

Light Technology Augmentative Communication for Acute Care and Rehab Settings

Elizabeth Bahr

This article will focus on light technology augmentative and alternative communication (AAC) for people who have recently experienced a stroke with resulting aphasia. The role of the speech therapist and occupational therapist in evaluation, implementation, and training will be addressed. Various AAC options based on level of function will be considered and discussed. The purpose of AAC for this population and its use in family training prior to discharge, communication with staff, and therapy will be highlighted. **Key words:** *aphasia, augmentative communication, family training, functional communication, light technology options*

The therapist in an acute care or rehabilitation-based setting working with a patient who has recently had a stroke plays many roles. While focusing on evidence-based practice to improve function, the therapist gives strategies and compensations for communication deficits. As a therapist, an important role is to challenge the patient, help the person achieve goals, and make gains while giving options and methods to decrease frustration associated with impaired communication. Occasionally, the focus of therapy, especially for a patient who has only recently had a stroke, may emphasize therapeutic treatment and exercises for increasing functioning versus time spent on compensatory strategies. Families may, at first, reject a focus on compensatory strategies as they hope their loved one will quickly improve. The patient, family, and therapists may rely on therapeutic techniques to improve the patient's functioning without providing a way for the patient to communicate in the meantime.

Focus on remediation of deficits at the expense of compensatory strategies can have a negative impact on the client's participation in rehabilitation. Costello¹ states that patients who used a voice output device in a hospital setting felt they were more involved in directing their care and felt more "respected" as a person by their doctors and nurses. This article will focus on the use of light technology communication options for people with aphasia after a recent stroke. *Light tech* is a term used in numerous ways throughout

the augmentative communication and assistive technology literature.² In this article, the term will mainly refer to paper-based systems, functional communication techniques, and battery-operated voice output devices. This is not to say higher tech systems do not work for people with a recent onset of aphasia. Many people experiencing aphasia do use high tech systems immediately after their stroke to assist with communication; however, in an acute care setting or inpatient rehab setting, it is sometimes difficult to quickly provide complex and costly devices for the patient.

Communication Boards

In their 1992 article, Mitsuda et al.³ expressed the need for nurses and other hospital staff to be educated on augmentative and alternative communication (AAC) for functional communication. When an inpatient with a nonfluent aphasia cannot orally communicate their needs, they are given a communication board with basic information (e.g., hot, cold, bathroom, pain, etc.). These words are usually paired with a communication

Elizabeth Bahr, MA, CCC-SLP, is Speech Language Pathologist, Rehabilitation Institute of Chicago Technology Center, Chicago, Illinois.

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Figure 1. Communication using PCS symbols with word labels via vertical eye gaze in a field of two, and an example of an eye gaze communication board with PCS symbols. The listener holds up the board and looks through the middle hole to watch the eyes of the communicator.



symbol, possibly Picture Communication Symbols (PCS) or line drawings, in a large field of choices. Occasionally, this board is thought to be a solution even if the patient is not using it functionally. For example, a patient experiencing limb apraxia may not point accurately to the board, and yet they are continuously asked to “touch the one you want.” The responses from the patient, if any, may then be misinterpreted. Boards require customization to allow the client to use them functionally. In the limb apraxia example, using eye gaze cards rather than a board to point to may result in more accurate communication of basic needs (**Figure 1**). Other clients may do better with photo-based choices or concrete symbols versus a more abstract symbol board.⁴ The number of choices as well as the size and location of each choice are also important considerations. Think about your own ability to visually organize information. Some people may write a shopping list in columns, organized neatly with spaces in between as this is easier for them to process the information. Due to possible language, cognitive, and visual changes after stroke, it is important to assess the best visual arrangement for the patient. In a multidisciplinary setting, the

occupational therapist can be consulted to give further information about the patient’s visual processing of information. For example, some patients with aphasia may be experiencing a right inattention and need symbol choices in a vertical row on the left side of the paper (**Figure 2**).

These and other considerations illustrate the importance of not falling into the trap of one basic board for everyone. Personalization and customization of a basic need communication system is an important step and should be done early in the patient’s inpatient stay. Education of family, caregivers, and allied health team members on use of the communication system is imperative. Due to changes in nurses and care technicians assigned to the patient, posting instructions in the patient’s room can ensure consistent use of the system.

When creating the initial basic needs communication system, the following is a list of items that should be considered:

- Specific medical needs (suctioning, repositioning, pressure relief, specific feelings of pain, etc.),
- The representation that works best for the patient (symbols, photos, or words),



Figure 2. Example of a communication board with PCS symbols for a person with right inattention.

- Access method (pointing, eye gaze, grabbing symbols off Velcro, etc.),
- Personalized vocabulary (family names, preferences, favorite TV shows, etc.),
- Vision needs (larger font, less per page, present in right visual field, put symbols only on left side of the page, etc.),
- Number of boards/symbol cards the patient can navigate through or that family can keep organized and use efficiently,
- Category-based or other organization system (e.g., a communication book organized with each page being a topical category such as needs, feelings, family members, etc., or each page being a place the patient goes),
- Motivating situations that can be included in the communication system,
- A comment page and/or rating scale to give the patient the ability to better describe or rate something,
- Direction page for family and staff to highlight how best to use the system with the person with aphasia.

Use of a recordable single message device, with a message of “please get my communication book,

I have something to tell you,” may also assist in letting nurses and caregivers know the patient wants to communicate with them, and the voice output of the message gets their attention. Some patients benefit from auditory feedback when making a choice. The auditory feedback may be a listener stating, “You’re pointing to the blanket symbol, are you cold?” It may also be useful to attach the board to a light tech recordable speech device. Devices such as the Cheap Talk 8 (www.enablingdevices.com) and other battery-operated devices allow the family or therapist to record a message for each symbol. In the blanket example, the picture of the blanket can be attached to a button that says “I’m cold.” Auditory feedback is given to the patient through the recorded message, and a listener can decipher what the patient needs over a speaker phone or when across a room as they no longer need to only see where the patient is pointing or looking.

If a recordable speech device is not available, items such as a talking photo frame, talking photo album, or digital photo keychain that are purchased at a local electronic store can be utilized in a very similar manner. Using one picture symbol per page, a talking photo album allows a recorded message for each picture. The first page may be a toilet symbol with the message “please help me to the bathroom.” The next page can be a photo of a grandchild with the message, “This is Emma, she’s 8,” and so on. In all the above products, the patient must be able to activate a button to play the recorded message. Consultation with the patient’s occupational therapist is recommended if accessing these options is difficult.

Auditory-Based Communication Strategies

Although some form of communication boards, symbol cards, or communication notebooks are a common method for early augmentative communication, there are other options to trial and consider. Due to visual acuity or visual attention issues, auditory scanning is a powerful tool for a person with aphasia who does not have significant auditory comprehension deficits. For less responsive patients or patients with extensive motor impairments, auditory scanning with a partner can be used to allow for control



Figure 3. Amdi recordable speech device used in linear scanning mode with auditory feedback. Switch seen on bottom right can be placed at the patient’s knee, head, shoulder, or other locations if hand function is impaired.

of a motivating activity, communication of needs/wants, or for choice making.

The following example of auditory scanning involves a woman with Broca’s aphasia and apraxia of speech. She had experienced a stroke less than 2 months prior, and decreased motor planning and visual attention impacted her accuracy when trying to point to communicative symbols on a communication board in a field of two choices. A small switch was mounted to the leg rest of her wheelchair, and she was asked to move her knee to hit the switch. The small switch was attached to a buzzer that went off when she tapped the switch. At first, the system was used to confirm yes/no responses, for example, “hit the switch if you like this song.” As her yes/no accuracy improved, it was used to make choices. The therapist would say, “When you hear me say what you want to do, hit the switch. Watch TV, go outside, go on the computer...” The patient would hit her switch at “computer” and that would be confirmed with yes/no as her desired choice.

Her family reported the system was faster than the 20 yes/no questions they usually had to ask. They used it for many choices throughout the day, such as to locate where she was having pain, what she wanted for lunch, and more.

The buzzer was later replaced with a single message device that was changed depending on the activity. A single message device is anything that records a spoken message and can later be accessed by hitting a button. For example, the therapist recorded “please help me” in the device and the patient hit the button to activate the single message when she needed help. The message can be quickly changed depending on the situation. As the patient’s ability to attend to numerous auditory choices while hitting a switch improved, a device that allowed for auditory scanning was attempted. In such a device, eight messages were stored by the therapist and the device would play back each message. When the patient heard the one she wanted, she hit her switch and the device would play that message louder so the listener was aware of her choice. In this case, the Amdi Tech/Scan 8 Plus (www.amdi.net) was used; however, there are similar devices on the market that do auditory scanning as well. Although auditory-based systems require a lot of communication support from the listeners, it allowed the patient an accurate and efficient way to communicate functional needs and wants when asked appropriate questions or given appropriate choices (see **Figure 3**).

Use in therapy

A 45-year-old male 3 months post stroke presenting with moderate-severe Broca's aphasia with reduced comprehension was recently referred for an AAC evaluation by his inpatient speech therapist. The referral indicated that decreased motivation, depression, and limited family support impacted his participation in all therapies. Similar observations were noted during his AAC evaluation session, and an accurate system of functional communication for basic wants and needs was not determined. A phone call was made to his family to discover the patient's interests and hobbies. They stated that he enjoyed Motown and Nascar. This patient's first communication board included pictures for the Four Tops, Nascar, Stop, Keep this on, I like this, I don't like this, and American Idol. The board was used in sessions to allow the patient control over a computer activity. If he pointed to the photo of the Four Tops, one of their songs was played; if he pointed to Nascar, clips from a recent race were played for him. The "nonpreferred" choice was American Idol. Nonpreferred choices are used to ensure accuracy of the person's choice making. If all options were preferred, for example Nascar and the Four Tops as the only choices, it would be unclear if the patient was demonstrating accurate choice making. He learned quickly not to choose the American Idol picture, or he would be read the results of a show he did not enjoy. This helped ensure his accuracy with the board and reinforce his control over the activity with use of the symbols. As participation with the communication board increased, he was introduced to similarly arranged boards for medical needs, answers, places, and personal information. Therapists on his inpatient floor stated increased use of the communication boards possibly due to his experience during the computer activity. The patient learned he could control and functionally communicate using the boards, and he became less resistant to an AAC system.

Speech therapists often use written choice in aphasia therapy. Written choice, even for individuals with difficulty reading, gives an additional mode of communication.⁴ For example, if a person with aphasia were asked whether he or she liked romance, comedies, or action movies, there may

be too much auditory information to process and no easy way to communicate an answer. Using written choice, the communication partner writes the three options on a paper and points to each while asking the question. The person with aphasia can then point to his or her choice, and it can be confirmed by the communication partner. This method is a common therapy practice but is not always shared with family, staff, and friends of the patient. Demonstration and written instructions for this technique can be a powerful training tool for patients' loved ones. A spiral notebook can be used to keep a log of commonly used written choices, which gives additional support to the family and allows for use of basic written choice answers, such as yes, no, and I don't know.

Augmentative communication techniques and materials do not need to be kept separate from other aphasia therapy techniques. Whether it is through increasing motivation, decreasing frustration, or giving additional training to the family, compensatory systems can play an important role in the entire therapy process.

Discharge planning

When patients are discharged from an inpatient or rehab setting back to their home, their caregivers have to take all the information they receive from each discipline, nursing, and the physicians and apply it to real life. Depending on the needs of their loved one, they may be adjusting their home for the patient's physical limitations and ordering equipment such as tub benches, hospital bed, etc. Often speech therapy's role in the discharge process is reviewing strategies, exercises, and therapeutic techniques addressed during therapy and possibly giving handouts and consulting with the outpatient speech therapist. However, in addition to the physical modifications to the home, there are some basic modifications that can be done to make the patient's environment more communication friendly.

It is very important to get the family involved in setting up communication systems for the home before their loved one is discharged. While in the hospital, a gentleman presenting with global aphasia utilized eye gaze to actual objects as his method of communication. There was

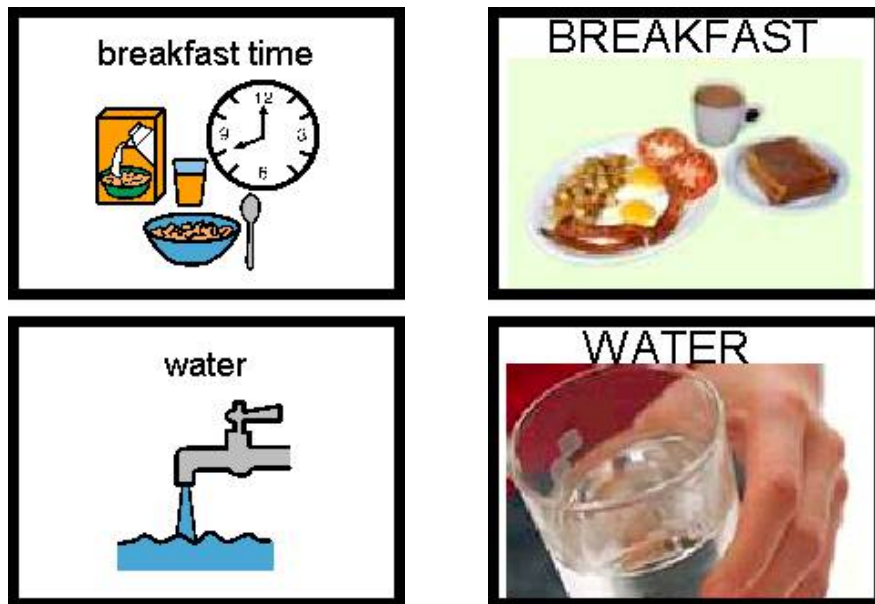


Figure 4. Example of using real photos for communication cards versus symbols or line drawings.

not a consistent yes/no response, and he was inconsistently alert. Although he was inconsistent with symbols, when concrete objects were held vertically in his eye gaze he looked at the one he wanted for 3 seconds to communicate a want or need. (They were vertically arranged due to a right inattention, and eye gaze was utilized instead of pointing due to limb apraxia.) For example, a cup of orange juice and applesauce were held vertically in front of him. The objects were reviewed and he was asked to keep his eyes on his choice. Once a steady gaze toward one of the two choices was noted, the therapist counted aloud to 3 and reinforced his choice by immediately giving him the chosen object and stating he communicated he wanted it by using his eyes. At discharge, the method was still inconsistent. The use of symbols and pictures instead of concrete objects was attempted, but trials were not successful. However, occasional communication via eye gaze was noted when using family photographs. Prior to discharge, his wife was asked to take photographs of the patient's home environment. She appropriately took pictures of his favorite cup, his recliner, his television, the bathroom in their home, and other objects that would signify needs or wants. Using the photographs of the patient's

actual environment proved more successful than generic pictures of a television or a different bathroom. The family was trained, and the patient was discharged to his home. After returning home, they reported that eye gaze with the photo cards was their main method of communication, and they had added new cards on their own (see **Figure 4**).

If a client is discharged with no supervision recommendations but is unable to communicate enough for an emergency phone call, the family does not want to leave their loved one with aphasia alone at the home. Emergency call systems can be purchased, but a less expensive and more temporary solution may be setting up a tape recorder with an outgoing message such as "there's something wrong, please come home" or a recorded message for a 911 operator. As long as the person can correctly use memory dialing on the phone, hit the play button on the tape recorder, and cognitively complete the steps to place the phone call, a loved one will know if help is needed. The family may also consider use of an emergency call system with multiple phone numbers or a monitoring service. Additionally, if 911 receives a phone call, they will automatically send emergency services if they cannot communicate with the caller.

The vocabulary on the communication boards used in the hospital can be adjusted for the home and either kept in a book or strategically placed around the person's environment. If the family wants to add to a picture communication board but does not have access to a software program to create symbols, they can use an image search online, digital pictures of the objects, magazine cutouts, or cutouts of food labels and various logos to create personalized boards for their loved one.

Discussion

For a therapist, including compensatory strategies in therapy sessions with patients who

have recently experienced a stroke is usually automatic. Spending time to focus and fine tune those strategies and techniques is sometimes not. AAC should be incorporated into a patient's rehabilitation process from the beginning. This will allow smoother discharge planning, family training, and enhanced functional communication at discharge. Further research is needed on augmentative communication's role in increasing functional language for people with recent onset of aphasia. Training of therapists, staff, family members, and others on various methods and uses for augmentative communication is an ongoing process that is specific to each patient's needs.

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