complications relating to AAC use.
- Serve as an integral member of an interdisciplinary team working with individuals who use AAC and their families/caregivers.
- Remain informed of research in the area of AAC and help advance the knowledge base regarding AAC assessment and intervention.
- Use evidence-based practice to evaluate functional outcomes of AAC intervention.
- Know about funding sources and the requirements for applying for funding from each source.
- Advocate for individuals and their families/caregivers.

Roles and Responsibilities of School-Based SLPs

Appropriate roles for school-based SLPs include the following:

- Complete the comprehensive speech-language evaluation.
- Consider the student's need for AT, including AAC.
- Request, coordinate, or conduct a transdisciplinary AAC evaluation within the student's natural environment and educational setting that includes both the student and their caregiver(s).
- Provide trial periods with AAC systems and collect data.
- Provide a variety of multimodal supports (no-tech/rapid access, low-tech/light-tech, and high-tech) to allow the student to communicate across various environments in the school setting.
- Collaboratively write and implement goals related to speech, language, literacy, participation, and use of AAC as part of the individualized education program (IEP) team.
- Ensure that the student's needs are met by others on the evaluation and treatment team.
- Provide initial and ongoing training to teachers, parents, and support staff about AAC and the needs of students who use AAC.
- Participate in IEP meetings.
- Ensure that AAC goals and AAC use are documented in a student's IEP.

- Provide transition support and documentation if AAC is deemed necessary for the student as they exit the school system.

As indicated in the ASHA Code of Ethics, SLPs shall engage in only those aspects of the profession that are within the scope of their professional practice and competence, considering their level of education, training, and experience. If an SLP has inadequate experience/training and is unable to assist an AAC user, an SLP refers to or (at minimum) consults with an SLP with experience in AAC.

AAC Populations

Individuals who use AAC have an impairment or a limitation in speech, language, reading, and/or writing. These can be the result of **congenital disabilities**, **acquired disabilities**, or **neurological differences** such as autism.

Examples of congenital disabilities that may benefit from AAC include

- cerebral palsy,
- developmental apraxia of speech,
- developmental disability,
- genetic disorders, and
- intellectual disability.

Individuals with congenital disabilities may continue to acquire language while using AAC. AAC may also serve as a tool to aid in expressive and receptive language acquisition and literacy development in this population. AAC needs may vary and change over time.

Examples of acquired disabilities that may benefit from AAC include

- cerebrovascular accidents (i.e., stroke);
- traumatic or acquired brain injuries;
- neurodegenerative diseases, such as
 - ALS,
 - supranuclear palsy,
 - primary progressive aphasia, and
 - apraxia;
- disability following surgeries (e.g., glossectomy, laryngectomy); and
- temporary/intermittent conditions for
 - patients in critical care settings (e.g., intubated patients) and
 - patients with acute laryngitis.

AAC needs for individuals with acquired disabilities vary and may change over time, depending on language and cognitive status at the time of injury as well as on disease onset and progression.

AAC Systems

An **AAC system** is an integrated group of components used to enhance communication. These components include forms of AAC (described below), symbols, selection techniques, and strategies.

The design of an AAC system should incorporate individual strengths and needs. It considers the individual's full communication abilities and may include existing speech, vocalizations, gestures, and/or some form of external system (e.g., SGD).

An individual may use multiple modalities or many forms of AAC in combination, allowing for change based on context, audience, and communicative intent. A well-designed AAC system is flexible and adaptable. It allows for changes to vocabulary and mode of access as the individual's language and physical needs change over time.

Forms

AAC is typically divided into two broad categories.

Unaided—do not require an external tool. Unaided forms require some degree of motor control. Unaided forms include the following:

- body language
- facial expressions
- finger spelling
- gestures
- manual signs
- vocalizations
- verbalizations

Aided—require some form of external tool, either electronic or nonelectronic. Nonelectronic aided forms are often referred to as “light-tech” or “low-tech.” Electronic forms may be referred to as “high-tech.”

Low-tech/light-tech options include the following:

- communication boards/books
- objects
- pictures
- photographs
- visual schedules
- writing

High-tech options include the following:

- computer/tablet/smartphone
 - communication apps, such as AAC software that enables dynamic symbol/language representation
 - text-to-speech features
 - texting
 - drawing/writing using a tablet
- single-message devices and recordable/digitized devices
- SGDs

An individual may use one form of AAC alone or utilize a combination of unaided AAC, low-tech/light-tech aided AAC, and/or high-tech aided AAC forms.

People who use AAC should always have access to their communication tools or devices. Concerns about the overuse of screen time, particularly for young children, do not apply to the use of screens as part of an AAC system.

SGDs often have different voice output options to allow users to select a voice based on the following:

- age
- ethnicity
- gender
- language(s) used

- race

However, voice output options may be limited and may not accurately reflect an individual's culture. SLPs should be mindful that work continues to be needed to develop AAC treatment and assessment that is culturally responsive (Mindel, 2020).

These devices use synthesized speech output, digitized speech output, or both.

- **Synthesized speech** is electronically produced. Phonemes and allophones of the target language are used to generate digital speech signals that are transformed into intelligible speech. Newer technology uses parameters and vocal characteristics of the speaker's former or residual speech. Through **voice banking**, an individual can record a large inventory of speech, which is then used to create a synthetic voice that approximates their natural voice (Costello, 2011/2016). See *Steve Gleason's Synthetic Voice* for an example. Voice banking should be completed when a communicator's energy and skills are sufficient to generate clear speech.
- **Digitized speech** consists of natural speech that has been recorded, stored, and reproduced. Nonspeech sounds, such as laughter or the sound of a car horn, can also be recorded. Through **message banking**, an individual can use their own voice or a proxy voice to digitally record and store messages, which may include words, phrases, sentences, and sounds using natural voice, inflection, and intonation. Those messages are then stored on, and reproduced by, the AAC device (Costello, 2011/2016).

Comparison of Synthesized and Digitized Speech Output

Synthesized Speech	Digitized Speech
Less “natural sounding”	More “natural sounding”
Requires less device memory storage	Requires more device memory storage
Allows for generation of speech in multiple languages	Allows for recording of speech in an individual’s voice, reflecting their language(s) and dialect(s) used
Allows for novel message generation	Limited novel message generation (number of possible utterances is limited to recorded items)

SGDs should also have customization/individualization options for users to select icons, vocabulary, and languages/dialects that meet their unique needs.

Additional Augmentative Supports

In addition to AAC, other support systems exist for individuals with differences in expressive or receptive communication. These include additional augmentative supports and hearing AT systems. These devices are considered AT but do not fall under AAC, because they do not require skilled SLP intervention prior to use.

Supports include the following:

- amplification
 - hearing aids
 - cochlear implants
 - Hearing Assistive Technology Systems (HATS)
 - personal amplification devices
 - text telephones

- Telecommunications Device for the Deaf
- Teletype
- Braille
- voice amplifiers and artificial phonation devices
 - electrolarynx devices
 - intraoral devices
 - speech valves (for individuals with tracheostomies or ventilators)

HATS may aid communication among individuals who are not able to communicate via sign language or choose not to do so (see ASHA's Practice Portal pages on Hearing Loss in Adults and Hearing Aids For Adults).

Symbols

Symbols are used in AAC to represent objects, actions, concepts, and emotions. They can include the following:

- facial expressions
- gestures
- objects
- photographs
- drawings
- auditory symbols (e.g., spoken words)
- orthography (i.e., alphabet-based symbols)
- 3-D symbols or tactile symbols

Symbols may not have the same meaning or relevance across different languages and cultures. Responsive practices consider what is meaningful for each device user.

Iconicity is the association made between a symbol and the item for which it stands (referent; Schlosser, 2003). Iconicity is classified depending on how easily the meaning of a symbol can be guessed.

- **Transparent** symbols are readily guessable in the absence of the referent, such as a photograph or written word.
- **Opaque** symbols are not readily guessable even when the meaning of the symbol is known, such as an individualized gesture.
- **Translucent** symbols lie between transparent and opaque symbols. The meaning of the referent may not be obvious, but the relationship between symbol and referent is more obvious when additional information is provided (Fuller & Lloyd, 1991).

Iconicity directly affects the communicator's efficiency and effectiveness, especially with untrained or unfamiliar communication partners. **High iconicity** refers to displaying a symbol along with a written word and can help communication partners learn and interpret symbols, particularly if no voice output is available (Wilkinson & McIlvane, 2002). **Language representation methods** (LRMs) refer to three common ways that symbols are used to represent language. The following LRMs are commonly used in AAC systems.

- **Alphabet-based methods** use traditional orthography (spelling) and rate enhancement techniques such as word or phrase prediction.
- **Single-meaning messages** use graphic symbols (e.g., photographs, drawings), each of which represents one word or message (e.g., touching a picture of a toy to indicate a desire or want to play with that toy).
- **Semantic compaction** is based on the concept of **multiple-meaning iconic encoding** and is sometimes referred to by its commercial name "Minspeak" (Baker, 1987). Semantic compaction combines picture symbols (icons) in various prescribed sequences to form words or phrases. Because a single icon can be associated with multiple

meanings, a relatively small set of icons can be used to create many words and phrases. Early in the use of semantic compaction, for example, **frog** could refer to the following concepts: “frog,” “green,” “jump,” and “water.” Pairing **frog** with different symbols can communicate these various concepts—**Frog** + *Rainbow* = *Green*; **Frog** + *Arrow* = *Jump*; **Frog** + *Cup* = *Pond* (Glennen, 1997). With the increase in dynamic screen technology, semantic compaction still uses multiple-meaning icons, but the technology guides the user with screen changes and picture representations. For example, one would now touch a rainbow to represent color words. The screen changes to represent a picture of a hand with a crayon for the verb “color,” and a row of colors at the top of the screen.

A person who uses AAC may use a single LRM or a combination of LRMs, depending on preference and the functionality of the system.

A person’s spoken vocabulary will change based on their age, communication partner, language development, environment, mood, and context. The symbols used in an AAC system should allow for the same changes and flexibility. Symbols are not universal across cultures. It is important to include symbols that are relevant to the individual and their community. In addition, consider appropriate skin tone and physical features in icons that appropriately reflect the AAC user and their community.

Symbol selection is also based on the person’s ability to access, recognize, and learn each symbol’s meaning. For example, a person with visual deficits may need a symbol that is modified to be viewable or is accessible via other sensory modes such as listening or touch.

Symbol Display

The **display** relates to the way in which symbols are presented on an AAC system. Different encoding options (e.g., alphanumeric, numeric, iconic, alphabetic, and color) are sometimes used to organize displays. Displays can be **static** (fixed), **dynamic** (changes based on user actions), or **hybrid** (a combination of static and dynamic).

Display Types		
Static/Fixed	Dynamic	Hybrid
<ul style="list-style-type: none">• Symbols remain in a fixed location.• Most common in communication boards or low-tech SGDs.• There are a finite number of symbols/messages.• Users may have multiple fixed displays (e.g., multiple pages in a communication book).	<ul style="list-style-type: none">• Electronic—selection of one symbol automatically activates change in symbol set.• Often arranged by large category first and then broken down to more specific vocabulary items.• With use of multiple-meaning icons, selection of one icon may prompt display of other related icons.	<ul style="list-style-type: none">• Static/fixed display with dynamic component (e.g., alphabet board or keyboard with word prediction; grid display that opens new page following user selection of a symbol).

A **visual scene** is a photo or video that represents situations, routines, places, or events. Elements within the visual scene may trigger message output when selected, also known as “hotspots.”

Visual scenes may be easier to learn and use than grid displays for beginning communicators (e.g., young children or older individuals who are at early-functioning communication stages). There is also utility for people with acquired communication needs such as aphasia (Dietz et al., 2020). For more details about visual scene displays and an example,

see Tuthill (2014).

Symbol Organization

Symbol organization on an AAC system affects the individual's ability to communicate effectively and efficiently. Symbol organization should be appropriate to the user's language level and address the user's needs and capabilities as well as those of the communication partners (Beukelman & Light, 2020). Organization strategies may change over time based on changes in skills and contexts.

Most AAC systems, with the exception of visual scenes, are presented in a grid format. The organization of vocabulary, symbol size, and number of symbols on the grid is individualized and determined by the type of display; the type of symbol; and the visual acuity, communication and cognitive skills, integrated sensory system, and motor control of the individual. These systems do not have to be accessed via touch; selections can be made via eye gaze, head pointing, or scanning methods.

Semantic–syntactic displays organize vocabulary based on parts of speech and syntactic framework. Symbols are laid out according to spoken word order and print orientation, and they are adaptable to languages that follow different semantic rules than English (e.g., left-to-right or right-to-left, adjective–noun, noun–adjective). Semantic–syntactic displays are useful for adults with relatively intact language (e.g., individuals with ALS) or language learners, and they can facilitate efficient production of grammatically complex messages.

Taxonomic displays group symbols according to semantic category (e.g., people, places, feelings, actions). Typically developing children begin to find this type of grouping helpful at around the age of 6–7 years, so this strategy may not be appropriate for individuals at earlier stages of language development (Beukelman & Light, 2020). The use of taxonomic displays for persons with aphasia can add to the cognitive and linguistic load and may lead to increased errors and slower response time (Petroi et al., 2011).

Activity grid displays (also known as “schematic grid layouts” or “activity-based displays”) organize vocabulary by event schemes, routines, or activities. Each page or display includes activity-specific vocabulary and may be further organized by part of speech (e.g., nouns, verbs). Activity grid displays can increase participation and syntactic development by encouraging use of multiword combinations (Drager et al., 2003). Users may be able to navigate independently from one activity display to another, or they may rely on a facilitator or communication partner to provide the appropriate activity display for a given situation.

Context-based displays are similar to activity grid displays but are designed for a particular (usually frequent) context or environment, allowing for greater generalization than vocabulary designed around a single, specific activity. Context-based displays require a well-developed combination of core and fringe vocabulary.

Pragmatic Organization Dynamic Display (PODD) is a system of organizing and selecting words or symbol vocabulary on a low-tech/light-tech or high-tech AAC system, so that individuals with complex communication needs and their communication partners can communicate more easily. The aim is to provide vocabulary for continuous communication all the time, across a range of different topics, using a variety of messages.

PODD communication books can vary depending on the specific needs of the individual, in

- symbol size,
- number of items on a page,
- language complexity,
- access method, and
- presentation mode (visual or auditory).

Vocabulary organization considers communicative function and flow of conversational discourse. Books include symbols for navigation, such as “I have something to say” and “Go to page_____”; colored page tabs that match page numbers; and symbols for specific operational commands, such as “Turn the page,” “Go back to page___,” and so forth. The first pages of the PODD book often include words or phrases to support behavioral and environmental regulation and may also include pragmatic starters, such as “Something’s wrong,” “I want something,” or “I’m asking a question,” to help individuals convey contextual information (Porter & Cafiero, 2009). PODD can help increase communication because of the focus on the communication partner to work with the client to maneuver the PODD book.

Inclusive Vocabulary Selection

Selection and inclusion of functional, personalized, and meaningful vocabulary within an AAC system can lead to greater intervention success and decreased likelihood of abandonment (Moorcroft et al., 2019) of AAC supports. The SLP considers the individual’s needs for communicating with family members and other communication partners (e.g., in social contexts, academic settings, medical settings, vocational settings, etc.). The vocabulary selected is commensurate with peers, relevant to the individual’s language, dialects, culture, and personal identities. Our personal lexicons shift over time. AAC devices should provide users with opportunities to grow and speak about their personal relationships with their loved ones. Nouns tend to dominate vocabulary sets for AAC users (Dark & Balandin, 2007); however, the inclusion of verbs and other parts of speech can increase AAC acceptance and use (Adamson et al., 1992).

Vocabulary is often divided into two categories: **core** and **fringe** (or “extended”). **Core vocabulary** consists of high-frequency words that make up about 80% of the words used by most people every day (Quick et al., 2019). Core vocabulary contains mostly pronouns, verbs, descriptors, and question words (Witkowski & Baker, 2012). English language learners use a comparable amount of core vocabulary as do native English speakers (Boenisch & Soto, 2015). **Fringe vocabulary** consists of lower frequency words—mostly nouns—that tend to be context specific. Combining core and fringe vocabulary can increase the frequency of AAC use (Beukelman et al., 1991; van Tilborg & Deckers, 2016; Yorkston et al., 1988).

Selection Techniques

Selection techniques are the ways in which messages or symbols are accessed by the AAC user. There are two main selection techniques.

Direct selection—The AAC user selects the desired symbol directly from a selection set. Direct selection can be

- electronic or nonelectronic,
- done with direct physical touch (e.g., body part or other object), or
- done with a generated movement or signal (e.g., via joystick, eye gaze, trackball, traditional or head mouse, brain–computer interface technology, light indicator).

Indirect selection (scanning)—Each item from a selection set is presented sequentially until the desired item appears and is selected by using a previously agreed-upon motor movement or vocalization or by using a switch.

- Presentation of items in the selection set can be auditory, tactile, or visual.
- Items on the screen are presented one by one, in a row, column, or quadrant.
- **Partner-assisted scanning** is an indirect selection technique in which the communication partner presents messages or letter choices in a sequential fashion (visually or auditorily) to the individual, and the individual then makes their selection using a previously agreed-upon motor act (e.g., blinking, grunting, nodding, raising a hand, etc.). Partner-assisted scanning
 - is used with individuals who have severe motor, visual, and/or communication impairments;
 - may be used with individuals who do not yet have established means of alternative access; and
 - may be used as an alternative when the primary system is unavailable or not functioning.

Comparing Direct and Indirect Selection Techniques	
Direct Selection	Indirect Selection
<ul style="list-style-type: none"> • Less load on working memory of user and listener • Can be used with high-tech or low-tech/light-tech systems • Requires more precise and accurate motor movements • One-to-one relationship between the motor act and message generation • Requires greater visual and/or auditory acuity 	<ul style="list-style-type: none"> • Greater demand on listener's and user's working memory • Can be used with high-tech or low-tech systems • Requires less fine-motor control • Requires intermediary steps between the motor act and message generation • Can be used by individuals with significant visual and/or auditory deficits

Communicative Competence

Communicative competence is an individual's ability to freely express ideas, thoughts, and feelings to a variety of listeners across contexts. It provides the means to achieve personal, educational, vocational, and social goals (Calculator, 2009; Light & McNaughton, 2014; Lund & Light, 2007). Individuals must achieve communicative competence whether they use natural speech or AAC, but their paths may vary (Light et al., 2003).

Communicative competence for AAC users consists of the following five individual competencies (Light et al., 2003; Light & McNaughton, 2014).

- **Linguistic competence** includes knowledge of and the ability to use the language(s) spoken and written in the individual's family and community (see Language In Brief) as well as knowledge of and the ability to use the linguistic code (symbols, syntax, grammar) of the AAC system.
- **Operational competence** requires skill in the technical operation of AAC systems and techniques, including
 - having the motor movements needed for unaided approaches,
 - using selection techniques for aided approaches,
 - navigating in and between systems,
 - turning an electronic device on and off and charging it, and
 - operating electronic equipment and/or navigating pages in a low-tech system.
- **Strategic competence** is the ability to use available features to convey messages efficiently and effectively, including
 - asking for choices due to vocabulary limitations,
 - using word/phrase prediction to enhance efficiency,
 - using an introductory (pre-stored) statement to explain AAC to unfamiliar communication partners, and
 - asking one's communication partner to write or type messages to aid in understanding and to repair communication breakdowns.
- **Social competence** is knowing what, where, with whom, when and when not to, and in what manner to communicate. Social communication skills include
 - turn-taking,
 - initiating and terminating communication,
 - topic maintenance, and
 - code-switching.
 - requesting attention;
 - requesting or providing information; and
 - pragmatic skills, such as

- **Psychosocial competence** is the ability to manage the demands and challenges of daily life, maintain a state of mental well-being, and demonstrate adaptive and positive behavior during communication (World Health Organization [WHO], 1997). Psychosocial competence for AAC users includes
 - being motivated to communicate,
 - having a positive attitude toward the use of AAC,
 - having confidence in one's ability to communicate effectively in a given situation, and
 - being resilient—persisting in the face of communication failures.

Assessment

See the Assessment section of the Augmentative and Alternative Communication (AAC) Evidence Map for pertinent scientific evidence, expert opinion, and client/caregiver perspective.

The goal of an AAC assessment is to determine the system component that will optimize communication for the user. AAC assessment is an ongoing process; ongoing evaluation and decision making are required, even after an AAC system has been selected. Elements of dynamic assessment and other informal assessments are used to supplement standardized assessment data. See Assessment Tools, Techniques, and Data Sources for a description of testing and data collection options.

Exposing individuals to symbols and systems prior to assessment may ensure more accurate assessment results. This can be accomplished by providing core and fringe vocabulary supports in the home and day environment (e.g., classroom) and by introducing visually represented language using a variety of communication display forms and sizes prior to the formal assessment process.

Assessment considers the needs of the individual. Needs may include one or more of the following:

- augmentative means of communication to facilitate natural speech;
- alternative means of communication to replace verbal speech, writing, or expressive language;
- temporary or permanent need for AAC; and/or
- means of communication to facilitate more appropriate alternate behaviors.

Primary, **secondary**, and **tertiary** components of the AAC system are also considered during assessment.

- **Primary components** are those that perform the functions of natural language and have the greatest impact on communication performance (e.g., symbols, vocabulary, methods of utterance generation).
- **Secondary components** relate to the way the individual uses and interacts with the system (e.g., user interface, selection method and output).
- **Tertiary components** are often external to the system itself but affect long-term use and ongoing success with the system (e.g., switches, portability, mounts, training and support; Hill & Corsi, 2012).

SLPs also collaborate and engage with family members and caregivers during the assessment. These individuals can often report consistent behaviors and current means of communication beyond what the SLP may directly assess/observe. Lack of family involvement in the AAC process is cited as a significant factor in device abandonment. Therefore, incorporating family members into the AAC process is crucial (Bailey et al., 2006; Moorcroft et al., 2019).

Abandonment of an AAC system is used here to mean that an individual has stopped using an AAC device even though one is still needed. Abandonment occurs in approximately one third of cases (Zangari & Kangas, 1997), even if the system is well designed and functional (Johnson et al., 2006).

The assessment should be conducted in the language(s) needed by the AAC user. Unique characteristics, linguistic background, and cultural variables that affect communication style and use are considered and reflected in assessment and treatment plans. Interpretation services may be needed (see Collaborating With Interpreters, Transliterators, and Translators).

If the individual (and/or communication partner) wears hearing aids or prescription eyeglasses, these should be worn during the assessment. Hearing aids should be inspected prior to the assessment to ensure that they are in working order. SLPs should obtain documentation of hearing and vision evaluations or make referrals as appropriate.

Environmental modifications should be made to accommodate vision or hearing deficits and any other physical difficulties. These modifications may include the following:

- special lighting
- physical positioning of the individual relative to their communication partner
- volume of the SGD
- additional personal amplification, if needed
- modifications of physical space to accommodate wheelchairs or other specialty seats

Consistent with the WHO's International Classification of Functioning, Disability and Health (ICF) framework (ASHA, 2016; WHO, 2014), a comprehensive assessment of individuals with AAC needs is conducted to identify and describe

- **impairments in body structure and function**, including underlying strengths and weaknesses in speech sound production, verbal/nonverbal communication, and gross and fine motor skills for writing and accessing an AAC system;
- **comorbid deficits**, such as apraxia of speech, dysarthria, ASD, intellectual disability, and neurodegenerative disease;
- the individual's **limitations in activity and participation**, including functional status in communication, interpersonal interactions, and learning potential;
- **contextual (environmental and personal) factors** that serve as barriers to, or facilitators of, successful communication and life participation; and
- the impact of communication impairments on **quality of life** and functional limitations relative to premorbid communication status (where applicable).

See *Person-Centered Focus on Function: Augmentative and Alternative Communication for Adult with Amyotrophic Lateral Sclerosis (ALS)* [PDF] and *Person-Centered Focus on Function: Augmentative and Alternative Communication for Child with Cerebral Palsy* [PDF] for examples of assessment data consistent with the ICF framework.

Comprehensive Assessment for AAC: Typical Components

Many components of the comprehensive assessment may already be documented in an individual's records (i.e., medical or school records). The components listed below may be completed if not addressed in these records.

Case History

- medical status and history, education, occupation, and linguistic backgrounds
- history and current use of AAC systems, including motivation to use AAC
- prognosis and potential for disease progression, when applicable

Ecological Inventory

- current communication skills and needs
- communication skills in relation to similarly matched peers
- communication skills in relation to the environment

Self-Report

- functional communication success
- communication difficulties and impact on individual and family/caregiver
- contexts of concern (e.g., social interactions, work activities)
- language(s) used in contexts of concern
- individual's goals and preferences

Sensory and Motor Status

- **vision**—ability to see symbols/text on the AAC system
- **physical/motor status**—means of access to the AAC system (positioning, fine motor, gross motor)
- **integrated sensory system**—ability to regulate and ready the body for communication

Hearing Screening

See Childhood Hearing Screening and Hearing Screening.

Speech Sound Assessment

See the Assessment section of the following ASHA Practice Portal resources: Speech Sound Disorders: Articulation and Phonology, Childhood Apraxia of Speech, and Acquired Apraxia of Speech.

Expressive and Receptive Language Assessment

The SLP should complete a comprehensive speech and language assessment relative to an individual's needs. An SLP should evaluate expressive and receptive skills, including

- an individual's method of expressing communicative intent;
- current means of communication and their effectiveness (verbal and nonverbal);
- vocabulary size and word types used and understood;
- word combinations and grammatical forms used and understood;
- the ability to follow commands;
- the ability to respond to yes/no questions; and
- the ability to correctly point to objects, words, and pictures given an auditory stimulus.

See the Assessment section of the following ASHA Practice Portal resources: Spoken Language Disorders, Late Language Emergence, and Aphasia.

Written Language Assessment (Reading and Writing)

See the Assessment section of Written Language Disorders.

Social Communication Assessment

See the Assessment section of Social Communication Disorder.

Cognitive Communication Assessment

Memory, attention, problem-solving, and executive skills in the context of functional AAC use.

See Traumatic Brain Injury in Adults and Evaluating and Treating Communication and Cognitive Disorders: Approaches to Referral and Collaboration for Speech-Language Pathology and Clinical Neuropsychology.

Symbol Assessment

Ability to use various symbol features to meet current and future communication needs, including

- type of symbol (e.g., objects, pictures, letters, printed text),

- symbol size,
- field size (e.g., number of symbols in a display), and
- organization of display.

Feature-Matching Assessment

Based on individual skills and needs, determine appropriate AAC system features, including

- the ability to facilitate written communication,
- the capability to allow a range of communication functions,
- capacity for use in varying environments and with different partners,
- type and number of symbols,
- type of display and display features (e.g., color vs. black and white, static vs. dynamic, hybrid),
- input type (i.e., direct vs. indirect selection),
- output (i.e., type of speech, voice),
- options for physical positioning and need for accessories (e.g., mounts or switches),
- portability,
- the capability to be modified to allow for changes in communication abilities and needs,
- AAC user preference,
- the ability to motivate use by an individual, and
- affordability and ease of maintenance.

See the Resources section of this document for sample feature-matching charts and checklists.

Identification of Contextual Facilitators and Barriers

- **Facilitators** such as
 - the ability and willingness to use AAC systems,
 - family support,
 - motivation to communicate, and
 - technological knowledge/abilities of the user and family.
- **Barriers** such as
 - reduced confidence in communication,
 - cognitive deficits,
 - visual and motor impairments,
 - lack of acceptance of disability and/or AAC use,
 - limitations in the capability of the AAC system, and
 - seating and positioning limitations across environments.

Assessment Considerations

AAC assessments may be time consuming, and if all questions are unanswered, continued assessment may progress alongside treatment. Trials of specific devices are often a component of AAC treatment, and an individual's success with a specific device may not be effectively determined upon initial assessment.

Treatment

See the Treatment section of the Augmentative and Alternative Communication (AAC) Evidence Map for pertinent scientific evidence, expert opinion, and client/caregiver perspective.

The goal of intervention is to maximize the efficiency and effectiveness of communication for individuals who are unable to communicate via verbal speech. Whenever possible, intervention takes place in a naturalistic environment in order to promote generalization and functional use. Potential areas of focus for treatment include using AAC to

- improve functional communication,
- increase language and literacy skills,
- improve speech production and comprehensibility with the use of multiple modalities,
- decrease challenging behaviors, and
- improve social communication.

AAC interventions address the development of adequate, functional communication skills to support individuals with complex communication needs in developing, rebuilding, or sustaining communicative competence to express needs and wants, develop social closeness, exchange information, and participate in social etiquette routines (Drager et al., 2010; Light & McNaughton, 2014).

AAC intervention requires ongoing collaborative decision making and training to promote communicative competence and language and literacy development, as well as modifications to AAC systems to support changes in communication needs over time. For individuals using aided approaches, intervention may include customization of vocabulary, rate enhancement features that allow users to produce language with fewer keystrokes, and updates to software for high-tech devices.

Preferred practice for AAC intervention incorporates multiple communication modalities so that the user is not restricted to aided or unaided approaches but can use a combination of communication modalities, depending on the environment, listener, and intent of the message.

See *Person-Centered Focus on Function: Augmentative and Alternative Communication for Adult with Amyotrophic Lateral Sclerosis (ALS)* [PDF] and *Person-Centered Focus on Function: Augmentative and Alternative Communication for Child with Cerebral Palsy* [PDF] for examples of functional goals consistent with the ICF framework.

Working With Other Professionals

SLPs often collaborate with other professionals to improve the success of AAC intervention.

- Physical and occupational therapists assist with positioning and selection methods for AAC users.
- Vision specialists assist in determining the best ways for an individual to process and understand symbols and to reduce visual barriers to symbols.
- Rehabilitation engineers or AT professionals help SLPs and AAC users with programming, accessibility, and efficient use of the AAC device.
- Special education and classroom teachers can help the SLP incorporate curriculum-related vocabulary into the AAC system and facilitate the use of the AAC system in the classroom.
- Behavior specialists assist in identifying communicative intent and embedding AAC systems into daily activities.
- Vocational rehabilitation specialists provide education to employers regarding workplace accessibility and inclusion of the AAC user in vocational activities.
- Members of the medical team include nurses, doctors, case managers, and social workers to assist with medical management and transition planning.

See Collaboration and Teaming and Interprofessional Education/Interprofessional Practice (IPE/IPP).

Communication Partner Involvement and Training

Communication partners are integral to the assessment and treatment process. Family, friends, and caregivers bring an important and unique understanding of the strengths, challenges, and needs of the individual who uses AAC. In addition to helping the individual identify goals and objectives for treatment, they often have input into the type of AAC system used, daily communication needs, and vocabulary incorporated into the system. This helps ensure carryover and functional use of the system in everyday life. Partial or complete abandonment of AAC can occur when partner input is not considered during AAC intervention (Angelo et al., 1995; H. P. Parette et al., 2000; P. Parette et al., 2000). See Family-Centered Practice for general guidelines.

Communication partner training facilitates effective communication and incorporates instruction in the following skills:

- using active listening strategies;
- increasing wait time for conversational turn-taking;
- using augmented input to facilitate communication (e.g., visual and environmental cues);
- helping the user take advantage of rate enhancement features;
- understanding the operational aspects of high-tech devices (e.g., turning the device on and off; charging and storing the device; programming; and troubleshooting); and
- supporting the communication of the person who uses AAC across contexts, and communication partners.

The SLP trains multiple communication partners, including other professionals who work with the AAC user.

Inadequate training of communication partners has been identified as a barrier to device use in addition to limitations of the AAC device itself and insufficient involvement in device selection (Bailey et al., 2006). For example, communication partners are more likely to ask yes/no questions instead of open-ended questions, dominate the conversation, or fail to respond to the individual's communication attempts when communicating with children who use AAC (Kent-Walsh & McNaughton, 2005).

Successful integration of AAC devices depends on the consistency of use. For instance, a device may not be maximally effective if it is used only at home but not in other situations (e.g., school or the workplace).

Treatment Approaches

Treatment selection depends on a number of factors, including the individual's communication needs, the presence and severity of co-occurring conditions (e.g., cerebral palsy, apraxia of speech, aphasia, or progressive neurological diseases), and the individual's communication needs, including language(s) used and consideration of belief systems and other cultural elements.

Once an AAC system is selected, intervention will initially focus on training the individual and their family/caregivers in how to use the device and/or system components (i.e., operational competence). Interventions should incorporate use of the AAC system into a naturalistic environment and address using the system to target broader communication goals such as language and literacy development and social interaction.

SLPs consider strategies, target areas and goals they use in other areas of language treatment as they select and implement AAC treatment approaches. SLPs use AAC system components to address these areas. Additionally, SLPs consider the type and frequency of prompting they use during AAC intervention and training, including fading prompts to facilitate independence.

Below are brief descriptions of both general and specific treatment approaches and instructional strategies for AAC intervention. Some are prescribed interventions with specified procedures, and some are more general approaches to language organization and/or system presentation.

This list is not exhaustive, and the inclusion of any specific treatment approach does not imply endorsement from ASHA.

Augmented input—also called “natural aided language,” “aided language stimulation,” or “aided language modeling”—is a receptive language training approach in which the communication partner provides spoken words along with AAC symbols during communication tasks (e.g., partner points to the AAC symbols while simultaneously talking).

Augmented input is based on the concept that language input provides a model for language development. This approach can lead to increased symbol comprehension in young AAC users and in users with severe cognitive or intellectual disabilities (Binger & Light, 2007; Drager et al., 2006, 2010), as well as increased symbol comprehension and production (Binger & Light, 2007; C. Goossens, 1992; M. D. Harris & Reichle, 2004). In fact, this approach can be effective for participants of many differing ages/disabilities/language skills (O'Neill et al., 2018).

Behavioral interventions are used to teach desired behaviors and are based on behavioral/operant principles of learning (i.e., differential reinforcement, modeling, prompting, and fading). Behavioral methods involve examining antecedents that elicit a behavior and the consequences that follow that behavior. Adjustments are made to increase desired behaviors and/or decrease inappropriate ones. Behavioral interventions range from one-to-one discrete trial instruction to naturalistic approaches.

Discrete trial training (DTT) is a one-to-one instructional approach that uses behavioral methods to teach skills in small systematic steps. The teaching opportunity is a discrete trial with a clearly identified antecedent and consequence (e.g., reinforcement in the form of praise or tangible rewards) for desired behaviors. DTT is most often used for skills that (a) learners are not initiating on their own; (b) have a clear, correct procedure; and (c) can be taught in a one-to-one setting. It may be difficult to generalize learning via DTT beyond the setting in which a skill is learned.

Milieu therapy includes a range of methods—including incidental teaching, time delay, and mand-model procedures—that are integrated into a child's natural environment. It includes training in everyday environments and during activities that take place throughout the day, rather than only at “therapy time.” Milieu language teaching and other related procedures offer systematic approaches for prompting children to expand their repertoire of communication functions and to use increasingly complex language skills (Kaiser et al., 1992; Kasari et al., 2014).

Incidental teaching is a teaching technique that uses behavioral procedures to teach elaborated language. Naturally occurring teaching opportunities are provided, based on the individual's interests. The clinician reinforces the individual's attempts to communicate as these attempts get closer to the desired communication behavior (McGee et al., 1999). The individual should initiate contact, which begins a language teaching episode. If the person does not initiate, an expectant look and a time delay might be sufficient to prompt language use. The clinician can prompt with a question (e.g., “What do you want?”) or model a request (e.g., “Say: I need paint.”).

Time delay is a method of teaching that fades the use of prompts during instruction. For example, the time delay between initial instruction and any additional instruction or prompting is gradually increased as the individual becomes more proficient at the skill being taught. Time delay can be used with individuals regardless of cognitive level or expressive communication abilities.

In **Core Vocabulary Approach** the clinician teaches the individual an initial set of core vocabulary that often consists of common words used across contexts. This approach considers vocabulary used by typically communicating peers and any additional words needed by the user based on input from members of the community (e.g., family members, teachers). Often, words from the initial set remain in the same location to minimize demands on memory and motor planning as more words are added to the AAC display; however, the extent to which this can happen varies depending on the AAC system. The variety of word types (pronouns, verbs, descriptors, question words, etc.) used in a core vocabulary approach allows the individual to complete various communicative functions, such as asking questions, requesting, rejecting, protesting, commenting, and describing.

Core vocabulary is likely represented by symbols or symbols combined with written words for individuals with congenital disabilities who use AAC. The core vocabulary may consist of only written words, depending on premorbid and current literacy level for those with acquired disabilities. A foundation of language skills based on core vocabulary is crucial if a focus of AAC intervention is to develop oral and written communication skills (Witkowski & Baker, 2012). Core vocabulary is reflective of all language(s) used.

Development of **functional communication skills training** (e.g., expressing wants and needs, gaining attention, indicating preferences, and protesting) is often the first focus of linguistic intervention for the AAC user. For example, individuals can be taught to make requests by using symbols, objects, or words to indicate desired objects or actions (Johnston et al., 2012). Functional communication skills help minimize communication breakdowns and reduce the occurrence of challenging behaviors (Carr & Durand, 1985; Mirenda, 1997).

Language Acquisition Through Motor Planning (LAMP) is a therapeutic approach based on neurological and motor learning principles that uses a high-tech AAC system to provide the child with opportunities to initiate activity, engage in communication around activities of their choice, and access consistent motor plans to locate vocabulary (Potts & Satterfield, 2013).

The LAMP approach teaches the individual to independently select words and build sentences on a voice output AAC device using consistent motor plans to access vocabulary. LAMP's emphasis on motor planning may reduce the cognitive demands of choosing from a symbol set and may result in more automatic and faster communication (Autism Spectrum Australia, 2013).

Mentoring programs pair young, newly proficient AAC users with older, more experienced users, with the intention of providing positive role models; teaching higher level sociorelational skills; and improving self-confidence and desire to achieve personal, educational, and professional goals. In addition to improving self-confidence and sociorelational skills in the newly proficient AAC user, mentors also benefit from the training experience that prepares them for participation in mentoring programs (Light et al., 2007).

Picture Exchange Communication System (PECS) is a low-tech intervention program for individuals with ASD and other developmental disabilities that is intended to shape a child's expressive communication abilities using prompting and reinforcement strategies. PECS is a specific approach with specific implementation parameters. PECS is based on applied behavior analysis. PECS training consists of six progressive instructional phases:

1. How to Communicate—exchanging single pictures for desired items/activities
2. Distance and Persistence—generalizing picture exchange to different situations and communication partners
3. Picture Discrimination—selecting from two or more pictures (typically stored in a communication book) to request items/activities
4. Sentence Structure—constructing simple sentences by adding a picture of the desired item to a sentence strip that begins with an “I want” carrier phrase
5. Answering Questions—using a picture to request an item/activity in response to the question, “What do you want?”
6. Responsive and Spontaneous Commenting—using pictures to respond to a variety of questions (e.g., “What do you see?” “What do you have?” “What is this?”) to introduce commenting behavior

PECS requires the facilitator to prepare pictures on and the user to accept and have the ability to transport a communication board or book (Flippin et al., 2010).

Total communication (TC) is a holistic approach to communication that promotes the use of all modes of communication, including sign language, spoken language, gestures, facial expressions, and environmental cues such as pictures and sounds. TC has also been used with populations such as individuals with ASD (e.g., Nunes, 2008; Wong & Wong, 1991).

Video-based instruction (also called “video modeling”) is an observational mode of teaching that uses video recordings to provide a model of a desired communication behavior. Video recordings of such a behavior (e.g., appropriate use of an AAC device) are watched and imitated by a learner. The learner’s attempts to incorporate learned communication behaviors can also be videotaped for later review.

Visual prompting strategies use visual cues (e.g., pointing or gesturing) to help individuals maintain attention, understand spoken language, sequence events, organize environments, or increase independence with task completion (Hodgdon, 1995). Visual prompts can be general (e.g., gesturing toward the communication system) or specific (e.g., pointing to a specific display location).

Visual prompting strategies can help increase an individual’s ability to independently initiate tasks, sustain participation in an activity, perform multistep tasks, and participate in an increased variety of activities.

The use of visual prompting strategies that incorporate the same symbols from an individual’s AAC system or that are incorporated into the system itself can help the AAC user understand, anticipate, and communicate about daily routines and can also help decrease challenging behaviors (Drager et al., 2010). Visual prompting strategies can create opportunities to increase aided language input or augmented input.

Visual schedules are a common method of visual prompting. Visual schedules use objects, photographs, drawings, written words, or other symbols to cue or prompt individuals to complete a sequence of tasks or activities. Symbols on the display are presented horizontally or vertically in the sequence of occurrence and can represent activities within a day or week (or longer period) or the steps within a particular activity. Visual schedules that initiate or sustain interaction are called **scripts**. Scripts are often used to promote social interaction but can also be used in a classroom setting to facilitate academic interactions and promote academic engagement (Hart & Whalon, 2008).

Visual schedules can be used to

- improve understanding of routines and expectations,
- increase engagement time,
- ease transitions from one activity to the next,
- provide opportunities to make choices, and
- increase an individual’s control over their daily life (Mechling, 2007).

Treatments Not Recommended

Facilitated communication is a discredited technique by which a “facilitator” provides physical and other supports in an attempt to assist a person with a significant communication disability to point to pictures, objects, printed letters and words, or a keyboard in order to communicate.

According to ASHA’s position statement titled Facilitated Communication, “It is the position of the American Speech-Language-Hearing Association (ASHA) that Facilitated Communication (FC) is a discredited technique that should not be used. There is no scientific evidence of the validity of FC, and there is extensive scientific evidence—produced over several decades and across several countries—that messages are authored by the ‘facilitator’ rather than the person with a disability. Furthermore, there is extensive evidence of harms related to the use of FC. Information obtained through the use of FC should not be considered as the communication of the person with a disability” (ASHA, 2018a).

The **Rapid Prompting Method**, also known as **Spelling to Communicate**, is a technique in which an instructor holds a letter board and provides prompts to encourage an individual to point to letters to spell words. According to ASHA’s position statement, Rapid Prompting Method, “It is the position of the American Speech-Language-Hearing Association (ASHA) that use of the Rapid Prompting Method (RPM) is not recommended because of prompt dependency and the lack

of scientific validity. Furthermore, information obtained through the use of RPM should not be assumed to be the communication of the person with a disability” (ASHA, 2018b). Please see ASHA’s resource on Rapid Prompting Method for further details.

Special Considerations: Assessment and Treatment

Accommodations for Individuals Who Use AAC

Many standardized assessments include items that require a verbal (e.g., picture naming) and/or motor (e.g., pointing) response. For individuals who are not able to do so, it may be necessary to modify the task or the response mode.

Standardized scores cannot be used when assessments are modified because the tasks are fundamentally different (Barker et al., 2012). Assessment should include elements of dynamic assessment and other informal assessments (e.g., direct observation of language use in a variety of natural contexts) to supplement standardized assessment data.

See the Assessment section of ASHA’s Practice Portal page on Written Language Disorders for a discussion of task modifications for assessing literacy skills in individuals who use AAC.

Participation Gap

When evaluating and planning for AAC intervention, the clinician considers the individual’s communication abilities and potential barriers to communication. AAC intervention is considered whenever a gap exists between the communication abilities of the AAC user and those of their peers for individuals with congenital disabilities. AAC intervention occurs when a gap is identified between pre- and post-injury abilities for individuals with acquired disabilities. See *The Participation Model for Augmentative and Alternative Communication* [PDF] (Beukelman & Mirenda, 2013).

Eligibility for Services

Use of AAC should be considered as early as possible, regardless of etiology of the communication impairment. The goal of AAC intervention is to facilitate communication between the individual and their communities. ASHA aligns with the National Joint Committee for the Communication Needs of Persons With Severe Disabilities (NJC) in support of a zero-exclusion policy for AAC services. See the *Communication Bill of Rights* (Brady et al., 2016; NJC, 1992).

There are no prerequisites for AAC intervention, and a variety of strategies and techniques should be implemented in order to determine the most effective means of communication for the individual (Brady et al., 2016; Zangari & Kangas, 1997). All individuals are considered candidates for AAC intervention if their communication abilities do not meet communication needs. The time and effort involved to implement AAC should not be a reason for exclusion from intervention.

Cultural Considerations

Views of disability vary widely and may influence all areas of AAC service delivery, including the decision to use AAC, the choice of AAC hardware, and the selection of vocabulary and symbol systems. SLPs collaborate with the individual and their family members with consideration of their beliefs and views of how to incorporate AAC into their lives.

A thorough assessment includes gathering information about lifestyle, the desire to communicate, and expectations regarding AAC use that are unique to each individual and their communication environments. Ethnographic interviews can be used to supplement information from commercial questionnaires and surveys and can help clinicians better understand clients’ communicative needs (Jenkins & Rojas, 2020). SLPs also recognize that not all individuals who use AAC will share the same beliefs about AAC as their families (O. Harris, 2015). SLPs consider routines, customs, and activities that are relevant to the AAC user’s culture. Please see ASHA’s Practice Portal page on Cultural Responsiveness for more information.

Linguistic Considerations

For individuals who speak more than one language, the clinician should collect a thorough description of prior language exposure and proficiency as well as current level of functioning in every language used. Clinicians should also consider changes in language proficiency due to acquired injury. For example, a bilingual individual with aphasia may no longer be as proficient in all languages used prior to the injury. Availability of culturally and linguistically relevant vocabulary facilitates buy-in and communicative success (Mindel & John, 2018). AAC tools should support various languages and dialects when possible; if the AAC system does not support all of the individual's language(s), they may be unable to communicate in the home, and carryover will be limited (Dukhovny & Kelly, 2015). In addition, the lack of access to language(s) used will result in social isolation from that linguistic community. An SLP may consider AAC systems with the ability to switch between messages in different languages. Several AAC companies offer devices or software that includes multilingual functionality. See Dukhovny and Kelly (2015) for the availability of SGDs with multilingual capabilities.

Involving families and caregivers in the assessment process may involve working with an interpreter or a translator. See *Collaborating With Interpreters, Transliterators, and Translators and Cultural Responsiveness* for more information.

Language Acquisition

Language acquisition via AAC is different from language acquisition through typical means. Before acquiring AAC, children likely had (a) reduced means of expression and ability to control communication interactions and (b) fewer opportunities for exploring and interacting with their environment. During the language learning process, AAC users depend on someone else to provide vocabulary and content for their AAC system, and there may be few communicators who can model language using the same form of communication that the child is expected to use (Blockberger & Johnston, 2003; Blockberger & Sutton, 2003).

Acquisition of grammar (both morphology and syntax) can be especially challenging for AAC users who are simultaneously acquiring language, because morphological markers (e.g., tense and plural markers) are difficult to represent via symbols or may be excluded due to space constraints (Sutton et al., 2002).

It is essential to provide support to all beginning communicators as they develop language skills. Children must be able to comprehend and use language to communicate with others in a wide variety of settings and to function effectively in the classroom. For children with disabilities, the skills to support language development very often must be explicitly taught. This includes building both receptive and expressive vocabulary (including both spoken words and AAC symbols). Specific types of vocabulary may need to be targeted (e.g., teaching verbs and adjectives to a child who primarily uses nouns). Once the child has acquired a good number of words and/or AAC symbols, they can be taught how to begin combining words to form sentences (Kent-Walsh & Binger, 2009).

For pragmatic/social language, an AAC user learns to adapt their communication style based on their environment, communication partner, and needs.

Literacy Development and AAC

Children who use AAC often receive less exposure to language and literacy due to motor, sensory, cognitive, or other impairments.

Lack of literacy development restricts AAC users to nonorthographic symbols and limits their ability for novel message generation (Millar et al., 2004). Nonverbal children may have difficulty acquiring phonemic awareness—an essential skill for literacy development—because they are unable to produce the sounds (Hetzroni, 2004; Millar et al., 2004).

Literacy instruction for AAC users incorporates AAC, AT, and task adaptations that can support literacy learning in children with complex communication needs (Hetzroni, 2004; Light & McNaughton, 2012). Many literacy activities can be adapted to meet the needs of AAC users, for example,

- print awareness activities using adapted books and modeling behaviors, such as indicating

- title and author,
- front and back of the book, and
- directionality of print;
- decoding activities (e.g., segmenting and blending sounds) using materials appropriate to motor and sensory needs;
- engaging in shared reading and reading discussions with ready access to a communication device and other supports to allow maximum participation;
- access to letter boards or adaptive keyboards via direct or indirect selection; and
- direct instruction in decoding and encoding.

Literacy intervention for children who use AAC also includes instruction on how to read for a variety of purposes while drawing on one's own relevant background knowledge and personal experiences (Erickson et al., 2006).

Setting Considerations

School-Based Settings

In the school-based setting, the SLP works as part of a team that typically includes general and special education teachers, paraprofessionals, physical and occupational therapists, teachers of students with visual or hearing impairment, music therapists, administrators, nurses, case managers, and family members.

Important considerations for this population include

- providing an AAC system that allows the student to access the general education curriculum;
- supporting the transition between home and school and between classrooms and schools; and
- other challenges, including
 - securing funding for AAC devices and accessing necessary resources,
 - lack of buy-in (e.g., from the educational team, administrators, or parents), and
 - inconsistent implementation of AAC across school and home settings.

Challenges noted above can be overcome or prevented by

- partnering with a state tech-act agency or a regional or state support center to obtain materials and equipment for loaner and trial periods;
- developing a structured implementation plan with defined roles and responsibilities;
- involving the students, parents, teachers, and administrator in the AAC process from initial consideration through implementation;
- encouraging and promoting interprofessional education and interprofessional practice; and
- providing training as necessary and documenting need for/use of AAC.

The school-based SLP works as part of a team that may include an AAC or AT specialist who facilitates or completes the AAC evaluation. Implementing AAC in the schools is the responsibility of the school-based team—which includes the school SLP—and may include support from an AAC specialist. If the IEP team determines that AAC is required in order for a student to be provided “free appropriate public education” (FAPE; U.S. Department of Education Office for Civil Rights, 1996; U.S. Department of Education Office of Special Education Programs, 2006), the technology must be provided to implement the IEP. The SLP is also responsible for IEP documentation.

According to the Individuals with Disabilities Education Act (2004), Section 300.105 on AT, on a case-by-case basis, the use of school-purchased AT devices in a child's home or in other settings is required if the child's IEP team determines that the child needs access to those devices in order to receive “free appropriate public education.”

Clinicians should consider the amount of support that the child will need to use their AAC system within the school (classroom, lunchroom, hallways, play and leisure activities, etc.) and outside the school setting when working with school-age children who use AAC. Vocabulary selection should give the individual access to the general education curriculum along with access to and use of vocabulary for social communication, functional needs, and support for ongoing language development.

Transitional and Postsecondary Educational Settings

The transition from adolescence to young adulthood can be challenging. The challenges associated with AAC use can present added barriers to success in postsecondary educational or vocational training programs, employment settings, and independent or semi-independent living situations. SLPs are involved in transition planning and may be involved in other support services beyond high school. Support for transitioning individuals who use AAC includes

- transition planning,
- disability support services,
- vocational support services,
- housing assistance,
- support for community integration, and
- ensuring access to AAC systems after leaving the postsecondary setting.

See ASHA's Practice Portal page on Transitioning Youth for more information.

Adult Outpatient Setting

Special considerations should be made when evaluating and treating adults as AAC choice may be highly contextual. Temporary needs versus progressive needs should be considered. For example, an adult with a temporary need for a ventilator after a traumatic brain injury may have significantly different communication needs from somebody with a progressive disease (e.g., ALS).

When working with adults who are using AAC, the SLP considers

- when the individual started using AAC;
- the individual's comfort level with technology;
- the individual's literacy skills prior to and after the injury or progression of the disease;
- if the individual is using AAC for the first time; and
- the individual's skills in areas such as language, cognition, and motor abilities prior to becoming an AAC user.

These factors may affect the individual's acceptance of AAC, their desire and ability to return to or enter the workforce, any accommodations that may be needed, and the need for communication partner training.

The following factors should be considered when facilitating transition and selecting an appropriate AAC system:

- ability of the AAC system to incorporate vocabulary for various settings (e.g., medical, leisure, recreational, vocational)
- need for strategies to support partner-dependent and independent communication (e.g., written choice or visual supports)
- vocational training as well as intervention and acceptance of AAC in employment setting
- concerns regarding device ownership following school-based intervention, as applicable
- considerations for work-related communication (e.g., conference calls, e-mails, etc.)
- accessibility of work (or other) environment

Acute Care Setting

In the acute care setting, the SLP works as part of a team that often includes doctors, nursing staff, physical and occupational therapists, case managers, family members, and caregivers. Many acute care facilities have AAC tool kits for use in acute care settings, and clinicians are encouraged to consult with the treating facility or to consider creating a tool kit. Please see Patient-Provider Communication for an example of such a tool kit.

Important considerations for this population include

- fluctuating physical, cognitive, and linguistic abilities due to medication side effects, pain, arousal/alertness, and acuity of illness;
- positioning and access to AAC from hospital bed;
- vocabulary that allows the individual to participate in their medical care by expressing basic wants and needs, indicating refusal or rejection, advocating for basic needs, and expressing preferences related to medical care;
- motor deficits (temporary and chronic); and
- education of SLPs in the acute care setting to provide this service and educate doctors, nurses, and other allied health professionals.

Telepractice

Effective AAC assessment via telepractice is a complex process. Refer to guidance from your state, employer, or school district. Some considerations for AAC evaluation include

- the availability of system components to be trialed for both the clinician and the client;
- the availability of not only a facilitator but also instruction and training for this individual to set up the device prior to evaluation;
- access to cameras (e.g., document cameras, smartphones, tablets) or other methods, which allow the clinician to observe the client's interaction with the device (e.g., camera placement over the client's shoulder to show the device from above, allowing the clinician to see the device screen and the client's selection);
- proper audio/amplification for the clinician to hear selections;
- the need for interdisciplinary collaboration with physical and/or occupational therapy to establish optimal positioning for access prior to or during the evaluation process; and
- the need for trial periods with devices or extended dynamic assessment across multiple sessions to ensure the clinician's confidence in system recommendations.

See a demonstration of equipment setup, intervention, and engagement strategies that are applicable to remote assessment from Special Interest Group 12, Augmentative and Alternative Communication. See ASHA's Practice Portal page on Telepractice.

End-of-Life Considerations

SLPs often assist individuals with reduced or impaired communication when nearing the end of life. When supporting an individual with AAC at the end stages of life, the SLP considers

- flexibility of access method as physical abilities change or decline;
- vocabulary selection to ensure that the individual will be able to express their wishes, desires, and feelings; basic needs; and issues related to medical care; and
- the individual's access to social networks and the Internet.

The goal of intervention at this stage is to develop communication strategies that will facilitate efficient and effective communication for as long as possible, including connecting with the outside world via social media, e-mail, and texting. The expected outcome of intervention is not to improve abilities but to allow the individual to express wants and needs and to participate in decision making to the best of their abilities.

SLPs should understand the process of dying to understand the emotional and psychological issues faced by individuals and their family members. The wishes of the patient and family are of utmost importance, and the SLP's role extends only as far as the patient and family chooses.

See End-of-Life Issues in Speech-Language Pathology for more information.

Barriers to AAC Use and Implementation

The following factors may serve as barriers to AAC use (Johnson et al., 2006; Light et al., 1996; Moorcroft et al., 2019; Pape et al., 2002):

- frustration due to lack of AAC knowledge on the part of the professional,
- negative attitudes toward persons with disabilities and the stigma associated with AAC,
- AAC potentially symbolizing disease progression,
- slow rate and low frequency of communication,
- equipment breakdowns,
- lack of relevant vocabulary,
- failure to consider cultural differences in AAC system design,
- lack of support for device use on the part of caregivers or belief that they can communicate effectively without the device,
- lack of motivation by the user and family members or caregivers, and
- accessibility due to physical limitations.

Barriers can be reduced if

- the AAC system serves the communication needs of the individual and can be updated when these needs change;
- there is a good match between the device and the user's language, physical, and cognitive abilities;
- there is collaboration with the AAC user, their family, and a multidisciplinary team to incorporate their needs and values during selection of the device;
- the clinician provides realistic timelines regarding progress and use of the device that are understood by the user;
- the AAC user experiences communication success with the system;
- the AAC user values the system and has a sense of ownership;
- thorough training is conducted with both the AAC user and the family/caregiver after receipt of the device; and
- ongoing training, including theoretical and practical experience, is conducted for new communication partners (e.g., new staff at a vocational setting).

Increasing AAC Awareness

There are many misconceptions about AAC that may deter an individual or a family member from AAC use. Advocacy and/or counseling efforts are critical to informing these potential AAC users, as well as professionals key to AAC implementation (e.g., SLPs, teachers, applied behavior analysis therapists). Potential AAC users may believe that AAC reduces motivation to improve natural speech and delays language development. However, AAC use may help improve natural speech when used in a multimodal approach (Millar et al., 2006; Sedey et al., 1991).

Consumers and professionals may think that young children are not ready for AAC until they reach school age. However, early AAC use can help develop speech and language (Lüke, 2014; Ronski et al., 2010; Wright et al., 2013) and can increase vocabulary for children with developmental delays aged 3 years and younger (Ronski et al., 2015). AAC use in preschool-age children may also increase use of multisymbol utterances and grammar development (Binger & Light, 2007; L. Harris et al., 1996; see Ronski et al., 2015, for a review), and AAC may improve receptive vocabulary in young children (Brady, 2000; Drager et al., 2006).

Caregivers and professionals may think that cognitive skills such as demonstrating communicative intent and understanding cause and effect are prerequisite to AAC use. However, impaired cognition does not preclude communication (Cress & Marvin, 2003; Zangari & Kangas, 1997). AAC may help children with complex communication needs develop functional communication, cognitive, literacy, and social communication skills (Drager et al., 2010).

Reimbursement and Funding

SLPs who provide AAC services should be familiar with funding options, including knowledge of public and private funding sources, how funding is determined, and how advocacy may affect funding. Low-tech or light-tech AAC systems are typically created by an SLP and do not typically require or qualify for additional amounts of funding.

SGDs are considered durable medical equipment (DME), and funding by third-party payers can vary. SLPs will need to verify coverage based on their client's specific needs and insurance. The SLP must justify that the device being ordered is medically necessary in order to receive third-party funding. A payer may require that an SLP consider multiple SGDs during their evaluation process and that those devices must not be from the same manufacturer or product line. SGD vendors may be able to assist with funding questions and may have templates for meeting payer standards; however, this does not take the place of a comprehensive AAC evaluation.

SLPs writing AAC evaluations and completing funding requests must disclose any financial relationships that they have with device manufacturers and must certify that their recommendation for device selection is based on a comprehensive evaluation and preferred practice patterns and is not due to any financial incentive.

The Assistive Technology Act

The Assistive Technology Act (AT Act) of 2004 provides every state and territory with federal funding to support efforts to increase access to, and acquisition of, AT devices and services (Assistive Technology Act, 2004). Find your state's AT Act program at the National Assistive Technology Act Technical Assistance and Training (AT3) Center - Program Directory. For more information about the AT Act, go to National Assistive Technology Act Technical Assistance and Training (AT3) Center - AT Act Information.

Insurance Information

Medicare

Please see Local Coverage Determinations by State Index for further information. See ASHA's Medicare Coverage Policy on Speech-Generating Devices as well as guidelines from CMS. Medicare rules are subject to change. Medicare may not cover AAC devices in all settings (e.g., skilled nursing facilities, hospice). SLPs work with their patients and facilities to provide appropriate services to their areas of need.

Medicaid

Refer to the Medicaid Guidelines for your state.

The Patient Protection and Affordable Care Act

The **Patient Protection and Affordable Care Act** (2010), commonly called the **Affordable Care Act** of 2010, prohibits disability-based discrimination in insurance policies for essential health benefits, which often includes SGDs.

Private Insurance Plans

There is significant variability in funding of AAC devices between different plans and companies. Each is different, and an SLP should check with the provider before beginning the process of obtaining a dedicated AAC device (e.g., SGD).

Funding for Tablets, Apps, and Computers

Tablets, apps, and computers are considered nondurable, nondedicated devices, and payers' coverage for these devices varies. SLPs need to verify coverage with the individual's insurance, based on that individual's specific plan and coverage.

Funding for Telecommunication Equipment

Technology to assist with communication over the phone may be covered by a state's telecommunication equipment distribution program. Eligibility may vary state-to-state. A listing of these programs is available at TEDPA Telecommunications Equipment Distribution Program Association.

For individuals who are deaf-blind, the federally funded I Can Connect program provides eligible individuals with devices necessary for distance-related communication (including computers and software), as well as evaluation and training on the equipment.

Funding for Accessories

As with SGDs, an SLP should document medical necessity for accessories. A team-based approach is suggested when considering appropriate accessories, particularly with considerations from physical therapy and occupational therapy. Accessories that may support an AAC user include the following:

- case
- keyboard
- mouse
- keyguard
- stylus
- amplification
- joystick/trackball
- mount/stand

Resources

ASHA Resources

- ASHA AAC Information for the Public
- Health Care Common Procedure Coding System (HCPCS) Level II Codes: AAC and Other Speech-Language Pathology Related Devices
- High-Tech AAC for Spanish Speakers
- Medicare Coverage Policy on Speech-Generating Devices
- National Joint Committee for the Communication Needs of Persons With Severe Disabilities (NJC)
- An Overview of the AAC Assessment Process
- SIG 12 AAC and Telepractice Information
- Transitioning Youth

Other Resources

This list of resources is not exhaustive and the inclusion of any specific resource does not imply endorsement from ASHA.

Advocacy/Education

- CommunicationFIRST
- International Society for Augmentative and Alternative Communication

- National Parent Center on Transition and Employment
- Orange Effect Foundation
- Patient-Provider Communication
- Project Core

Assessment

- AAC at the University of Washington
- Association of Assistive Technology Act Programs
- Communication Matrix
- Communication Supports Inventory–Children & Youth (CSI-CY)
- Family Impact of Assistive Technology Scale for Augmentative and Alternative Communication Systems (FIATS-AAC)
- *Feature Matching Comparison Chart* [PDF]
- Tobii Dynavox Dynamic AAC Goals Grid 2

Intervention

- AAC Language Lab
- Dynamic Learning Maps Professional Development
- LAMP (Center for AAC/Autism)
- Minspeak
- Model Talker
- Pennsylvania Training and Technical Assistance Network (PaTTAN)
- PrAACtical AAC
- Talking with Tech
- Tele-AAC Resolution

Related Organizations

- AAC-RERC
- ALS Association
- American Association on Intellectual and Developmental Disabilities (AAIDD)
- Assistive Technology Industry Association (ATIA)
- The Center for AAC & Autism
- CommunicationFIRST
- Rehabilitation Engineering and Assistive Technology Society of America (RESNA)
- Rehabilitation Engineering Research Center on AAC
- TASH
- Team Gleason
- United States Society for AAC (USSAAC)

Other

- Boston Children's Hospital Augmentative Communication Program Handouts and Resources
- Institute for Matching Person and Technology, Inc.
- *The Participation Model for Augmentative and Alternative Communication* [PDF]
- Talking Mats

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