



NEURO
INSTITUTE

Continuing Education for Rehabilitation Professionals



A.A.C. (Augmentative and Alternative Communication) after T.B.I.

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Prevalence of TBI

- Every year, at least 1.7 million TBIs occur in the United States (Faul, Xu, Waldo, & Coronado, 2010).



Prevalence of TBI

- Between 3.2 and 5.3 million persons (1.1%-1.7% of the U.S. population) live with long-term disabilities that result from TBI. (Alverson et al., 1999; Selassie et al., 2008; Zaloshnja, Miller, Langlois, & Selassie, 2008).



Imagine if.....



Imagine if....



Imagine if.....



Communication Deficits Related to T.B.I.

- **Aphasias**
 - Global Aphasia
 - Expressive Aphasia
 - Receptive Aphasia
- **Apraxia of Speech**
- **Dysarthria**



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Global Aphasia

- Most severe form of aphasia
- few recognizable words
- understand little or no spoken language
- unable to read or write,
- injuries to multiple language processing areas (Broca's and Wernicke's)



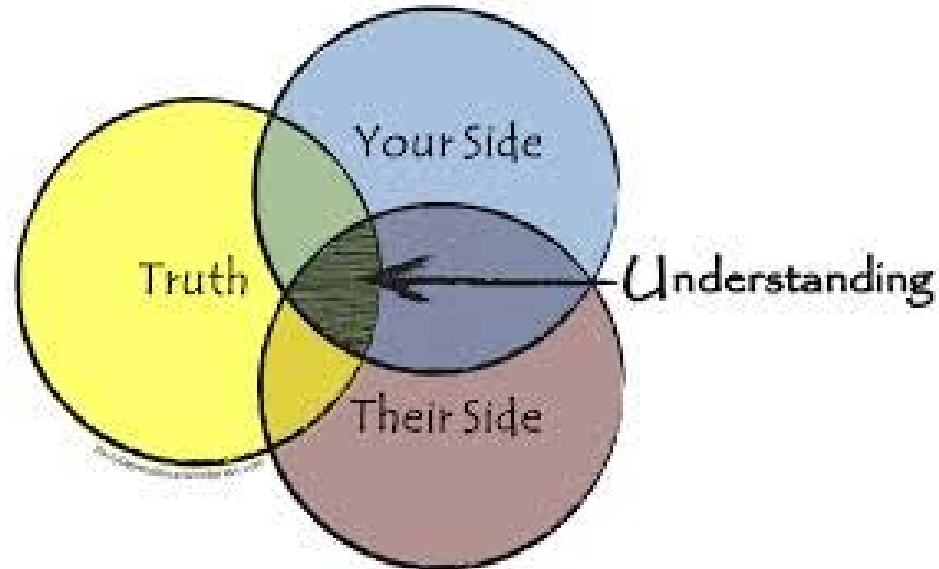
Expressive Aphasia

- language disorder resulting in the loss of ability to create expression by speech, writing or signs.
- Broca's aphasia- non-fluent aphasia (halting and effortful; telegraphic speech); damage typically in the **anterior** portion of the left hemisphere
- Comprehension is typically mild to moderately impaired

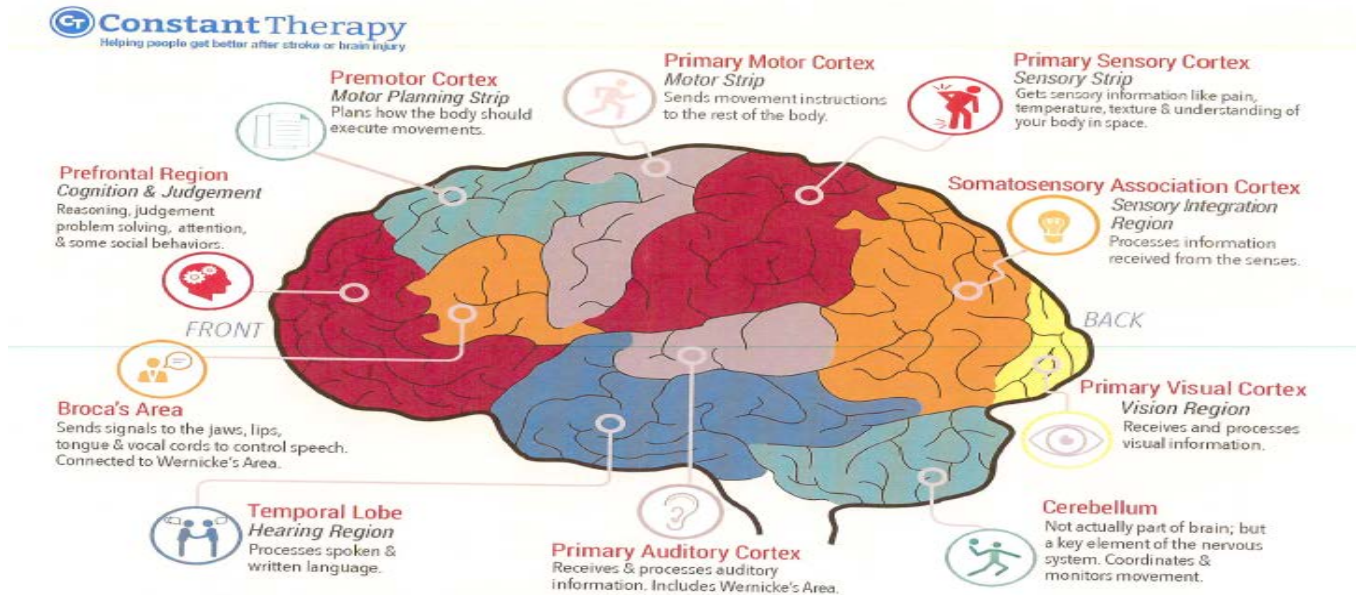


Receptive Aphasia

- Receptive aphasia- loss of comprehension of spoken or written language
- Wernicke's Aphasia-fluent aphasia; damage is typically in the **posterior** portion of the left hemisphere.
- Comprehension is poor and person often produces jargon (nonsensical words and lack meaning)
- may not be aware of their deficits.



Get to Know Your Brain



• GET TO KNOW YOUR BRAIN •

What happens when different parts of your brain are affected by stroke, brain injury or other communication disorders?

Apraxia of Speech



- Apraxia of speech (AOS)- “a neurological speech disorder that reflects an impaired capacity to plan or program sensorimotor commands necessary for directing movements that result in phonetically and prosodically normal speech” (Duffy, 2013)

Apraxia of Speech

- Deficits in motor planning and programming of movements for speech
 - Typically seen after damage to Broca's area (Brodmann's area 44/45)
 - Spontaneous speech contains fewer errors than speech in repetition tasks
 - Can occur with limb, oral, gait and swallowing apraxia
 - Have awareness of their deficits
- Errors are inconsistent and unpredictable
- Most common errors are substitutions
- Other types of errors listed from most to least common:
 - Repetitions
 - Additions
 - Transpositions
 - Prolongations
 - Omissions
 - Distortions

Apraxia of Speech

- Treatment of AOS- (Verbal Apraxia)
 - Therapeutic focus is on retraining vs. compensation
 - Rosenbeck's 8 step continuum
 - Melodic Intonation Therapy (Sparks and Holland, 1976)
 - Using melody and rhythm, method stimulates the creation of more neuronal connections
 - Mainly a disorder of articulation

Communication Deficits Related to T.B.I.

- Dysarthria: a motor speech disorder where the individual is unable to formulate sounds due to incoordination of the musculature responsible for speech (lips, tongue, vocal folds, and/or diaphragm).
 - Intelligibility is mostly effected
 - Slurred or mumbled speech
 - Slow or rapid rate of speech
 - Limited tongue, lip and jaw movement
 - Abnormal pitch and rhythm
 - Hoarse or breathy voice or speech that sounds nasal or stuffy

Dysarthria

- Errors are consistent and predictable
- Same difficulty in spontaneous speech as he/she would have with practiced speech tasks
- Errors are mainly distortions or omissions; distortions being the most common
- Vowels are easier than consonant
- All aspects of speech are affected (articulation, phonation, resonance and prosody, rate and respiration)
- Dysphagia frequently accompanies dysarthria
- For many clinicians, therapy is strictly compensatory.

What is A.A.C.?

- A.A.C. can be defined as an area of clinical/educational practice to improve the communication skills of individuals with little or non-functional speech (Lloyd, Fuller, & Arvidson, 1997).
- AAC is a field of endeavor with a goal to optimize the communication of individuals with significant communication disorders (ASHA, 2004). The field or area of AAC involves clinical, educational, and research practice to improve the communication of individuals who cannot speak.

What is A.A.C.?

- Interventions and technology used to communicate or the services (assessments, intervention, technical support)
- AAC is not just assistive technology or devices!!

What is A.A.C.?

- A.A.C. systems assist with:
 - Representation of language
 - Communication
 - Social interaction
 - Promote language development
 - Improve educational opportunities
 - Improve work opportunities
 - Enable or increase participation in society.

AAC **NEVER** diminishes the use of natural speech! AAC can help facilitate and clarify speech production.

GOAL of A.A.C.

- Most effective communication possible.
- AAC was developed to assist people with complex communication needs (CCN), who cannot be understood using speech or writing as an alternative method for communication.

Medical Conditions Associated with Need for AAC Devices

- AAC devices generally are recognized as appropriate treatment for, and have become standard practice in, the treatment of individuals with severe dysarthria, apraxia, and aphasia.
- When these conditions are severe, the preferred treatment in speech-language pathology is utilizing an AAC device.

Medical Conditions

- These speech (dysarthria, apraxia) and language (aphasia) impairments are associated with a variety of neurologic conditions.
 - the most common including amyotrophic lateral sclerosis (also known as ALS or Lou Gehrig's Disease)
 - and traumatic brain injury.
 - cerebral palsy,
 - locked-in-syndrome,
 - multiple sclerosis,
 - Parkinson disease,
 - brain-stem stroke,
 - cortical stroke,
 - progressive aphasia,

When AAC



- ASAP
- First step is completing a comprehensive assessment from an AAC team.

A.A.C. Assessment and Intervention

- Goal: Most effective means of communication based on the clients needs.
- The AAC team should hold supreme the interests of the individuals being served.
- To achieve the goals of AAC, evidence based practices yield the best results.

AAC Assessment

- Use of AAC require cognitive and motoric skills that are intact and finding solutions using multiple modes of communication
- Need to be able to communicate their basic wants and needs, share info and personal stories, maintain relationships and participate in daily tasks such as greeting people.
- Contact a speech language pathologist



A.A.C. Team

- The client
- Family Members
- SLP
- OT
- PT
- Physician
- Advocate
- AAC Representative
- Case Manager
- Vocational Counselor
- Life-Care Planner
- Social Worker
- Teacher
- Nursing
- Optometrist
- Funding Agencies



The Communication Bill of Rights

- Developed by the National Joint Committee for the Communicative Needs of Persons with Severe Disabilities (1992)
 - Developed to promote research, demonstration, and educational efforts to helping persons with severe disabilities to communicate effectively.

**A RIGHT IS NOT
WHAT SOMEONE
GIVES YOU;
IT'S WHAT NO
ONE CAN TAKE
FROM YOU.**

- Ramsey Clark

The Communication Bill of Rights

1. The basic communication rights are as follows:
2. The right to **request** desired objects, actions, events, and persons, and to **express** personal preferences, or feelings.
3. The right to be **offered** choices and alternatives.
4. The right to **reject or refuse** undesired objects, events, or actions, including the right to **decline or reject all preferred choices**.

The Communication Bill of Rights

5. The right to request, and **be given, attention** from and interaction with another person.
6. **Request feedback** or information about a state, an object, a person, or an event of interest.
7. **For active treatment and intervention efforts** to enable people with severe disabilities to communicate messages in whatever modes and as effectively and efficiently as their specific abilities allow.

The Communication Bill of Rights

8. To have communicative acts **acknowledged and responded** to, even when the intent of these acts cannot be fulfilled by the responder.
9. To have **access at all times** to any needed augmentative and alternative communication devices and other assistive devices, to have those devices in good working order.
10. To environmental contexts, **interactions**, and opportunities that expect and encourage persons with disabilities to participate as full communicative partners with other people, including peers.

The Communication Bill of Rights

11. To **be informed** about the people, things, and events in one's immediate environment.
12. To be communicated with in a manner that recognizes and acknowledges the inherent **dignity** of the person being addressed, including the right to be part of communication exchanges about individuals that are conducted in his or her presence.
13. To be communicated with in ways that are **meaningful, understandable, and culturally and linguistically appropriate.**

The AAC Rules of Commitment

- Established by the National Joint Committee for the Communicative Needs of Persons with Severe Disabilities. (1992)
 - Established to protect AAC consumers.



The AAC Rules of Commitment

- Rule 1: Be committed to the most **effective communication system** for the individual being served.
- Rule 2: Be committed to following your **professional code of ethics**.
- Rule 3: Be committed to **involving the consumer and family** in the service delivery process.
- Rule 4: Be committed to **achieving the maximum outcomes** for the individual.
- Rule 5: Be committed to **advocating** for language.

The AAC Rules of Commitment

- Rule 6: Understand the **merits of ALL language representation methods.**
- Rule 7: Support the language representation method (s) for core and extended vocabulary access that best serve the interest of the individual.
- Rule 8: Advocate for the AAC system that supports the chosen language representation methods.
- Rule 9: Be committed to using AAC performance measurement to support clinical intervention.
- Rule 10: **If unable to adhere to any of these guidelines, be truthful about it to the individual, family, and advocates.**

Speech

- Speech-verbal means of communicating
 - Articulation-how sounds are made
 - Voice-use of the vocal folds and breathing to produce sound
 - Fluency- rhythm of speech



Language

- Language is made up of socially shared rules that include the following:
 - What words mean (e.g., "star" can refer to a bright object in the night sky or a celebrity)
 - How to make new words (e.g., friend, friendly, unfriendly)
 - How to put words together (e.g., "Peg walked to the new store" rather than "Peg walk store new")
 - What word combinations are best in what situations ("Would you mind moving your foot?" could quickly change to "Get off my foot, please!" if the first request did not produce results)



Communication

- Communication-the act or process of using words, sounds, signs, or behaviors to express or exchange information or to express your ideas, thoughts, feelings, etc., to someone else.



Standardized Assessments

- Speech and Language Assessments
- OT Assessments
- PT Assessments
- Nursing assessments
- Teacher assessments

What is Important to AAC Users?

- A.A.C. users identify the most important factor in communication for them are:
 - Being able to say exactly what they want to say
 - Spontaneous Novel Utterance Generation (SNUG) vs. Preprogrammed sentences (Hill, 2001)
 - SNUG is based on providing language needed to communicate anything someone wants to say during any possible conversation, and not the messages that someone else thinks a person might say
 - Saying it as fast as they can
 - Communication Rate (CR)-People who use AAC, communication rate is much slower than natural speech (Foulds, 1980). CR is a significant component of communication effectiveness.

Communication Support During TBI Recovery

- TBI can cause a wide variety of cognitive and motoric deficits that impact memory, language and comprehension, behavior and movement.
- Recovery and rehab varies dramatically
- Individuals with TBI should be active participants in their recovery
- Communication is an essential element of that participation.
- Caregivers assist by allowing adequate time for responses, providing context, and introducing topics.

Communication Support During TBI recovery

- Some solutions include extensive partner support
- Others can be used more independently
- Dependent on the current communication status and goals of the participant.
- Multimodal communication
 - speech, gestures, eye movements, and pictorial symbols to create complete and cohesive message

AAC/SGD Funding

- 3rd party funding programs are responsible for almost all SGD's
 - Funding was introduced in the late 1970's
- Simple, digitized speech output devices (most inexpensive) are usually purchased by the families.



AAC/SGD Funding

- SGD's are funded by the following third party funding sources:
 - Medicare (largest single purchaser of SGD's; >1000 devices annually)
 - Medicaid
 - Insurance and Health Benefits Plan
 - Federal Employee Health Benefits Plan
 - Tricare
 - Department of Veterans Affairs
 - Special Education and Early Intervention
 - Vocational Rehabilitation
 - Telecommunications Equipment Distributions Programs

AAC/SGD Funding

- Coverage Vocabulary
 - FDA calls SGD's "**powered communication systems**"
 - Medicare, Medicaid, Insurance and health benefit programs, SGD's are covered as items of **durable medical equipment**
 - Tricare and VA- SGD's are **prosthetic devices**
 - Special education, early intervention, and vocational rehabilitation are considered **assistive technology devices**
 - SGD's are covered as **telecommunication devices or specialized telecommunications** equipment by Telecommunications Equipment Distribution Programs

Medicare Funding

- Medicare definition of AAC/SGD/VOCA
 - Provide an individual the ability to meet their “functional, speaking needs”;
 - are primarily used for the purposes of generating speech;
 - Include the capability to generate email, text or phone messages
 - Include other non-covered features at the expense of the Medicare patient

Medicare Eligibility Basics

- Medicare covers SGD's as items of DME, which is a benefit of the Medicare Part B program. To be eligible for an SGD, a recipient must satisfy the following 4 requirements:
 - Be enrolled in Medicare Part B (pay the enrollment premium)
 - Live at home, a ALF, a group home, but not in a hospital, hospice or nursing facility;
 - Be determined, following an SLP evaluation, to need a SGD to meet communication needs in daily activities; and
 - Have a doctor's prescription for the SGD and all related items
 - Face to face with physician with report

Medicare Funding

- Definition excludes from Medicare coverage:
 - A device that is useful to someone without a speech impairment;
 - Personal computers, tablets or mobile devices that may be programmed to perform the same functions, but do not meet the definition of DME;
 - Internet or phone services, or any modifications to the patient's home; specific features not related to "functional speaking", such as hardware or software used to create documents or play games;
 - Video communications or conferencing software.
 - The excluded features can be added to the SGD at the patient's expense.

SLP tools for assessment

- To support Medicare requirements two tools have been developed to help SLP's through the assessment and report writing process.
 - *SGD Assessment Protocol* or simply the *Protocol (M.I.T)*
 - *The AAC Report Coach* (Pamela Mathy, PHD, Arizona State University)



Medicare Overview

- AAC devices meet the Medicare statutory standard as ‘reasonable and necessary’ to treat individuals with severe communication impairments.
- Like Medicare, the Medicaid programs focus on ‘medical necessity’ to determine coverage and payment of items and services.
- At present, AAC devices are covered by every state Medicaid program. In addition, the Department of Veterans Affairs, TriCare, and hundreds of commercial health insurance providers adopted coverage policies for AAC devices. (See Myers v. State of Mississippi, 1995).

Specific Types

Aided

- Require some form of external support
 - Communication boards with visual graphic symbols (pictures, photographs, printed words, etc.)
 - Computers, handheld devices, or tablets with symbols, words, letters or icons that “speak” through synthetic or digitized speech

Unaided

- Nonverbal means of natural communication
- Require adequate motor control and communication partners who can interpret
 - Gestures/facial expressions
 - Manual signs
 - American Sign Language
 - (asha.org)

Considerations for Device Selection

Low Tech

- Non-electronic communication options

High Tech

- Provide output or “talk”
- (asha.org)

Considerations for Device Selection

Static

- Fixed Displays
 - Individual pages
 - Symbols do not change position
 - Pages are changed to access additional vocabulary

Dynamic

- Touching one symbol allows the client to access multiple overlays automatically
- (asha.org)

Accessories



- Mounting systems (Wheelchair or Rolling)
- Carrying cases

Voice Banking

- What is voice banking?
 - Recordings of a large inventory of your speech that is then used to create a synthetic voice that approximates your natural voice.
 - >1000 utterances
 - Allows for spelling and generating of unique messages
 - Message banking for your own voice for personally meaningful messages
 - Consult with an SLP is highly recommended
 - May be done privately

F.A.S.S.T. Center

- Florida Alliance for Assistive Services and Technology, Inc.
 - Serves Floridians with disabilities by providing free access to information, referral services, educational programs, and publications in accessible formats on topics such as disability rights, laws, and policies. We also provide assistive technology (AT) device loans as well as funding opportunities for AT.
 - Device Loan Program
 - Regional Centers (6 locations in FL)
 - National Assistive Technology Technical Partnership (NATTAP)
 - Resnaprojects.org

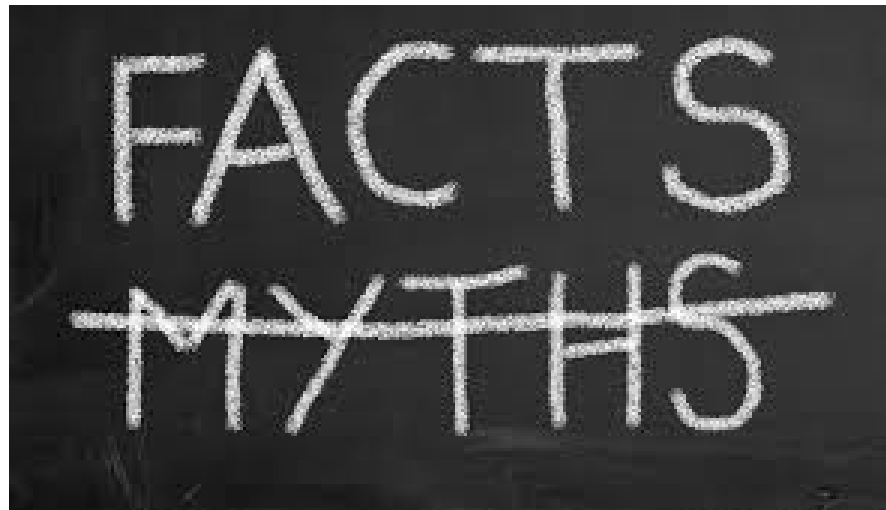
Myths and Facts

Myths

- My loved one won't regain speech if they learn to rely on AAC.

Facts

- Your loved one needs to be able to communicate right now with the skills they have. Therapy includes working on speech and AAC skills.



Myths and Facts

Myths

- AAC requires high-tech devices that are hard to learn and cost a lot.

Facts

- There are many inexpensive options that are easy to learn.

Myths and Facts

Myths

- Writing messages down is easier and faster for individuals with TBI.

Facts

- This may be the best solution for some, but can be slow and tiring.

Myths and Facts

Myths

- Changing how I interact won't improve my loved one's communication.

Facts

- You can help improve the ease, efficiency, and effectiveness of your loved one's communication, making the recovery process less stressful for everyone involved.

Take Home Points

- ASHA defines AAC as an area of clinical practice that attempts to compensate for the impairment and disability patterns of individuals with severe expressive communication disorders.
- AAC can involve external aids or natural communication, such as facial expression, body posture, or sign language.
- The best form or forms of communication are determined by the needs of the individual with disabilities and their communication partners.



Take Home Points

- AAC is can be effective for an individual when he/she presents with a severe expressive communication impairment that interferes with or prevents development and use of oral language.
- Everyone uses a variety of means to communicate. The “best” form or forms of communication are those that the individual will use to communicate with others. (Multimodal Communication)
- AAC interventions are used whenever individuals are unable to rely on speech to meet all of their daily communication needs.



Take Home Points

- The selection of symbols and of a device is determined by the communication and linguistic profile of the intended user.
- Selection of a communication device is not a “either or” decision. People communicate in a variety of ways, therefore, one device will not meet the person’s needs in all situations. (Multimodal Communication)

Family Support

- Practicalaac.org
- Isaac-online.org
- AAC representatives
- SLP
- Local support groups
- Local universities



Funding & Other Resources

- Article: TBI and AAC: Supporting Communication Through Recovery www. Asha.org (search “TBI and AAC”)
- Websites: <https://www.isaac-online.org>
- <http://www.dynavoxtech.com/conditions/other/traumatic-brain-injury/>
- <http://aacfundinghelp.com>
- <http://www.ninds.nih.gov/disorders/tbi/tbi.htm>
- <http://www.augcominc.com/whatsnew/ncs3.html>
- <http://whenseanspeaks.com>
- <http://www.augcominc.com/whatsnew/ncs3.html>
- Book: Characteristics of Effective Communication Partners in Supporting Persons with Traumatic Brain Injury, Jerry Hoepner, ProQuest 2013
- Aphasia Video: Youtube: Understanding Aphasia Imagine Life Without Words

Thank you!

Questions?