

# Augmentative and Alternative Communication

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## AAC Terminology

### Definition of AAC

- the use of special strategies, methods and techniques to **augment** and/or serve as an **alternative** to natural speech
- Examples: gestures (facial expressions, eye movements, postures), manual signs, communication boards, electronic devices

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### Definition:

- Augmentative – defined as the process of augmenting existing speech abilities
- Alternative – defined as the process of providing a substitute for speech (Lloyd, 1985)

ASHA: "AAC refers to an area of research, clinical and educational practice. AAC involves attempts to study and, when necessary, compensate for temporary or permanent impairments, activity, limitations

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**Who Relies on AAC**

- No typical person.
- Come from all age groups, socioeconomic groups, ethnic or racial groups.
- Their only unifying characteristic is the fact that they require adaptive assistance for speaking and/or writing, because their gestural, speech and/or written communication is temporarily or permanently inadequate to meet all of their communication needs.

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**Variety of Conditions/Causes for AAC**

<b>Congenital</b>	<b>Acquired</b>
Intellectual Disability	Amyotrophic Lateral Sclerosis (ALS)
Cerebral Palsy (CP)	Multiple Sclerosis (MS)
Autism	Traumatic Brain Injury (TBI)
Apraxia	Stroke
	Spinal Cord Injury

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**Low-tech Communication Options**

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## Unaided low-tech systems

- No external aid, tool or equipment required
- Readily available at no cost
- Easily transportable
- Can be difficult for listeners to interpret

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## Gestures & Body Language



- Conventional gestures - recognized by society as messages with specific meaning
- Body language - postural behaviors and signals that are commonly recognized

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## Gestures & Body Language

### PROS

- Nothing external required

### CONS

- Limited in number & type of messages that may be conveyed
- Limited to 'here and now'
- Can become a game of '20 questions'
- Some physical ability required

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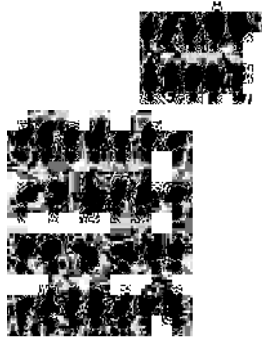
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## Sign Language

- Gestures with rules for production
- **Not universal**
- May be learned more easily with reinforcement specific to a request
- Facilitates language development
- Can communicate extensively if partner is knowledgeable
- Must have physical skills



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## Vocalization & Speech

- Used for quick, general intent
- Can be more effective paired with gestures/facial expressions
- Gains attention and should be recognized
- Speech is efficient, can be difficult or easy
- May need to be augmented

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## Aided low-tech systems

- Requires the use of some type of external aid, tool or equipment in addition to the user's body
- Easier to understand
- Used in multiple environments with variety of people
- Can break down or get lost
- Must be portable

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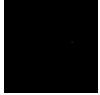
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## Static pictures & boards

- Individual picture symbols
- Picture communication books/boards
- Letter/alphabet boards
- Word boards
- Accessible through multiple means
- PECS (Picture Exchange Communication System)

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## Lightpointer & headpointer

- Access for those with more physical involvement
- Requires some physical control
- May require listener to be standing beside and follow along
- Spelling - slow, tedious, not effective with non-spellers

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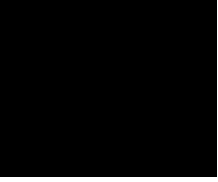
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## Eye Gaze/Eye Blink

- Can use static pictures, boards, frame, alphabet, hands, letters
- Extremely flexible with positioning
- Easy to make
- Can be time consuming to obtain message
- May be misinterpreted and become 'yes/no' game
- Responses for yes/no
  - Once/twice
  - Up/down
  - Fast/slow
  - Morse code

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## Partner Assisted Scanning

- Uses low-tech options
- Partner scans choices through desired method (linear, row/column, group) until communicator confirms
- Can use pictures, alphabet, or words
- [http://depts.washington.edu/enables/myths/myths\\_aac\\_strategies\\_lowtech.htm](http://depts.washington.edu/enables/myths/myths_aac_strategies_lowtech.htm)

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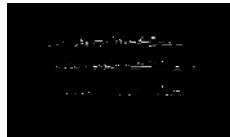
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## “Off the shelf” low-tech

- Pad/paper
- Dry erase board
- Magna Doodle
- Letter bracelets  
– Yes/No



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## Low-tech voice output options



**Cheap Talk**  
By Enabling Devices



**Big Mack**  
By AbleNet



**Step-by-step**  
By AbleNet



**Partner/One**  
By AMDI



**Communication Builder**  
By Enabling Devices



**Say It Play It**  
By Enabling Devices

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## High-tech Communication Options

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## Types of displays

### Fixed/Static

- Items are fixed in a particular location and do not change
- To change vocabulary, you must change overlay
- To change messages for different overlays, you must re-record or change levels

### Dynamic

- Visual display changes automatically
- Pages or screens may be linked to other pages or screens
- Can be dedicated or computer-based
- Most have alternate access methods

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## Fixed “static” display devices

### Pros

- Easy to program
- Voice output
- Easy access
- Lightweight
- More portable (when smaller)
- Less expensive

### Cons

- Must anticipate communication needs in a situation
- Limited messages
- Requires assistance from partner
- Does not allow for text-to-speech message creation

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## Dynamic display devices

### Pros

- Extensive vocabulary available
- Most offer digitized and synthesized voice output
- Allow for text-to-speech message creation
- More flexible in creation and layout of pages

### Cons

- Can be much more difficult and time consuming to program
- Heavier weight, can be difficult to transport
- Cost
- Linking pages requires some basic categorization skills

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## Types of Speech Output

### Digitized Speech

- Uses recorded speech
- No spelling capability
- Easier to setup

### Synthesized Speech

- Computerized speech
- Allows for text-to-speech message creation
- More involved setup

\*Devices may offer a combination of both

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## Factors affecting intelligibility of synthesized speech

- Rate of speech
- Output methods – word, sentence, mixed methods
- Noise
- Non-native speakers of English
- Older adults with hearing loss
- Telephone

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## Dedicated vs. Computer Based

- Dedicated – sole purpose is communication, does not run on a computer platform (i.e. Windows), can do computer access with accessories and/or cable using screens on device.
- Computer based devices – run on a computer platform and use communication software, gives you access to the actual computer and computer programs you would use on your personal computer without additional accessories and/or cables. May not be funded by traditional funding sources.

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## Rate enhancement techniques

- Word prediction – as you spell the device begins to predict what you are spelling and offers you a selection of choices
- Grammar prediction – when you complete a word the device will offer several optional words that may come next in the sentence (often pronouns, helping verbs, articles)

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## Rate enhancement techniques (cont.)

- Abbreviation expansion – key letters of a message are used to store messages (i.e. 'hh' represents "Hi, how are you?")



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**Voice Output Solutions:  
Static Display, Multiple Level**



Go Talk  
*By Attainment*



Easy Talk  
*By The Great Talking Box Company*



Tech Speak  
*By AMDI*



Message Mates  
*By Words+*



Boardmaker Activity Pad  
*By Mayer-Johnson*

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**Voice Output Solutions:  
Dynamic Display Devices**



Dynavox V, V Max, Tango  
*By Dynavox Technologies*



ECO2, Vantage Lite, Vanguard  
*By Prentke Romich Company*



C12 and C8  
*By Tobii/ATI*



Alt Chat, ComLink ST+ and ComLink LT  
*By Forbes Rehab Services*

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**Voice Output Solutions:  
Dynamic Display Devices**

DIGITIZED SPEECH  
ONLY DEVICES



MightyMo & MiniMo  
*By Dynavox Systems*



Dynavox M3  
*By Dynavox Systems*



Springboard Lite  
*By Prentke Romich Co*

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### Voice Output Solutions: Dynamic Display Devices


**HANDHELD DEVICES**




**Say-It SAM**  
*By Words+*



**iPod Touch with  
Proloquo2go software**  
*By Apple/Assistiveware*



**Xpress**  
*By Dynavox*



**Chat PC Silk**  
*By Sattilo*

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### Computer based eye response communication systems




**MyTOBii CEye**  
*by Tobii Technology*



**Quick Glance 3**  
*by Eye Tech Digital Systems*



**EyeMax**  
*By Dynavox Technologies*



**ECOpaint**  
*By Prentke-Romich Company*

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### Voice Output Solutions: Text-to-Speech


- Text-to-Speech devices
- Rate enhancement techniques
- Text-to-Speech capabilities of other devices



**Lightwriter SL40**  
*By Tobii/ATI*



**Speak Out**  
*By Sattilo*



**DynaWrite**  
*By Dynavox*

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### AAC Assessment: Considerations

- Evaluation is performed by a multi-disciplinary team
- Evaluation consists of hands-on trial of all devices being considered
- Trials may need to be done over a period of time and in different environments before recommendation is made
- Input should be received from all team members (i.e. parents, school team, outpatient therapists, etc...)

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### OT/PT Involvement

- Need for OT or PT to look at gross and fine motor skills related to device use
  - Access (direct select, scanning, headpointing, eye gaze)
  - Visual/perceptual skills (visual tracking, depth perception, color contrast, accuracy for targeting)
  - Sensory needs (organization, regulation, auditory and tactile considerations)
  - Seating, positioning, and mounting for recommended equipment (to provide for optimal use of device in a variety of positions and environments)

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### SLP Involvement

- Need for SLP to look at language and vocabulary skills related to device use
  - Picture Identification/discrimination (symbol set)
  - Categorization skills (to determine static vs. dynamic display, complexity of navigation)
  - Spelling and Literacy skills (generative language, word/phrase prediction, pre-programmed whole words, digitized vs. synthesized speech)

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**Other Factors Influencing Recommendation**

- Battery life
- Size, weight and portability of the device
- Durability
- Ease of programming
- Warranty
- Technical support
- Other accessories and features

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**Overview of Evaluation Process**

- Intake
- Evaluation
- Follow-up/Trials
- Funding
- Initial Training
- Ongoing therapy
- Integration of device into all environments
- Follow up and equipment updates

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**Funding and Resources for AAC**

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## Health Insurance Programs as a Funding Source

- Medicaid
- Medicare
- Private Health Insurance

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## Medicaid

- Three standards all Medicaid programs impose as preconditions to funding:
  - AAC devices are within the scope of a variety of Medicaid services provided in every state
  - AAC devices are a form of treatment
  - AAC devices are medically necessary

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## Medicaid (cont.)

- Provision under Medicaid is durable medical equipment (DME)
- The basic components are:
  - DME can withstand repeated use
  - DME is primarily and customarily used to serve a medical purpose
  - DME is not useful in the absence of illness or injury
  - DME is appropriate for use in the home

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## Medicare

- Is Title XVIII of the Social Security Act
- Covers:
  - Health care for anyone 65 and older
  - Persons receiving social security disability payments more than 2 years (except ALS)
  - Two parts:
    - Hospital insurance (Part A)
    - Medical insurance (Part B)

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## Private Health Insurance

- Coverage is dependent on individual's policy
- Some insurance companies do not list specific services, but cover DME, prosthetic, rehabilitation, SLP, OT, PT services
- Some insurance companies require preauthorization for services, others may require submitting request for DME
- Will need letters/scripts from physicians documenting the medical need for AAC services/devices

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## Alternate Funding Sources

- Private funds
- Community and service organizations
- Monetary loan programs
- Developmental Disability Services (formerly MR/DD)
- BCMH (children)
- School districts
- BVR

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