



Family &
Community
Services

Augmentative and Alternative Communication (AAC) Guidelines for speech pathologists who support people with disability

Summary: This document is designed to be read with and to be complementary to the Complex Communication Needs Practice Guide.



Document approval

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Augmentative and Alternative Communication (AAC)
Guideline for speech pathologists who support people with a disability

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1 Introduction

1.1 Introduction and purpose

Welcome to the Augmentative and Alternative Communication (AAC) guidelines for speech pathologists who support people with disability. This practice guide is designed to be complementary to, and read in conjunction with, the Complex Communication Needs (CCN) Practice Guide. The Augmentative and Alternative Communication Practice Guide provides additional detail about some topics introduced in the Complex Communication Needs Practice Guide and some new information in this area.

It has been developed to support speech pathologists that are:

- new to working with people with a disability in the area of Augmentative or Alternative Communication (AAC)
- entry level clinicians
- returning to work.

It has been designed as a practical resource to provide basic or core level information on AAC for speech pathologists when working with people with disability, their families and caregivers and other professionals to promote consistent and efficient practice. It outlines current principles, evidence and some resources around good practice in:

- assessment and prescription of AAC
- intervention and implementation of AAC
- use and evaluation of AAC.

There is an appraisal accompanying the practice guide.

This practice guideline forms part of the supporting resource material for the [core standards program](#) developed by Clinical Innovation and Governance, Ageing Disability and Home Care, Family and Community Services, NSW, Australia.

Please note that the information contained in this package is designed specifically for speech pathologists working with people with a disability in Australian settings.

Your feedback on this AAC practice guideline is welcome and should be sent by email using this link CIGCorestandards@facs.nsw.gov.au with the words *AAC practice guideline* as the subject of the email.

1.2 Core standards program

ADHC has developed an overarching program of core standards. Four common core standards with practice guidelines, appraisals and other resources are available for *practitioners who provide support to people with a disability. These are located on the [ADHC website](#). Definitions of disability and

other key areas for speech pathologists are covered in the common core standards.

The common core standards cover the following areas for practitioners who support people with a disability:

- Professional Supervision
- The Working Alliance
- Philosophies, Values and Beliefs
- Service Delivery Approaches

* The term practitioner as used here includes dietitians, speech pathologists, occupational therapists, physiotherapists, psychologists, behaviour support practitioners and nurses.

In addition specific practice guidelines and resources are available in various professional disciplines.

The suite of speech pathology practice guidelines include:

- Complex Communication Needs
- Mealtime Management

1.3 Copyright

The content of this guideline has been developed by drawing from a range of resources and people. The developers of this guideline have endeavoured to acknowledge the source of the information provided in this guideline. The guideline also has a number of hyperlinks to documents and internet sites.

Please be mindful of copyright laws when accessing and utilising the information through hyperlinks. Some content on external websites is provided for your information only, and may not be reproduced without the author's written consent.

1.4 Disclaimer

This resource was developed by the Clinical Innovation and Governance Directorate of Ageing, Disability and Home Care in the Department of Family and Community Services, New South Wales, Australia (FACS).

This practice guide has been developed to support practitioners who are working with people with disability. It has been designed to promote consistent and efficient good practice. It forms part of the supporting resource material for the Core Standards Program developed by FACS.

This resource has references to FACS guidelines, procedures and links, which may not be appropriate for practitioners working in other settings. Practitioners in other workplaces should be guided by the terms and conditions of their

employment and current workplace.

Access to this document to practitioners working outside of FACS has been provided in the interests of sharing resources. The Information is made available on the understanding that FACS and its employees and agents shall have no liability (including liability by reason of negligence) to the users for any loss, damage, cost or expense incurred or arising by reason of any person using or relying on the information and whether caused by reason of any error, negligent act, omission or misrepresentation in the Information or otherwise.

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Practitioners should always refer to relevant professional practice standards. The information is not intended to replace the application of clinical judgment to each individual person with disability. Each recommendation should be considered within the context of each individual person's circumstances. When using this information, it is strongly recommended practitioners seek input from appropriate senior practitioners and experts before any adaption or use.

The information contained in this practice guide is current as at September 2014 and may be subject to change. Whilst the information contained in this practice guide has been compiled and presented with all due care, FACS gives no assurance or warranty nor makes any representation as to the accuracy or completeness or legitimacy of its content.

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2 What is Augmentative and Alternative Communication?

Speech Pathology Australia (Speech Pathology Australia, 2012) defined Augmentative and Alternative Communication (AAC) as “an area of clinical and educational practice that provides communication interventions for people who have little or no functional speech or who have complex communication needs (CCN)” (p.

13). A person may have CCN due to intellectual, physical, sensory or environmental causes (Balandin, 2002). A person with CCN and “their communication partners are likely to benefit from the use of a range of AAC systems and communication support strategies to participate fully in all aspects of life” (Balandin, 2002).

Furthermore,

“The aims of AAC systems and strategies and communication support interventions are to:

- support and increase the individual’s ability to participate in all environments with autonomy, choice, and self-determination; and*
 - enhance opportunities for community participation and improve quality of life.”*
- (SPA, 2012, p. 13).

Augmentative Communication strategies are designed to support a person’s speech abilities. Alternative Communication strategies are designed to replace speech when, for varying reasons, such as physical disability, speech development is not possible.

AAC may be a combination of methods used for communication (Beukelman & Mirenda, 2005). Communication is a two way process – an individual must be able to successfully send a message to another individual who in turn must be able to successfully receive it. AAC may involve strategies for both sending and receiving messages for both the individual using AAC and their communication partner/s.

The aim of AAC is to provide an individual with a means of independent communication and to maximise their ability and opportunity to successfully participate in everyday environments. Quality of life and feelings of well being improve when AAC is used successfully by people with complex communication needs (Iacono, Lyon, West, & Johnson, 2013).

AAC includes all forms of communication that are used to express thoughts, needs, wants, and ideas. We all use AAC when we make facial expressions or gestures, use symbols or pictures, or write.

AAC may be used to support the understanding of communication as well as to promote expressive communication. Recent evidence indicates “people who are non verbal need to be presented a minimum of 200 opportunities a day to interact” (Baker, Carrillo, & Stanton, 2012 p. 125).

AAC strategies need to be tailored to the person so they “fit in” with lifestyle, environments, social circumstances and peers.

Resources and additional reading:

- [History of AAC](#) – American Speech-Hearing Association.
- The [Speech Pathology Australia \(SPA\) Clinical Guideline on Augmentative and Alternative Communication \(AAC\)](#) is available to SPA members only. Non-members are able to purchase it through Speech Pathology Australia).

2.1 Unaided AAC

Unaided AAC refers to communication strategies which do not require the use of an external aid. That is, the person uses whatever is available to them using their own body. This may include using eye gaze, facial expression, gesture and body language and tone of voice.

Unaided AAC strategies have the benefit of being extremely portable (because you don’t need to carry external devices) and they usually build on a skill the person already has.

When supporting a person who relies on unaided AAC techniques, it is important to provide training and support to their communication partners.

One example of a formal, unaided strategy is Key Word Sign and Gesture. The principles of Key Word Sign and Gesture involve the concurrent use of speech and manual sign with only the key words of the sentence being signed. It incorporates the use of natural gesture, facial expression and body language with simple sign language techniques such as directionality and placement. The use of this strategy depends on the level of the person’s physical abilities.

Other unaided AAC strategies include:

- gestures
- pointing
- vocalisations
- body language
- behaviours (e.g., taking a person’s hand and leading them to the door)
- eye contact / eye gaze (within an environment)
- facial expression

- touch cues
- tactile signing.

Unaided AAC systems can be used alone or they can be used in conjunction with aided systems as a supplement and/or backup strategy. Most AAC users will blend systems to achieve the most effective communication. This approach is referred to as Multimodal Communication or Total Communication.

2.2 Aided AAC

Aided AAC refers to communication strategies which involve the use of an external item. These are divided into:

- 'low technology' (low/light tech) equipment, such as a communication board, photographs or real objects
- 'high technology' (high tech) aids, such as a computer or speech generating device (SGD).

2.2.1 Low tech aided AAC

Low tech AAC strategies involve the use of aids that do not require a power source to be operated. They include print outs, photos, drawings objects etc. Low tech AAC strategies can be considered a valuable addition to a person's AAC system as they can be simpler to operate and not prone to technical difficulties. They can often be used as a 'back up' to a person's high tech AAC system.

Examples of low tech AAC aids are:

- schedules
- timetables
- choice-making supports
- community request cards
- communication boards
- talking mats
- picture exchange communication (PECS) systems
- Pragmatic Organisation Dynamic Display (PODD)
- alphabet display
- pictures, letters or word boards
- calendars
- shopping lists
- daily planners
- diary
- labels and signs
- continuum lines
- timers

- small objects
- cue cards
- memory books
- memo boards
- memory wallets
- reminiscence (generic) photos
- photo albums & individual photos
- communication books
- communication boards
- generic greeting cards (i.e., holidays)
- phone lists.

Low/ light tech AAC systems may be used to provide:

- visual information to support understanding
- a means of expression for a person who may point to or pick up a desired picture or object to communicate a want, need, question or comment
- a prompt or support for transitions between activities or warning of impending change
- opportunity to make a choice or indicate a preference
- express an emotion
- a reminder of a person's role or responsibility.

Resources and additional reading:

- [InterAACtion](#): Strategies for Intentional and Unintentional Communicators
- [PECS](#) - Picture Exchange Communication System
- [PODD](#) - Pragmatic Organisation Dynamic Display
- [Talking Mats](#)

2.2.2 High technology aided AAC

There are many opportunities for technology to be part of an AAC system. These options generally involve a person needing to activate a computer-like device that generates speech output to convey their message.

High tech communication aids that 'speak' after input are usually referred to as either voice output communication aids (VOCA) or speech generating devices (SGD). Speech generating devices can use digitised speech, synthesised speech or direct recorded speech, however not all people who use high tech AAC like or want their device to talk. It is important that all AAC systems have back up in some form. This means that if technical systems fail the person still has a system for communication.

When considering High Technology AAC there are two broad areas:

- dedicated communication devices

- general computerised devices with communication apps or programs often called “mainstream” devices such as tablets or hand held devices.

Dedicated communication devices are specifically for communication and may or may not have features such as computer interface or connection to the internet. However these devices are often purpose built with a number of valued features for the user that include, but are not limited to, big memory allowances for graphics; software dedicated to the device; inbuilt symbol sets; back up and storage systems; full user customisation; customer and user technical support servicing and warranties.

Communication devices have many different options. Some examples are:

- static display- this means language or symbols are in a hard copy format, like an overlay or board and have to be changed manually
- dynamic display- this means language is displayed in electronic pages and levels within the device which can change, usually through use of touch screen or scanning input
- text-to-speech- this allows the user to type or input messages which are spoken.

Devices can range from single message voice output devices (e.g., BIG Mac), to devices with several options placed in a grid style presentation (e.g., Go Talk) and onto more expensive devices (e.g., Liberator, VMax) that contain a computer and are supported by complex software. There are many devices that are available and it is important to thoroughly assess and research the options to determine what is most appropriate for the person. Devices are constantly evolving as technology improves and changes, so it is important for practitioners to keep up to date.

General devices which can be used for communication have developed rapidly over the last 6 years. These devices are not purpose built for communication but have applications which can allow different communication options. The popularity of tablet computers, such as iPads and their android counterparts, has prompted wider interest in this technology for AAC.

Alongside this development have been the advances in systems or platforms that allow for applications or “apps” that enable the user to try different systems or programs. Some AAC users will have both a dedicated communication device and a general device such as a tablet and use them both for different occasions and tasks. For example, an AAC user reported making a speech to deliver on her dedicated device, but taking her tablet out to dinner with friends (AGOSCI, 2011).

There is a plethora of AAC apps available for tablet devices and mainstream technologies and the number continues to grow. Not all AAC apps are suitable for all AAC users and not all apps are based on evidence. There is a growing

bank of resources available for assessing whether an app is evidence based and whether it is suitable for the person who uses AAC.

Resources and additional reading:

- [AAC app reviews](#) (Jane Farrall)
- [Android apps for AAC](#)
- [Apps Feature Matching Checklist](#) from Scope (Vic)
- [Apps for AAC](#) – web site to compare AAC Apps
- [Assessment Process Synopsis of Training Module](#) developed by IPAT.
- Debbie Burmester, 2013 [Best practice guideline for speech generating device prescription- section on GAS goals – page 83](#)
- [Enable NSW](#) list of devices available for loan
- [Flowchart for Selecting Apps for AAC](#) by Two Way Street
- [Feature Matching Communication Applications](#) by Jessica Gosnell, Children’s Hospital Boston
- [Independent Living Centre NSW](#)
- [Interagency Program for Assistive Technology \(IPAT\)](#) (Lee, J)
- [IPPA: Individually Prioritised Problem Assessment](#)
 - An instrument to assess the effectiveness of assistive technology (AT) provision. The IPPA can be used to assess the extent to which problems identified by an individual AT user have decreased. The application of the tool in outcome studies to assess the effectiveness of mobility aids, transportation services, hearing aids, communication devices, home adaptations, telephone relay services, and a robot manipulator are discussed
- [iPhone/iPad Apps for AAC](#) – Information from Spectronics
- PrAACtical [App Free light AAC apps](#)
- [Quality Indicators for Assistive Technology Services \(QIAT\)](#)
 - QIAT is a set of quality indicators, intent statements, and common errors for eight areas important to the development and delivery of assistive technology services. Each of the eight areas - Consideration, Assessment, AT in the IEP, Implementation, Evaluation of Effectiveness, Transition, Administrative Support and Professional Development - should be fully explored because the areas are complementary in nature.
- [Quebec User Evaluation of Satisfaction with Assistive Technology](#) (QUEST version 2)
 - 12 question survey which gives a rating of satisfaction with assistive devices. Has validity and reliability indicators and statistical comparisons. Can be used with all ages.
- Speech Generating Device / Voice Output Communication Aids Provides some Assistive Technology Guides in areas of communication
- [The Human Voicebank Initiative](#)

- [Top 10 Alternative & Augmentative Communication \(AAC\) Apps for iPad.](#)
Written by Andrew Leibs

2.3 Assistive Technology

Assistive Technology (AT) refers to a range of equipment that assists a person to perform a task and participate in their environment. Without this AT the person would be unable to do the task. AT includes equipment for communication, computer access, environmental control, and mobility.

2.3.1 Use of Assistive Technology

AT may be used by speech pathologists to help achieve a person's communication goals. Switches may be used to develop cause and effect skills and improve access to play, recreation and learning activities.

One of the AAC team members, an occupational therapist, can help with assessment and trials when considering the best method for the person to access a communication device. For example the occupational therapist may help set up Skype access via switch so a person can chat to their Aunt using Key Word Sign.

Resources and additional reading:

- [Australian Disability Clearing House on Education and Training](#)
- [Information about AT from ILC Australia](#)
- [Information about ARATA](#) – Australian Rehabilitation and Assistive Technology Association

2.3.2 Assistive Technology Services

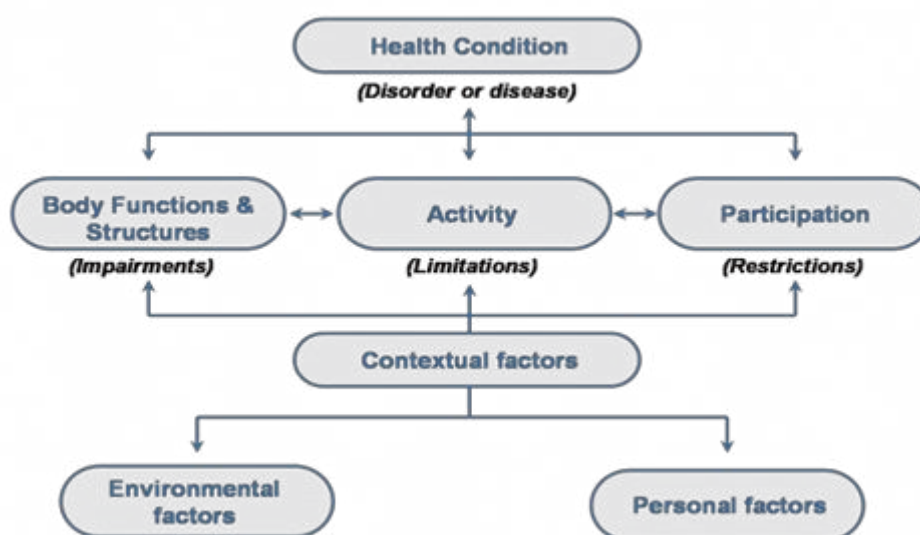
There are specialist services which offer consultation and support in the process of assessment, recommendations and trials of technology. When considering a speech generating communication aid for a person, consultation with the AAC team, your senior speech pathologist or mentor will give a broader range of ideas. Because of the large number of devices available, people with a disability may be referred for a specialised assistive technology assessment where more options can be trialled with each individual.

These services generally involve a fee to the family, and there may be a waiting period for assessment. Services often require a local therapist to be involved in the assessment and trial period. Consultation is available to assist in setting up the device when it is received by the family. Responsibility for the device and insurance for any damage to equipment during the trial period should be discussed with the specialist service/supplier and the family. For some examples of funding for Assistive Technology see Appendix 4.

3 International Classification of Functioning Disability and Health (ICF)

The World Health Organisation (WHO, 2001) developed a classification framework for health and health related domains. The [ICF](#) is a framework for measuring health and disability at both individual and population levels. The classification is based on a bio-psycho-social model which reflects human rights for all and focuses on functioning. There was a version for children and youth -the ICF Children and Youth Version (ICF-CY), but a [resolution](#) has been passed to merge the ICF-CY into the main ICF document.

Diagram: ICF domains



As can be seen by the diagram above there are five different domains highlighted in the ICF framework when considering a person's functioning and health. These are:

- body functions and structure
- participation
- activity
- environmental factors
- personal factors.

There are [codes](#) which can be applied to all domains at different levels of functioning.

The ICF codes use letter codes to describe health and health-related domains. The codes are:

b=body functions
s=body structures
d=activities and participation
e= environmental factors

Each code has a qualifier. This is an indication of severity. The qualifiers represent the following levels of limitation or restriction as follows:

0 – no problem or within normal limits
1 – mild
2 – moderate
3 – severe
4 – complete or profound

3.1 Why should speech pathologists apply the ICF to AAC?

The application of the ICF framework for speech pathologists working in the field of AAC is important for several reasons:

- use of the ICF for AAC means diagnostic and intervention documentation is the same world wide with applications across all cultures and languages (Fried-Oken & Granlund, 2012)
- assessment of AAC in the past has often focused on disability. Using the ICF framework defines a person's level of functioning in different environments and takes into account health, activity, social, cultural and personal factors, within the context of any interaction. All the components of an AAC system assessment still happen (i.e. access, devices, choice of modality, vocabulary, training, etc.) but the assessment framework is focused on everyday functioning rather than disability or systems changes (Simeonsson, Bjork- Akesson, & Lollar, 2012)
- application of the ICF framework changes and widens the overall focus of evaluation of AAC interventions. AAC intervention in the past has often been evaluated by looking at the success of the system used or the device functions, or the use of symbols sets (Lund & Light, 2006). By using the ICF framework the outcome of using AAC can directly measure people's functioning in their daily lives. For example the efficacy of an AAC intervention can be measured by being able to do an activity or participate in a social engagement (Lund & Light, 2006), (Lund & Light, 2007). The ICF is a tool for "moving the goal of health

services away from body function and towards involvement in life situations” (Pless & Granlund, 2012 P.11)

- in the area of AAC, terminology, reporting, evaluation and measurement of change is very diverse. Use of the ICF as a framework means speech pathologists world wide use an internationally agreed set of terms for communication problems, disabilities and disorders (Pless & Granlund, 2012)
- description against the ICF agreed set of codes means the nature and severity of communication disorders is documented using functional profiles of a person’s abilities
- evaluation of outcomes is based on the same ICF codes, which allows comparison of an individual’s assessment profiles with intervention profiles (i.e. pre/post treatment). This change can be monitored and in some cases applied to certain profiled populations (Simeonsson et al., 2012).

Resources and additional reading:

- An AAC Personnel Framework: Adults with Acquired Complex Communication Needs (Beukelman, Ball, & Fager, 2008)
- [How to use the ICF A Practical Manual for using the International Classification of Functioning, Disability and Health \(ICF\)](#) (World Health Organisation, 2013)
- [ICF CHECKLIST](#) Version 2.1a, Clinician Form for International Classification of Functioning, Disability and Health (World Health Organisation, 2003)
- [ICF Resources](#) (American Speech Language Hearing Association, 2014)
- other frameworks for specific needs or populations have also been proposed. An example is an AAC personnel framework for adults with acquired complex communication focuses on the roles of people assisting the AAC user with acquired impairments including aphasia, brainstem impairment and amyotrophic lateral sclerosis (Beukelman et al., 2008)

3.2 Self Advocacy

The importance of self advocacy is increasingly recognised by people who rely on AAC as well as support people and services. In order for the field of AAC to grow and for the people who benefit from AAC to be heard, self advocacy must be promoted and recognised.

Why are so many people consigned to lead lives of needless dependence and silence? Not because we lack the funds, or because we lack the federal policy mandates needed to gain access to those funds. Rather, many people lead lives of silence because many others still find it difficult to believe that people with speech disabilities like my own have anything to say or contributions to make.

Williams, Krezman, and McNaughton (2008 p.203)

The speech pathologist should aid the AAC user to become a self advocate when possible.

4 Evidence Based Practice in AAC

Schlosser and Raghavendra (2004) proposed a 'working definition' of evidence based practice (EBP) in AAC:

Evidence based practice is the integration of best and current research evidence with clinical/educational expertise and relevant stakeholder perspectives, in order to facilitate decisions about assessment and

intervention that are deemed effective and efficient for a given direct stakeholder.

Schlosser and Raghavendra (2004
p.3)

As professionals speech pathologists have to be able to measure and evaluate AAC interventions. The choice of intervention also needs justification (Schlosser, 2003; Schlosser & Raghavendra, 2004). In the future this will become a necessary requirement for funding of systems for AAC users.

The process of EBP in AAC includes:

- asking a well-built question
- conducting a search of the literature
- examining and appraising the evidence for internal, external and social validity
- determining if the evidence is valid
- discussing the findings with relevant people
- identifying and exploring the views, preferences, concerns and expectations that people may have.

In the field of AAC, an increase in the availability of systematic and narrative reviews and a growing interest in evidence-based practice have resulted in a wider appreciation of the benefits of AAC across many populations...

(Speech Pathology Australia, 2012
p.15)

On the basis of a review of the AAC evidence base, Iacono (2004) concluded that:

- *the evidence in AAC predominantly stems from single case and small group designs;*
- *research studies have been more numerous in relation to developmental than acquired disabilities;*
- *it is difficult to conduct randomised group control studies in the field of AAC due to the heterogeneity of the AAC population;*
- *the applicability of randomised control study designs to people with complex communication needs is questionable;*

- *there is a wide range of evidence sufficient to support the application of AAC, with evidence for some areas of AAC being particularly strong as a result of controlled trials and availability of systematic reviews.*

(Speech Pathology Australia, 2012 p.15)

4.1 Myths and realities of EBP in AAC practice

Schlosser (2004) addressed some of the myths of EBP in AAC. It is important to understand these and realise that evidence based practice is not hampered or limited in specific areas of practice such as AAC.

Myth	Reality
EBP is impossible to implement because we do not have enough evidence	EBP can be implemented regardless of the size of the evidence base
EBP already exists	There are many AAC practitioners who do not consult the AAC evidence base
EBP declares evidence the authority	Evidence needs to be integrated with clinical experience and the team perspectives (including the person who will be using AAC)
EBP is a cost cutting mechanism	Decisions made in an EBP context will not always be less expensive.
EBP is a cookie-cutter practice – referring to a ‘one size fits all’ approach	EBP requires skills and experience to adapt principles to specific situations and people to produce the best fit for the person.
EBP is impossible to put in place	Implementing EBP can happen by degrees and investing any time in the

4.2 What Factors Should You Consider in Service Delivery?

Speech Pathology Australia (2003) highlights the following important factors for service delivery in AAC:

- a team approach to assessment and support
- training for communication partners is fundamental in the implementation of an AAC system
- assessment and support should occur in the individual’s environment and focus on functional outcomes that increase participation

- the individual's environment, needs and preferences are crucial in the process of selecting a system and the vocabulary used.

A range of models of support can be used with a person and their family or carers to achieve their goals according to the person's needs and/or circumstances. AAC practitioners are encouraged to be flexible and creative in the way they work.

When working as a sole practitioner or part of a team, consideration should be given to resources such as videos; videoconferencing; teleconferencing; telehealth or e- health particularly when working in geographically isolated areas. Models of working with people to deliver AAC services can include direct and indirect support.

The main modes of support are described below in the context of therapy or intervention services. For more information see the ADHC core standard [Service Delivery Approaches](#).

4.3 Prevalence of AAC use

Speech Pathology Australia calculate that 1.1 million Australian have difficulty communicating (Speech Pathology Australia, 2014). Speech Pathology Australia in a submission to the Productivity Commission Disability Care and Support in 2011 suggested that augmentative or alternative communication devices were used by 13,000 Australians (Speech Pathology Australia, 2011).

Currently in 2014 in Australia, there is no consistent data or statistics regarding AAC users or prescription.

It is imperative to document the long-term outcomes of AAC interventions to ensure accountability, justify costs, guide clinical interventions and establish best practices to improve services to individuals with complex communication needs.

(Lund & Light, 2006 p.284)

Due to the diverse terminology used to describe communication disability, it is difficult to compare and gather statistics related to the need for communication devices. However, "recording the size, characteristics and needs of populations that use or could benefit from AAC is essential for the ongoing development of AAC as an area of practice" (Sutherland, Gillon, & Yoder, 2005 p.295).

Table on prevalence of use of AAC

Population referred to	Prevalence	Source
Children and young people needing high technology	0.05% or 6,200	Gross 2010
Projected adult	19,710	Gross 2010
Projected need for AAC in England	370,752 using Scope figure 0.6%	Office of National Statistics 2010 mid 2009 figures for UK & Scope
UK population who would benefit from AAC	0.4-1% 0.6% most quoted	Scope 2007
People in UK and USA who require AAC systems	0.3-1.4%	From studies in UK and America, including Beukelman and Ansel 1995, cited in Communicating Quality 3 2006 BCSLT
School population in UK needing AAC systems	0.2-0.6%	Blackstone 1990, cited in Communicating Quality 3
Children with Special Educational Needs statement referred for AAC	18%	Wright J, Clarke M, et al. 2004.
People with cerebral palsy using AAC	Male 61% Female 39% Low	Murphy J et al. 1995.
People in USA using AAC	8-12 per 1000	Studies reported in ASHA 2008 edition.
Cerebral palsy resulting in a speech impairment needing	50% 31% to 88%	Beukelman & Mirenda 1998.

Taken from: (Enderby et al., 2009 p.19)

Resources and additional reading:

- [AAC Project. Independent Living Centre, WA \(Inc\)](#)
- [Shining a Light on AAC](#)

4.4 Who uses AAC?

A person may benefit from AAC at any time in their life due to a communication difficulty or complex communication need. Disorders that may affect a person's ability to speak may involve physical, neurological, sensory, psychological or cognitive processes. This may be caused by a developmental/congenital disorder or an acquired disorder.

People who may use AAC throughout their lives could include children with developmental disabilities. The term 'developmental disabilities' is an umbrella term, which is used to describe disabilities that interrupt or delay a child's development. Developmental disabilities can affect people in different ways and usually persist for their lifetime.

Other people with various genetic syndromes or developmental disorders may use AAC. Functional speech may develop, however communication partners may have difficulty understanding the person due to poor intelligibility.

Those people diagnosed with Cerebral Palsy (CP) may use AAC. CP is the most common motor disability in childhood (Centers for Disease Control and Prevention, 2014). People with cerebral palsy usually have associated motor problems such as difficulty using their arms, balancing, walking, eating or speaking. They may or may not have intellectual disability. People with CP may have speech which is difficult to understand.

Children and adults diagnosed with Autism spectrum disorder (ASD) may use AAC. ASD is a developmental disability that can cause significant social, communication and behavioural challenges. People with ASD may communicate, interact, behave, and learn in ways that are different from other people.

Sometimes use of AAC is not life long but time limited. Some examples of people who may use AAC for a specific time could be:

- someone who has had a stroke or head injury and may recover speech
- a person who has had surgery to their neck/vocal area
- someone who may be in intensive care with an inability to speak because of tubes/ventilation
- people with illnesses and /or degenerative diseases which may be episodic and cause communication issues at certain times (an example is Multiple Sclerosis)
- some people developing dementia
- people with psychological or mental health issues who may choose not to use speech but will use AAC for a period of time.

Resources and additional reading:

- Alant, E. [Dementia and AAC in Taiwan](#)
- Angelman Syndrome Foundation [Assistive Technology & AAC](#)
- Calculator and Black, 2010. [Parents' Priorities for AAC and Related Instruction for their Children with Angelman Syndrome](#)
- Care Home UK [Dementia signage and visual aids are crucial within care homes](#)
- Communication Matters: [Life talking through a communication aid. By Scott Stack \(Communication Matters Trustee\).](#)
- Dementia Care Australia [What Is Dementia?](#)
- [Down Syndrome Australia.](#)
- Everyone Communicates, [individual stories](#)
- Fried Oken, M. [A Fresh Look at AAC and Dementia](#)
- Foreman & Crews 1998: [Using augmentative communication with infants and young children with Down syndrome](#)
- [Australian Hearing](#)
- International Rett Syndrome Foundation, [Augmentative and Alternative](#)
- Light & Drager 2010: [Effects of Early AAC Intervention for Children with Down Syndrome](#)
- Novita [Stories of communication strategies for people with physical disabilities:](#)
- PrAACtical AAC, 2013 [Fresh Look: AAC for Children Who Have Rett Syndrome with Dr. Theresa Bartolotta](#)
- PrAACtical App: [Books featuring children who use AAC](#)
- Schladant, M. 2011 (dissertation) [An Examination of Parent Perspectives on Augmentative and Alternative Communication Systems in Children with Fragile X Syndrome](#)
- [Speech Pathology Australia](#), 2010 Clinical Guideline, Speech Pathology in Mental Health Services. (Available to SPA members only. Non-members are able to purchase it through Speech Pathology Australia).
- [TBI Express](#) is a package developed by the University of Sydney that provides freely available videos with information and strategies for people who have experienced a brain injury.
- [The Fragile X Association of Australia.](#)
- [The Raising Children Network](#) web site contains information and resources for children with disability.

4.5 Impact of use of AAC systems

The worth of an AAC system which allows someone to communicate is inestimable. Having a working communication system and/or equipment affects fundamental human rights like ability to make choices and overall quality of life (Bush & Scott, 2009; Hamm & Mirenda, 2006).

Some people have described the experience of using AAC as life changing, citing increased independence, interactions and the ability to make use of opportunities (Hodge, 2007). Others have said that just using simple AAC strategies “can still be indispensable at specific times, such as, hospital

appointments or communicating over the telephone” (Enderby et al., 2009 p.8).

4.6 Costs associated with no provision for AAC

Speech Pathology Australia states that “there are no Australian data to guide considerations of the cost burden that results when communication and swallowing problems are untreated or under-treated” (Speech Pathology Australia, 2014 p.19).

When AAC supports are not provided for people with communication disorders there can be serious costs to quality of life and may be impacts on:

- education and learning
- employment
- social involvement
- health
- quality of life
- productivity
- environment control.

Additional difficulties can arise if AAC systems, strategies and equipment are delayed. This may lead to problems with:

- language development
- literacy skills
- communication skills
- life skills.

For an individual this might also lead to:

- loss of identity
- mental health problems
- isolation
- behaviours of concern including passivity
- lost learning opportunities
- risk of abuse or harm
- inability to fulfil potential in life.

The use of an AAC system strategy or equipment provides a means of communication for people with severe communication impairment. The impact of using AAC systems, strategies or equipment varies with the individual circumstances and needs of the person, the level of speech and language impairment, communicative ability of the individual to facilitate their participation in society.

(Enderby et al., 2009)

Sometimes mental health issues may become a concern amongst AAC users. People can feel loss and grief for the communication abilities which may be lost or deteriorating. It is imperative that the person develop systems for communicating to explain feelings and seek help.

5 AAC in Diverse Settings

The focus of AAC clinical practice should be to equip a person with the functional communication skills to communicate in all places, with all the people who interact in their lives. However, each setting has a unique environment (including the communication partners involved) which will have an impact on the level of the person's communication success.

The information in this section is an introduction to the settings that should be considered when implementing AAC. Various types of service delivery models can be used in a range of settings. Some examples of settings are:

- various community centres
- family homes
- group homes
- residential facilities
- community based clinics
- hospital based clinics
- inpatient contexts
- remote, in person or via telehealth or other technology.

Further reading and literature searches should be conducted for best practice approaches within particular settings and populations.

5.1 Working as Part of a Person Centred Team

When providing a person centred service the 'AAC team' always includes the person themselves. Other members of the team around the person can include:

- immediate or extended family
- paid or voluntary carers
- teachers and teachers aids
- speech-language pathologist
- physician
- occupational therapist
- physiotherapist
- social worker
- education specialist
- psychologist
- rehabilitation engineer
- vision specialist

Working on a team provides different perspectives and skills and allows collaborative decisions to be made about AAC systems. Once decisions or trials have happened regarding an AAC system, it is important to have professional follow-up. This may include training or speech pathology services that focus on the development of AAC competency over a period of time (ASHA, 1991).

Table: Roles of individuals involved in AAC interventions

Person	Potential roles
Person with complex communication needs	Provide input related to communication needs and decisions about personal and medical care, life choices and goals, social relationships and AAC system and intervention preferences
AAC facilitators	Provide everyday assistance to people with CCN; support implementation of multimodal interventions; support unfamiliar communicative partners; maintain AAC technology; prepare low- tech materials; assist people with CCN to select and program words and messages in their AAC devices; serve as a liaison with other AAC personnel and device manufacturers
AAC finders	Identify persons with CCN; be aware of current, appropriate communication options for individuals with CCN; prepare potential decision makers; organize decision-making process to seek AAC assessment; refer to appropriate AAC intervention provider(s); certify AAC prescription(s) (when appropriate)
General practice clinicians or educators	Implement multimodal interventions; integrate low-tech AAC materials in restorative/developmental and compensatory interventions; implement appropriate low-tech AAC options; implement routine high-tech AAC options; monitor impact of individual AAC interventions; prepare and support AAC facilitators; instruct communication partners
AAC specialists	Implement multimodal interventions; integrate low-tech AAC materials in restorative/developmental and compensatory interventions; implement appropriate low-tech AAC options; implement complex or unique high-tech AAC options; monitor impact of individual AAC interventions; obtain funding for intervention technology; prepare and support AAC facilitators; support general practice clinicians; instruct communication partners; provide continuing education to AAC facilitators; collaborate to support technology transfer; collaborate to support AAC research; support AAC professional organisations and activities; provide expert testimony for legal and policy proceedings

AAC experts	Promote, sustain and enhance AAC services at program or agency level; provide pre professional preparation of AAC finders, intervention specialists and experts; provide continuing education for AAC finders; provide continuing education for general practice clinicians, AAC intervention specialists and experts; develop AAC policies; execute AAC research; collaborate to support technology transfer; prepare AAC educational materials; participate in the leadership and management of AAC professional organisations; support AAC professional organisations activities; provide expert testimony for legal and policy proceedings
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Taken from: (Beukelman & Mirenda, 2013p.102)

5.2 AAC in early childhood settings

The use of multi-modal AAC strategies and a total communication approach is advocated in the early childhood population. AAC should be introduced early for children with complex communication needs, and provides not only an alternative mode of communication but a foundation for language and communication development (Ronski & Sevcik, 2005).

Providing support in the natural environment, as a part of daily care-giving activities, play and social interactions, helps to build functional and meaningful skills and encourages generalisation across environments (Wetherby & Woods, 2006; Woods, 2008).

The following areas are an important foundation for intentional communication and language development, and may be targeted in the context of social interaction and play in early childhood settings (Kumin, 2012):

- attention development (focus on a person, object or event)
- cognitive development (object permanence, cause-effect)
- visual development (eye contact, visual tracking, joint attention)
- auditory development (attention to sound, sound localisation, processing sounds)
- tactile development (exploration with mouth and hands)
- imitation development (gesture, movement, sound)
- social communication development (turn-taking, seeking and responding to interaction).

The Literature Review Report – Strengthening Supports for Children 0-8 Years (Dew, De Bortoli, Brentnall, & Bundy, 2014) describes the benefits of discipline specific interventions in mainstream settings and summarises 10 studies

relating to speech pathology. These studies found that following speech pathology intervention children displayed:

- increased interactions with peers and decreased segregated activities and undesirable behaviours
- increased participation in educational activities and play
- improved basic skills and functioning
- broader benefits, such as development of friendships.

Useful resources and additional reading:

- Bhargava, D. (2008) "[Getting Started!!! Using Visual Systems to promote Communication](#)" Bhargava (2008)
- Goossens, Crain & Elder, 1992. Engineering the Preschool Environment for Interactive, Symbolic Communication: 18 Months to 5 Years.
- University of Colorado, [Just Being Kids DVD](#). Supports and services for special needs infants and toddlers and their families in everyday routines, activities and place.

5.3 AAC in Education settings

Incorporating AAC into the classroom setting can be very challenging for teachers and educational staff. Dada and Alant (2005) describe some of the difficulties surrounding AAC intervention in the classroom context.

It is important to consider:

- structuring the physical environment to include the child using AAC
- any potential curriculum adaptations
- ready access to the AAC system
- updating and maintaining the AAC system
- training for teachers and aids or volunteers about the AAC system.

Despite these challenges, teachers can play an important role in making AAC a success in the life of a child who uses AAC.

Strategies that speech pathologists can focus on to support AAC in the classroom are outlined by Zangari (2012) as:

- clarifying expectations – outline student, teacher, support staff, peer and family roles
- identifying the demands of the classroom – consider the demands of the physical context, linguistic context, social context and cultural context
- managing assessment demands – work collaboratively with teachers regarding what assessments they need to conduct or data that needs to be collected
- supporting AAC learning opportunities – explicit description of new and existing activities.

Blackstone (2008) outlines some of the possible guiding principles that might be helpful to guide goal setting and outcomes for students using AAC including:

- having services be coordinated and consistent
- training teachers and support staff to have the skills to support all students including those who use AAC
- students developing academic and social skills to develop friendships and social networks
- families being engaged and encouraged to participate
- AAC instruction happening in natural settings and activities
- goals reflecting the needs of the student as well as the realities of the classroom
- communication opportunities being available throughout the day and across activities
- multiple modes of communication being supported
- AAC systems modelled during everyday interactions
- communication partners being available for authentic interactions
- progress being monitored over time.

Access to education and the practical use of learning and applying AAC whilst at school can prepare a lifelong user well for the years after school.

Useful resources and additional reading:

- In NSW the Department of Education and Communities provides supports to students with disabilities via the [“Every Student, Every School”](#) initiative. The Department estimates there are 90,000 students with a disability, learning behaviours or behaviour support needs in public schools. This initiative aims to improve access to information and expert support such as supports for students with complex communication needs through a strong focus on professional learning and support for teachers and support staff. For more information visit the [DEC website](#).
- De Bortoli, T. 2010 Where are teachers' voices? A research agenda to enhance the communicative interactions of students with multiple and severe disabilities at school. *Disability and Rehabilitation*. Vol. 32, No. 13 , P. 1059-1072
- Special Education Technology British Columbia. 2008. [Supporting People who use AAC Strategies: in the Home, School & Community](#).
- Zangari, C. (2013) PrAACtical [How I Do It: Encouraging AAC Implementation](#)

5.4 AAC in Health/Hospital/Acute/Rehabilitation settings

A person may enter these settings for short or long periods of time because of:

- sudden illness or injury
- surgery (planned or unplanned)
- prolonged illness
- seizures
- other health complications.

Possible health settings include (but are not limited to):

- doctors office/clinic
- emergency rooms
- intensive care units acute care hospital
- disaster/emergency locations (triage, ambulance, shelters)
- nursing home
- rehabilitation unit
- hospice.

Communication between patients and providers needs to be efficient and effective, for adequate healthcare. For many people, health care settings are a daunting place where general communication becomes difficult for many reasons. People and families are often stressed and anxious. It can be difficult to understand procedures and information. For people with communication difficulties, this issue is compounded.

Some people may find themselves unable to communicate effectively during their time in the health care setting. This can be a temporary situation or part of an ongoing change in communication functions. Use of AAC strategies for receptive and/or expressive communication can be effective. Many centres have generic 'communication boards'. Low technology strategies that are durable and portable are often the best options in these situations.

For the AAC user who comes into one of these settings it is crucial to provide support to those interacting with the person. AAC assessment and intervention can help a person to be more involved in their health or rehabilitation program and also reduce the frustration of not being understood.

AAC strategies in all of the settings need to be readily understood by everyone and easily implemented. The biggest barrier to effective communication in hospitals is time (Hemsley, Worrall, & Balandin, 2011). All staff members need to allocate the time to learn how a person communicates and understand what AAC methods a person may use.

The AAC user and family can be supported by the speech pathologist to provide information that helps staff to interact with the person in a professional, positive and safe way. Information provided should be in plain or easy English or accessible format.

If possible short, accessible staff training, which focusses on the most practical and crucial information about the person and the AAC system will help staff understand and promote use of communication systems.

Involvement of family carers of people with cerebral palsy and Complex Communication Needs during an inpatient hospital stay is complex. Although they depend upon others for communication support, these individuals with CCN wish to be treated as adults in hospital and

included in decisions about their healthcare. They want to be involved in the education of hospital staff, and to communicate directly with hospital staff.

(Hemsley, Balandin, & Togher, 2008)

Useful resources and additional reading:

There are many resources available online for carers, families and health care providers to support communication and interaction in health care settings, including generic communication boards, alphabet boards and emergency care boards, factsheets and templates.

- Central Coast Health in NSW has developed the [“TOP5”](#) resource to support communication across health settings. The TOP5 resource encourages families and carers, who know the patient well, to document the most important strategies and information that staff should use when caring for the person. This is also designed to be used across settings and environments for a range of people
- [Patient Provider Communication](#) web site also contains valuable information and resources.

5.5 AAC in the justice systems

Access to justice in the criminal justice system for people with disabilities who need communication supports or who have complex and multiple support needs (people with disabilities) is a significant problem in every jurisdiction in Australia. Whether a person with disability is the victim of a crime, accused of a crime or a witness, they are at increased risk of being disrespected and disbelieved and of not enjoying equality before the law.

(Australian Human Rights Commission, 2014 p.5)

Through consultations, the Australian Human Rights Commission (2014) identified barriers and experiences of people with disabilities including:

- higher risk of being jailed and of having repeated contact with the criminal justice system
- difficulty identifying disability and responding appropriately
- supports and adjustments are not provided regardless of whether a person’s disability is identified
- insufficient personal protection
- becoming a victim of repeated violence
- people with disabilities are not regarded as credible or reliable witnesses
- inappropriate questioning styles are used by police, lawyers and the courts
- people with disabilities are less likely to get bail.

Speech pathologists working with the person, their family and personnel in the justice system should be aware of AAC supports that are available to help with understanding the justice system processes e.g., the Intellectual Disability Rights Service wallet cards and “Getting Arrested” Kit. Working with individuals with disability who come into contact with the justice system requires specialist knowledge and skills in order to understand the complexities of the presenting issues.

Modification of legal documents (e.g., addition of line drawings/ photos, making the information accessible) can assist the person with a disability understand and comply with conditions set by police and the courts. However, this requires a high level of experience and competence given the ramifications of misinterpretation of legal information. This is not an area for new graduate speech pathologists unless they have the support of a clinical supervisor.

Resources and additional reading:

- [Australian Human Rights Commission Report](#) (2014). Equal before the laws: Towards disability justice strategies
- Intellectual Disability Rights Service (IDRS), www.idrs.org.au/index.html and Criminal Justice Support Network (CJSN)
- [Department of Justice](#)
- NSW Police [Easy English factsheets \(2013\) for victims and witnesses of crime](#)
- Speech Pathology Australia (2012) [Submission to Parliament of South Australia: Select Committee into Access to and Interaction with the Justice System for People with Disabilities.](#)
- Statewide Behaviour Intervention Service (2015) [Communication Equality in the Criminal Justice System: A Practice Guide for Speech Pathologists Supporting People with a Disability](#) (due to be online February 2016).

6 Assessment in AAC practice

6.1 Person Centred Assessment

Person centred AAC practice means the person who would benefit from AAC is at the centre of the process right from the beginning of assessment and implementation through to evaluation and monitoring. This is consistent with the person centred approach to service delivery in which the functional goals that are important to the person and their carers are identified, and form the basis for assessment and clinical intervention.

Assessment tools are used in conjunction with interviews, observations and input from many different sources. Formal or informal interviews and/or questionnaires can be used with the person, their family, caregiver, teachers, specialists, and direct care staff.

Assessment with people who may require AAC is complex. Often there are not standardised or norm-referenced tools for use. Any assessment tools used, whether formal or informal, should provide meaningful information for the purpose of diagnosis, planning person centred support options, goals and outcomes with people with a disability and their families. Observation and reports from the person, their family and/or carers, and use of checklists and questionnaires, are all valid ways of gaining information without the use of formalised tests. There are many helpful resources available to ensure that person centred planning is used in assessments and approaches to assessment.

The person's identified functional goals are used to guide the assessment process, informing decision making around the type/s of assessment that will be conducted, and which, if any formal assessment tools are used. All speech pathology goals should reflect the person's long term goals and aspirations, for example, a person may wish to communicate better in order to join a social group; their speech pathology goal and AAC systems should reflect this.

Speech pathologists need to be vigilant that their practice is always person centred. When there are many stakeholders involved, goals and practices can inadvertently focus on carers, services or funding bodies. The person's preferences need to be heard and incorporated into any decisions about AAC. In practice this can be more difficult than it seems and usually requires an ongoing process which can be time consuming. However, evidence has shown that involvement of the person in all aspects of AAC planning results in better success and use of systems (Rackensperger, Krezman, McNaughton, Williams, & D'Silva, 2005).

Resources and additional reading:

Person Centred [tools](#) that might be useful:

- [4 + 1 Questions](#)
- [A Person Centred Communication Profile](#)
- [Good days / Bad Days](#)
- [Important to/for](#)
- [Lifestyle Planning](#)
- [One page profile](#)

6.2 Participation Model of AAC assessment

Beukelman and Mirenda (2013) describe a number of models for AAC assessment, including the Participation Model. This highlights the area of participation, which is one of the domains described in the International Classification of Functioning Framework (see Section 3).

The participation model described provides a systematic process for conducting assessment that leads to functional interventions which are based on the person's participation requirements (Beukelman & Mirenda, 2013). A Participation Inventory Tool can be used to identify a person's level of independence, opportunity, barriers and access barriers to form a picture of participation patterns and communication needs.

Resources and additional reading:

- A summary of the [participation model by](#) Novita Children's Services
- Useful tools for assessing adults:
 - (ASHA) [Functional Assessment of Communication Skills for Adults \(ASHA FACS\)](#)
 - (ASHA) [Quality of Communication Life Scale \(ASHA QCL\)](#)

6.3 Dynamic Assessments

Dynamic assessment "involves some sort of instructional interaction between the assessor and the individual being assessed. The purpose is to reveal learning potential rather than (just) measure performance" (Camilleri & Law, 2007 p.312). This is an important factor when assessing AAC needs as often high technology systems are expensive and need to be able to 'grow' or 'change' with the person as they learn, improve or alter in their communication skills.

Assessment can occur as part of intervention, making this a dynamic interaction. Many variables can affect performance and potential and often trial of AAC devices forms part of a dynamic assessment (see section 7).

Resources and additional reading:

- Grigorenko, E. (2013) [Dynamic Assessment and Response to Intervention](#)
- Snell, M (2002) [Using dynamic assessment with learners who communicate nonsymbolically](#)

6.4 Assessment issues and considerations

Assessment of a person with complex communication needs is best done as part of a team (see Section 5.1 for teams and roles). Assessment of all communication needs will include AAC assessment if required.

The following points are important to consider during assessment (Beukelman & Mirenda, 2013):

- the senses (i.e., vision, hearing, touch, smell and taste)
- physical abilities (e.g., vocalisation, orientation, mobility and dexterity)
- physical and mental health (including medication)
- intellectual abilities (e.g., alertness, attention span, comprehension & understanding, receptive and expressive language, memory and executive functions)
- literacy skills (i.e., reading, writing and arithmetic)
- activities of daily living, including social skills and the ability to make choices
- social networks
- contexts or environments (e.g. Where the person lives, works, goes to school, socialises)
- personality, personal preferences and priorities (e.g., likes, dislikes)
- emotional support needs
- self-advocacy skills (including self-esteem and assertiveness)
- personal history and future plans or aspirations
- previous intervention and support strategies.

Questions to consider include, how does / can the person:

- say yes and no
- make sense of their environment by drawing on a variety of cues (e.g., sights, sounds, smells, touch or taste)
- understand what is happening around them and both participate in and influence those events in a positive way
- communicate in every day settings
- engage the attention of others, including naming people of particular significance
- effectively signal a protest or rejection of something or someone
- request an object, an action, assistance or information
- express preferences and / or make choices
- express emotion in response to various situations
- comment or express an opinion on issues of importance to them.

During assessment it is also important to consider the skills and support needs of communication partners. This should include:

- opportunities for interaction and shared activities
- opportunities to support choice making
- acknowledging and responding to the person's attempts to communicate
- supporting the person to understand that a response is expected
- talking about activities and routines with the person
- modifying or adapting their communication style to match the person's skills.

6.5 Communicative Competencies for AAC users

J. C. Light (1989) proposed a definition of communicative competence for people who would benefit from the use of AAC as:

“a dynamic interpersonal construct based on functionality of communication; adequacy of communication; and sufficiency of knowledge, judgment, and skills” (J C. Light & McNaughton, 2014 p.1)

In order to develop communicative competence in the use of AAC, a person needs to develop knowledge, judgement and skills in four domains: linguistic, operational, social and strategic (Light, 1989; Light & McNaughton, 2014). Beukelman and Mirenda (2013) offered a fifth domain – self advocacy.

6.5.1 Linguistic Competence

Linguistic competence refers to a person’s receptive and expressive language skills. It also includes knowledge of the ‘linguistic code’, such as the line drawings, words, and signs for an AAC system. For people who would benefit from an AAC system, they need to have linguistic competence in the language being used around them as well as for their AAC system.

Important things to consider include:

- communication awareness
- communicative intent and symbolic skills
- vocabulary (including sentence structures)
- selection options (such as icon sequencing, navigation).

6.5.2 Operational Competence

Operational competence refers to the technical skills required to operate the system. This includes the motor and cognitive skills required to use the features. Developing operational competence is the most immediate need for people learning to use an AAC system and the people who support them.

Often less operational competence is required for unaided or low-tech systems.

Training in operational competence might include:

- keeping the system up to date (especially considering future needs)
- creating new overlays, pages or categories
- maintaining the physical integrity of the system (including repairs)
- making sure the system is readily available. Important things to consider include:
 - visual discrimination
 - memory skills and attention
 - motor abilities and motor planning
 - access options
 - system navigation (static versus dynamic display).

6.5.3 Social Competence

Social competence includes all the skills required for social interaction. Skills in this domain include:

- initiating and maintaining conversations
- finishing conversations
- taking turns in conversations
- using a variety of communicative functions (such as requesting, questioning, rejecting)
- engaging with a communication partner and participate actively in conversations
- an interest in others.

Supporting a person to build skills in this area often involves training, however opportunities to practice in natural and supportive environments is also crucial Beukelman and Mirenda (2013 pp. 12-13).

6.5.4 Strategic Competence

Strategic competence, for a person who uses AAC, means having the flexibility to adapt communicative style to suit the communication partner (such as signing more slowly to strangers or turning up the volume on the AAC system for grandad).

It also involves learning how to repair and extend the conversation with strategies that allow a person to adapt and cope when conversations break down. For example, this might involve a person learning a strategy to communicate the message “Please slow down” or “You misunderstood”.

Resources and additional reading:

- PrAACtical AAC [Communicative competence in AAC](#)

6.6 Sensory Impairments

Sensory impairments that should be considered during AAC assessment and intervention include:

- vision Impairment
- hearing Impairment
- dual sensory impairment
- sensory processing difficulties

Vision impairment will have an impact on the layout of symbols in the AAC system. It will also be important to carefully consider colours, contrasts and font size as well as the 'business' of pictures or photographs in any resource a person is expected to use. Also be aware of where you stand when interacting with a person with vision impairment.

Sporadic **hearing loss** during critical periods of childhood can contribute to delayed development of speech and language. This will also have an impact on implementation of an AAC system. Important things to consider are input and message feedback (such as vibration), volume and speech rate.

Sensory processing difficulties occur when the brain is not able to organise sensory information. This may be a result of either the senses delivering information that may not be accurate or, once information is delivered to the system, the interconnections within the brain are not efficient and therefore the information received is not processed accurately (Murray-Slutsky & Paris, 2000). Research suggests that many children with Autism Spectrum Disorder (ASD) have deficits in sensory processing (Robinson & Magill-Evans, 2009).

Characteristics of sensory processing difficulties may include:

- inconsistencies in performance
- difficulties in attention, arousal, organisation of behaviours, motor planning, and coordination
- difficulties processing sensory input
- fluctuations in emotions and behaviour

Keep in mind that sensory processing difficulties are not just limited to people on the Autism spectrum. It is important to consult with an occupational therapist about any client who may have sensory processing difficulties. Sensory processing difficulties may affect AAC assessment and intervention including:

- difficulty seeing/processing visuals
- aversion to touching object symbols
- difficulty processing visual and auditory information simultaneously
- difficulty using AAC while in an emotional state

- tendency to ‘self stimulate’ using AAC materials (i.e. flicking visuals, focussing on reflective laminate, chewing on items).

To overcome difficulties like these it is important to work as part of a team.

Resources and additional reading:

- [The Royal Institute for Deaf and Blind Children](#)
- [Vision Australia](#)

6.7 Student, Environments, Tasks, and Tools (SETT) Framework

The SETT Framework (Zabala, 2005) is a four part model intended to promote collaborative decision-making in all phases of assistive technology service design and delivery from consideration through implementation and evaluation of effectiveness. It uses the term “assistive technology” throughout, but the framework is equally applicable for the broader term AAC.

Developed for use in educational settings, this SETT framework has been applied in practice to a broader range of people of all ages who use or are being assessed for AAC. The student, environments, and tasks should be fully explored before tools are considered or selected.

Resources and additional reading:

- [A Brief Introduction to the SETT Framework](#)
- [The SETT Framework: An Assessment Process - Assistive Technology Training Online Project](#)
- Zabala, J. (2005). Ready, SETT, go! Getting started with the SETT Framework. *Closing the Gap*, 23 (6), 1-3.

6.8 Feature matching

A full assessment of the person’s communication needs including direct and in-direct access methods and feature matching in regard to all AAC options is required (Speech Pathology Australia, 2012). Feature matching is a system to match a person’s strengths, abilities and needs for available tools and strategies (Shane & Costello, 1994).

Feature matching involves comparing the features (e.g., storage of vocabulary; retrieval of vocabulary; method of access; modifying voice, gender, accent, pitch and volume; adding items) of two or more devices or systems to the person’s needs and skills. This can include all mainstream technologies, dedicated communication devices, software platforms and systems. A feature matching assessment helps to limit bias in decision making

about the best AAC system or strategy. For example a selection of a device or system could be based on price and portability without consideration (or in preference to) considerations about access or linguistic considerations (Speech Pathology Australia, 2012).

Assessing the person's performance on at least two AAC systems is necessary to determine the relative benefits of different features of the systems that are best suited to the person's needs (Speech Pathology Australia, 2012).

Resources and additional reading:

- Gosnell, J. [Feature Matching Communication chart](#)
- Marfilu, S. & Fonner, K. [Feature match checklists](#)
- [Quality Indicators for Assistive Technology Services \(QIAT\)](#)
- Rocky Bay (WA) [Feature matching checklist](#)
- [The Periodic Table of AAC](#)

7 AAC Intervention practices

AAC strategies are classified as aided and unaided. AAC can be used to support comprehension or expression. AAC strategies may be broad and general or targeted for specific environments and purposes. AAC users in one study concluded that “successful use of AAC technology was best assessed by functional use in the community” (Rackensperger et al., 2005 p.165).

7.1 Aided Language Input

Aided language input also known as aided language stimulation (ALS) is a communication strategy used with AAC. A communication partner teaches symbol meaning and models language by combining his or her own verbal input with a selection of vocabulary on the user’s AAC system or topic boards or other communication displays. This is done by simultaneously selecting vocabulary on the AAC system and speaking.

Aided language interventions include these components:

- they are used during activities that occur in natural contexts
- they are used to augment the speech of communication partners
- they use modeling with the aim of expanding expressive and receptive vocabulary.

Resources and additional reading:

- [AAC Language Lab](#)
- Binger & Light (2007) : The effect of aided AAC modeling on the expression of multi-symbol messages by preschoolers who use AAC (Binger & Light, 2007)
- Drager (2009) Aided Modeling Interventions for Children With Autism Spectrum Disorders Who Require AAC (Drager, 2009)
- Rocky Bay (2010) [Aided language stimulation handout](#)

7.2 Language Acquisition through Motor Planning (LAMP)

A method of teaching language using AAC devices is the Language Acquisition through Motor Planning (LAMP) therapeutic approach. It is based on neurological and motor learning principles using a specific language system (Minispeak® and Unity®).

The motor planning aspect focuses on giving the individual independent access to vocabulary on voice output AAC devices. Access to vocabulary is consistent and is achieved by always using the same motor plans. The vocabulary is taught across environments using multisensory input so that over time the person learns to use the motor pattern automatically to access vocabulary and language. The vocabulary taught is dependent on the child's interests and desires.

This is a relatively new intervention practice. Evidence is available for the specific components used in this method (e.g., core vocabulary, motor planning), but further evidence is required for evaluation of the approach as a whole intervention. It is used as an intervention with children with Autism Spectrum Disorders with some promising results, but evidence is still being gathered.

Resources and additional reading:

- The Centre for AAC and Autism [What is LAMP?](#)
- Baker, B. [How Minspeak® Allows for Independent Communication by Giving Anyone Access to Core Vocabulary](#)
- Reed, M. [The Language Stealers](#)

7.3 Colour coding

The use of colour in communication displays might help people to differentiate between symbols. Colour coding symbols by grammatical categories or parts of speech is a practice that has been used by AAC practitioners for many years. However, there is a need for more evidence to support this practice (Thistle & Wilkinson, 2009).

If choosing to incorporate colour coding, there are two main approaches that can be used:

- The Modified Fitzgerald Key (Fitzgerald, 1949). Developed in 1929 to teach hearing impaired individuals this is a colour coding classifying system for the different parts of speech
- a system developed by Goossens, Crain, and Elder (1992). Similar to the Fitzgerald system specific parts of speech (represented by symbols or used in overlays) were coded for colour.

Regardless of the system of colour coding, it is important that it stays consistent for the person using the system.

Resources and additional reading:

- Goossens, Crain, Elder :[Engineering Communication Overlay Colors](#)
- PrAACtical AAC [Communication boards - colour considerations](#)

- Putting people First: Re-Thinking the role of Technology in AAC Intervention (Augmentative and Alternative Communication, 2013;29(4):299-309) (J C. Light & McNaughton, 2014).

7.4 Facilitated Communication

Facilitated Communication (FC), also referred to as ‘supported typing’ or ‘assisted typing’, involves a facilitator touching the person with disability’s hand, elbow, shoulder, body, keyboard or alphabet board (‘rapid prompting’) in order that the person with disability points, types, or selects messages.

(Clinical Guideline: Augmentative and Alternative Communication Speech Pathology Australia, 2012 p. 30)

Evidence from controlled trials and two systematic reviews suggested that facilitators using this method influence the person’s message, and that they do so consciously and/ or unconsciously (Speech Pathology Australia, 2012).

Additionally, the

American Psychological Association (APA) and the American Academy of Pediatrics have recommended that facilitated communication not be used because of its potential harmful effects and lack of proven success.

Speech Pathologists have an ethical responsibility to inform their clients and families of the lack of supportive evidence in the area of facilitated communication.

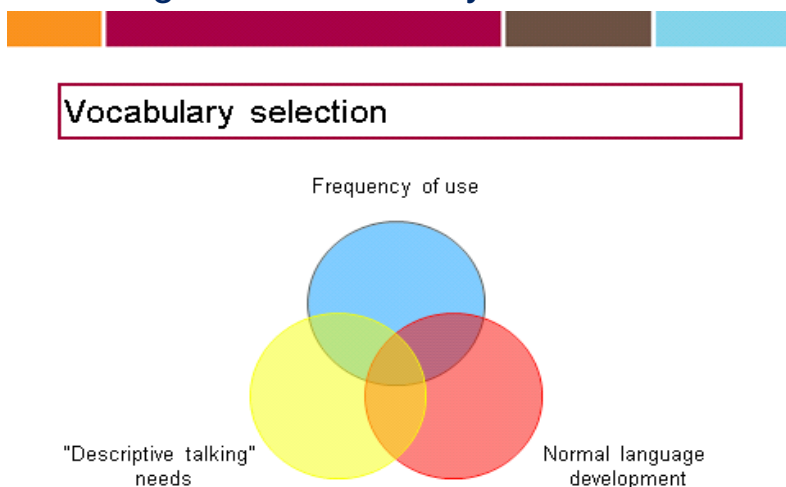
Resources and additional reading:

- Anne McDonald Centre [Facilitated communication training](#)
- ASHA [policy on facilitated communication](#)
- Clinical Guideline: Augmentative and Alternative Communication Speech Pathology Australia, 2012
- Raising Children Network [Facilitated communication.](#)

7.5 Vocabulary Choice

When considering vocabulary for an AAC system, professionals are encouraged to consider the core vocabulary, a set of words and concepts which have been found to be the most frequently occurring and relevant to functional communication across environments (Trembath, Balandin, & Togher, 2007) (Trembath, 2007). The vocabulary set in an AAC system must also be revised frequently to ensure that the vocabulary suits the person’s changing needs. Although often cited when working with AAC with children the premises of core vocabulary selection apply also to adults who have a finite range of commonly used words.

7.6 Diagram: Vocabulary selection



7.7 What is the core vocabulary approach?

Core vocabulary contains words that are observed in high frequency and are helpful in furthering child language development (Trembath et al., 2007).

The most significant traits of a core vocabulary are that it is relatively small in size and varies little across individuals or environments. Most core vocabulary work has linked high frequency words to particular age ranges with a focus on social and needs-based communication (Dennis, Erickson, and Hatch (2013).

The vocabulary selected for an AAC device or strategy must reflect the individual needs of the person or child. Trembath et al. (2007) outlined the considerations for vocabulary selection stating it should be:

- meaningful and functional
- flexible and capable of serving a range of communicative functions
- interesting and motivating
- effective in establishing social closeness
- likely to be used frequently
- reflective of the person's personality, interests, groups and memberships
- appropriate to the person's age, gender, background and environment.

Although a relatively small core vocabulary of frequently and commonly used words may enable them to communicate effectively across a range of interactions with teachers and peers, they also require individualised fringe vocabulary that is reflective of their personalities, interests, and the contexts in which they interact.

(Trembath et al., 2007 p 300)

Fringe vocabulary consists of low frequency words that may not aid language development, but is important for ensuring that systems are individualised for each person.

Resources and additional reading:

- Bloomberg, K. [Debating multiword phrases and core vocabularies](#)
- PrAACtical AAC [Core vocabulary board example](#)
- PrAACtical AAC [Core vocabulary tag](#)
- Van Tatenhove, G. [Vocabulary lists and checklists](#)

7.8 Choosing Symbols

The symbols used in any AAC system should be selected in collaboration with the AAC user. The concept of a 'symbol hierarchy' (such as a supposed progression from using real objects to picture symbols) is not well supported in the literature.

There is no need to select a single 'symbol set' as the symbols should be based on the AAC user's preferences. For example, a person may readily recognise a printed picture of the logo of their favourite fast food restaurant but prefers real objects in their daily schedule.

It is important that symbols be reflective of the maturity and preference of the person. A child may prefer coloured PCS™ Symbols - Picture Communication Symbols (Mayer-Johnson, 2014) and an adult may prefer line drawings.

Examples of types of aided symbols:

- line drawings
 - Picture Communication Symbols (PCS)
 - Softpics
 - Widgit symbols
 - Pictograms
 - Blisssymbols
- photographs
- real objects
- partial objects
- miniature objects (use with caution)
- artificially associated and textured symbols including tactile symbol systems like Braille or Moon.

It should be noted that most line drawing symbols used in AAC are copyrighted and permission should be sought before using them in systems.

For example Mayer- Johnson (Boardmaker PCS) does not allow use of their symbols in certain communication apps.

When considering symbols, thought should be given to the use of text with symbols. Not all symbols are easily recognised or “intuitive”. However, the use of text to accompany symbols can facilitate word recognition and sight reading for literacy development.

Text font and size should also be considered for the individual and their communication partners. Usually a sans serif font is suggested as being more visually clear than some other fonts.

Resources and additional reading:

- Augmentative and Alternative Communication: Supporting Children and Adults with Complex Communication Needs:(Beukelman & Mirenda, 2013 p.50-57)
- Farrall, J. [Symbol supported text does it really help?](#)

8 AAC and Literacy

“No student is too anything to be able to read and write.”

Dr David Yoder, DJI-AbleNet Literacy Lecture, ISAAC (2000).

Literacy has been defined as the set of skills a person requires in order to read, write and spell (Beukelman & Mirenda, 2013). AAC assessment is important for a person who may have had some exposure or literacy activities in order to inform any intervention goals and activities.

Although literacy skills are essential in the lives of all citizens, they carry even greater importance in the lives of individuals with complex communication needs who rely on AAC.

(Beukelman & Mirenda, 2013)

AAC users who are able to achieve levels of literacy are able to access more systems which are linguistically or phonically based. This can increase the range of devices and communication options for many users.

AAC users will have different levels of literacy. Development of literacy skills for those using AAC has traditionally lagged behind peer literacy development – with “approximately 70% of individuals with severe communication impairments are significantly behind their peers in literacy learning” (Koppenhaver & Yoder, 1992 p.1).

The knowledge and skills required to read and write include:

- orthographic processing
- phonological processing
- context processing (vocabulary, grammatical, world knowledge)
- meaning processing (processing the above to build understanding).

Literacy learning can be more challenging for people with disabilities who use AAC because of:

- visual impairment
- hearing impairment
- motor impairment
- cognitive impairment
- language or speech impairment
- reduced experience and world knowledge
- history of limited participation.

These are not reasons to neglect or avoid literacy learning opportunities. Michalicek et al. (2010) stated that “students with significant physical and developmental disabilities who use aided AAC devices seem to benefit from

receiving evidence- based literacy instruction in typical contexts” (Michalicek et al., 2010 p. 235).

Extrinsic factors that may impact on literacy learning:

- physical context (the availability and accessibility of literature)
- availability and accessibility of literacy activities
- opportunities for interactions with literate peers
- accessibility of the language used during literacy experiences
- values and attitudes towards literature by family, school and community.

Michalicek et al. (2010) found that systematic instruction strategies were best for teaching literacy skills such as phonemic awareness, phonics, vocabulary, text comprehension children who use AAC. These strategies include:

- scaffolding
- direct instruction
- least-to-most prompting with time delay.

Literacy assessment for an AAC user should cover as many of the following as possible:

- letter-sound correspondence
- sound-blending skills
- phoneme segmentation
- word decoding
- sight word recognition
- reading comprehension
- spontaneous spelling
- first-letter-of-word spelling
- recognition spelling.

Visual assessment should also consider the person’s:

- visual acuity and field
- oculomotor functioning
- light and colour sensitivity
- visual stability
- functional visual competence.

Resources and additional reading:

- [Centre for literacy and disability studies- Jane Farrell blog](#)
- [Four Blocks](#) is a literacy teaching framework. The Four Blocks program is based on the premise that all children don't learn in the same way and integrates four language arts areas into reading instruction. Those areas are: guided reading, self-selected reading, writing, and working with words
- [Literacy for All: Blocks for Building Literacy Success](#). Plenary presentation at the Inclusive Learning Technologies Conference 2012

- [MEville to WEville](#) is a researched-based literacy curriculum developed specifically for students with disabilities in the moderate to severe range. Designed to build a classroom community that promotes a sense of belonging, each unit offers students a new and different perspective on themselves, their families, and their school
- [The Australian Curriculum](#)
- Yoder & Koppenhaver, (1993). [Literacy Learning and People with Severe Speech Impairments](#) (Special Issue). Topics in Language Disorders, Vol 13, No. 2.

9 Implementing an AAC system

Implementation of AAC goals will form part of the person's overall complete communication goals.

9.1 Communication Opportunities

Typically developing children are exposed to language and verbal interactions for many hours before they start to speak. Think about how many hours children have spent hearing and learning language even before they enter school. This is something for people supporting a child who needs an AAC system to think very carefully about. It is the role of the speech pathologist to promote the importance of immersing a child in an AAC environment which will give them more opportunities to learn to use it.

Evidence indicates people who are non verbal need to be presented a minimum of 200 opportunities a day to interact (Caulfield & Carillo, 2010).

9.2 Communication partners

A communication partner is anyone that a person who uses AAC might interact with. Potential communication partners include:

- parents
- family members
- childcare workers
- teachers /aids
- school admin staff
- friends / peers
- shop assistants
- food attendants
- healthcare workers
- support workers.

This is not an exhaustive list and serves to illustrate how many people a person might interact with during one period of their life. There will be key communication partners who will be the main supports for a person who is learning to use AAC.

The role of communication partners is crucial for achieving positive outcomes for people who use AAC (Bech, Bain, & Vass, 2008). Important roles that communication partners need to take include:

- showing a positive attitude and advocate for use of the AAC system
- creating opportunities
- modeling use of the AAC system
- prompting use of the AAC system
- keeping the interaction going
- modeling problem-solving during conversations
- training new communication partners
- maintaining the motivation, autonomy and self-esteem of the AAC user.

Important roles that speech pathologists need to take to support communication partners include:

- providing initial and ongoing training to communication partners
- supporting functional goal setting
- modeling use of the AAC system in common settings
- monitoring progress towards outcomes
- identifying barriers and facilitate problem solving.

9.3 Environment

Communication and interaction do not happen in a vacuum. The environment has an impact on the way we all communicate. How and where an AAC device is used, how it is set up, where it is positioned, how communication partners can access it if needed and other practical factors need to be considered. It is also important to take into account cultural and diverse backgrounds when using AAC. This may mean considering languages, cultural usages and cultural environments.

For AAC users, it is important that their environments support them and their communication partners wherever possible.

Features of the environment that are important to think about for both high and low tech AAC are:

- people and crowds and noise levels
- portability or space needed to operate device or low tech AAC
- light levels (too low or too high)
- layout (can the AAC system be seen by communication partners?)
- storage and accessibility for AAC systems
- time (communicating with AAC often takes more time).

There may also be features of the environment that are physically damaging to an AAC system, including:

- bright sunlight may damage a communication display
- rain or saliva may damage an electronic device

- putting a system in and out of a bag
- power surges when charging, incorrect electrical connections or currents.

To increase the likelihood of success, it will be important to consider adapting the communication environment. Sometimes this can be more appropriate than changing the device or system or asking the person who uses AAC to adapt.

9.4 Access

Access refers to the way in which a person is able to manipulate and use their AAC system. Their ability to access the chosen AAC system is a major factor when designing, prescribing and using an AAC system. Physical disability, vision and hearing impairments, behaviour, seating and positioning, and sensory processing issues are all examples of factors which may affect the manner in which an individual can access their AAC system.

It is important to have an occupational therapist as part of the team when considering access options for AAC systems. For example, a communication system may need to be incorporated with an individual's wheelchair and seating system. There may need to be consultation regarding the Therapeutic Goods Act (see Appendix 5). It is important that all issues and options are discussed with the person and their family when using AAC.

Examples of some areas of consideration which may fall under access include:

- level of independence
- portability (weight, size, carrying handle)
- durability
- battery life
- digitized and synthesized speech options. Synthesized is necessary for text- to-speech as the individual learns to spell and can store their own messages.
- consistent motor plan to access vocabulary makes it easier to learn and automaticity allows for faster access and access without cognitive attention to symbols and page navigation.
- consistent access to core words
- amount of vocabulary on screen
- language software that allows progression from first words to complex language without relearning
- option to compose words and phrases to express wants, needs, medical information, and thoughts
- use of hide and show feature to minimize visual distractions
- use of picture symbols that can be used to communicate multiple meanings of words.

Adapted from: (The Centre for AAC and Autism, 2009).

Accessing aided AAC systems happens either through direct access (the AAC user selects and composes the message) or by an indirect method when the AAC user selects and composes the message through a process such as scanning.

Most high tech devices allow either option to be selected. Direct selection might involve selecting a symbol (either visual or auditory) with a body part, pointer or eye gaze. If direct access is not possible due to physical disability, messages are composed by using scanning features in a device or using another person. There are many types of scanning options that can be selected to best suit the needs of the person.

9.5 Scanning

Scanning is an indirect selection technique (or access method), that can be used by people who use AAC, to choose items from the selection set (Beukelman & Mirenda, 2005). There are different reasons to use scanning, including physical restrictions or loss of physical ability. Usually, switch scanning requires only one movement (such as head, eye or limb movement).

The person who uses AAC makes a desired choice on the electronic device or on a communication board. A scanning indicator on the device (or person for low tech aids) moves through items by highlighting each item on the screen or board (visual scanning), or speaks the items (auditory scanning), and the person selects the item using a switch or other indication. The speed and pattern of scanning, as well as the way items are selected, are individualized to the person's physical, visual and cognitive abilities (American Speech-Language-Hearing Association, 2004).

Scanning can be difficult and tiring. It requires more attention and cognition and perhaps more memory to store messages or parts of messages while the scan is in operation. Scanning makes communication slower and can cause issues with flow of communication because of time and selection procedures. It is important to have an occupational therapist as part of the team when considering scanning options for AAC systems.

If a scanning technique is part of the access method for a person, there are different scanning patterns (Vinson, 2001) to be considered:

- circular scanning
- linear scanning
- group-item scanning.

9.5.1 Head and Eye Movement

Some people who use AAC rely on minimal movements such as head and eye movement. In situations without technology, head and eye movement may be used to indicate “yes” or “no” “more” or “less,” “slower” or “faster,” or “go” or “stop”(Fager, Beukelman, Fried-Oken, Jakobs, & Baker, 2011). Eye gaze is also a crucial strategy in combination with head and eye movement.

9.5.2 Head and Eye Tracking

The technology for head and eye tracking is rapidly advancing and becoming more accessible and affordable. It is beyond the scope of this document to maintain current and up to date information on this technology. Practitioners should keep up to date with the latest technology as it emerges. This technology can allow people who use AAC more options for communication and interaction.

9.5.3 Head Pointing

The person who uses AAC with this access strategy points a laser, attached to their head, at objects or pictures in the environment to communicate a message. Lasers can also alternatively be mounted on hands, feet or other parts of the body. There can be a concern for the eye safety of people in the environment as a laser pointed directly in the eye can be damaging.

9.5.4 Brain Computer Interface

This is a newly emerging technology that is being explored for people who use AAC and who have very limited physical movements. As described above with head and eye tracking, this field of brain controlled communications options is emerging and rapidly expanding.

9.5.5 Switches

A switch enables the user to activate a device indirectly. Using switches with people with physical difficulties makes it easier for them to use dedicated communication devices; computers; environmental controls; toys or any other electronic device.

[Beukelman and Mirenda \(2013 p.149\)](#) describe six components of switch control which includes the ability to:

- wait for the right moment to activate the switch
- activate the switch
- hold the switch in the activated position
- release the switch
- wait again
- activate again as appropriate to the situation.

There are different types of switches including big and small switches, pressure adapted switches, touchpad switches and soft switches. A switch can be operated using any part of the body allowing access even for those who have severe physical difficulties.

Types of switches:

- contact switches –requires physical contact with the switch. For example: Jelly Bean switch
- non contact switches – any movement triggers the switch. For example: Blowing, sucking, blinking or making a noise.

There are also multi- step switches which enable several steps to be performed sequentially. Often simple contact switches will provide effective access for many people. It is important to work collaboratively with an occupational therapist if switch access is being considered as part of the access method.

Resources and additional reading:

- [All About Switches](#) from CommunicateAT
- Fager, S, Beukelman, D, Fried-Oken, M, Jakobs, T, & Baker, J 2012, 'Access interface strategies', *Assistive Technology*, 24, 1, pp. 25-33.
- Inclusive Technology [Special Needs Articles and Information pages](#)
- [Switch Progression Road Map](#) by Ian Bean.

9.6 Mentoring

The definition of mentoring varies widely across professions. Mentoring usually involves a relationship between a more experienced individual and a less experienced person to teach, guide, support and facilitate growth (Taylor. L. J., 1992).

Jacobi (1991) describes mentoring with the following features:

- a helping relationship focused on support, personal/professional development and role modeling
- a reciprocal relationship
- having direct interaction between mentor and mentee
- mentor shows greater experience and skill in the area of mentoring focus.

9.6.1 Mentoring for AAC users

Mentoring for AAC users has been explored as a strategy to increase the likelihood of success for people learning to use AAC.

Commonly cited challenges include the large amounts of practice and learning that are required (Rackensperger et al., 2005) and the difficulties in obtaining enough therapy services with the sufficient frequency to support this need (Perry et al., 2002).

From (Ballin, Balandin, Stancliffe, & Togher, 2011 p. 447)

Beukelman and Mirenda (2013 p.13) commented that children who were developing skills in using an AAC system cannot simply do what other, typically developing children do when learning how to interact and communicate – that is, what those around them do. The people around them usually are not using AAC to communicate, so a mentoring relationship provides this opportunity.

Ballin, Balandin, and Stancliffe (2013a) described mentoring for people who use speech generating devices (SGDs) as an appropriate addition to the services that speech pathologists can provide. By adding mentoring to AAC practice, competency outcomes can be exceeded for people who use AAC. There are also growing discussions that there may be a role for social media platforms in supporting people learning to use AAC.

9.6.2 Mentoring for practitioners

For speech pathologists that may be new to the field of AAC sometimes a mentor can help with increasing professional growth and knowledge. Experienced clinicians may also seek a mentor when exploring unknown systems and new devices and technologies. Experts in AAC take a variety of roles in relevant associations. For a list of organisations which may provide mentoring see appendix 2. Speech Pathology Australia also has a mentoring program. Some providers and suppliers of technology also have mentoring or training available.

10 Evaluation of AAC systems

10.1 Outcome measures

Measurement of outcomes for assessment, interventions monitoring and management can be classified according to purpose.

Outcomes on an organisational level may require specific reporting such as key performance indicators; data sets and so on for populations, staff and/ or users. Speech pathologists may input at an organisational, departmental and client level for specific evaluation of AAC interventions. Outcomes such as the ICF codes can also be used on an international or world data and research level.

What should be measured?

The following are possible domains that could be included in measuring meaningful outcomes following AAC implementation:

- goals made by the person using AAC, their family and people with whom they interact
- changes to any of the five domains- body functions and structure; participation; activity; environmental factors and personal factors using ICF codes and tools developed to measure (World Health Organisation, 2001)
- changes to any of the five domains- body functions and structure; participation; activity; environmental factors and personal factors using the ICF-CY for AAC Profile and Code Set for Children Who Rely on AAC (Rowland et al., 2012) As mentioned in section 3, the ICF-CY will soon be incorporated into the above general ICF codes
- participation using the Participation Model of AAC (Beukelman & Mirenda, 2013) as discussed in section 7
- changes to communicative competence using Light's Communicative Competence for Individuals who use AAC (J. C. Light, Beukelman, & Reichle, 2003)
- changes in other areas of communication skills and abilities (like speech, language, literacy, fluency, voice, and pragmatics) which are targeted goals within the AAC intervention.

Adapted from: (Augmentative and Alternative Communication Clinical Guideline Speech Pathology Australia, 2012 p. 28)

10.1.1 How can these be measured?

Several criterion referenced tools can measure specific and personal outcomes for AAC goals prioritised by the person and their families or communication partners. Examples of some AAC and Communication tools are listed in Appendix 2.

Speech pathologists should ensure sufficient competence in the use of these tools and those mentioned below.

Two widely used evidence based tools that can be used with AAC interventions, assessments, monitoring and management are outlined below.

1. The Canadian Occupational Performance Measure (COPM). This is an individualised person-centred approach to service delivery which indicates the person's and communicative partners' priorities. It is a well validated and researched outcome measure and goal setting tool. It allows the person (or proxy) to identify performance, and satisfaction with this performance, both at baseline, and after support/implementing the goal. It is designed for use with people with a disability and is a standardised instrument enabling specialist support staff and case management staff to target areas of greatest need.

2. The Goal Attainment Scale (GAS) is a measure that records changes to a person's functional skills using expected levels of achievement (and levels above and below goal achievement expectation). It produces a goal attainment score which allows measurement of outcomes. GAS measures the symptoms, behaviours, feelings, skills or achievements that the intervention or support is designed to change. It can organise, help to focus and clarify the aim of supports during team planning then document changes at every step throughout the intervention.

Resources and additional reading:

- [Canadian Occupational Performance Measure](#)
- Debbie Burmester, 2013 [Best practice guideline for speech generating device prescription- section on GAS goals – page 83](#)
- [Goal Attainment Scaling](#) (Thames Valley Children's Centre)
- [International Classification of Functioning Disability and Health \(ICF\)](#)

11 Overcoming Barriers

Assessment and implementation of AAC intervention takes time and resources. This practice guide contains some information and resources that may help in achieving successful outcomes, however there are many barriers that may continue to arise.

These barriers could include:

- characteristics specific to the person (e.g., their comprehension of symbols or physical ability)
- limited resources (e.g., availability of equipment, funding and personnel time)
- experience and skills of communication partners and their previous experiences with AAC
- attitudes of communication partners
- physical or social environments and how conducive these are to the use of AAC
- organisational policies, procedures or philosophies
- opportunity to use AAC and interact in natural settings and activities
a person may exhibit behaviour problems or behaviours of concern
- generalisation and stereotyping

11.1 Myths and realities of AAC intervention

Table: Ronski and Sevcik (2005) addressed the perceived myths or barriers surrounding AAC intervention.

Myth	Reality
AAC is a “last resort” in speech-language intervention	This is a very out-dated opinion which has been addressed through years of AAC research during early childhood. Also see Cress and Marvin (2003).
AAC hinders or stops speech development	See below for more information on this area.
Children must have a certain set of skills to be able to benefit from AAC	For people with physical and sensori-motor disabilities, they are unable to demonstrate their abilities until they are given the tools to communicate. How can a person demonstrate skills to access the tools, when those tools are essential
Speech-generating AAC devices are only for children with intact cognition	The AAC device should be seen as a tool that allows a person to achieve an outcome of language and communication skills. The device is not the outcome
Children have to be a certain age to be able to benefit from AAC	There is no evidence that age is an indicator of readiness for any AAC strategy. Research has been conducted showing that the opposite
There is a representational hierarchy of symbols from objects to written words	Empirical evidence from typical language development indicates that this is an inappropriate assumption. Choice of symbols is more likely to be influenced

Beukelman and Mirenda (2013 p.187-189) discuss potential barriers including:

- policy barriers
- practice barriers
- knowledge and skill barriers
- attitude barriers.

Common challenging statements that may be encountered under some of these barriers while assessing and implementing AAC could include:

“Our main communication goal is for the person to talk”.

It is natural for parents and carers to expect a child to develop speech. It is important to listen and be receptive and open to what is being said. Explanations and expectations about why a child might not talk need to be delivered sensitively and with emotional supports in place. Evidence indicates that AAC interventions will not inhibit speech and communication development (Millar, Light, & Schlosser, 2006; Schlosser & Wendt, 2008).

When AAC is first introduced as an intervention for a child or person, many parents and carers raise concerns that it will hinder speech development or use of language.

This concern has been the focus of many research studies. Miller, Light and Schlosser conducted a systematic review with meta-analysis and concluded that the “best level of evidence indicates that AAC interventions do not have a negative impact on speech production” (Millar et al., 2006).

In addition to this, there is evidence to suggest that AAC promotes language learning (Cress & Marvin, 2003). Research and clinical experience indicate that children will learn to use the most effective and efficient modes of communication available to them.

As a speech pathologist practicing in the field of AAC it is important to be informed about the latest evidence about the interaction between AAC and speech, language and literacy development. It is important to provide up to date information to families, carers and professionals involved in supporting the implementation of an AAC system.

(Balandin, 2009) concluded that there was no evidence that AAC was a barrier to speech production. However there needs to be further robust research into this area so that limited or no gains in speech production should not preclude AAC as a therapy strategy. It is also noted that participants in research on AAC and speech and language are a varied group and this means that outcomes and effects vary greatly between people (Balandin, 2009).

“Nobody else will use the AAC system, so we don’t want it”

Sometimes past negative experiences will influence how a person, their family or their carers react to the introduction of AAC. The reasons for this may be varied and complex. When working with families it is important to remain open to their thoughts and opinions and create a positive working alliance. It is equally important to look at participation barriers and evaluate the potential opportunities a person will have to use their AAC. If communication partners and environments do not support the use of AAC, there will be a decreased likelihood of success (Hodge, 2007).

“He/she understands everything I say...”

For some people with complex communication needs, it can be difficult to determine their level of comprehension. Donellan (1984) described the development of the philosophy of the least dangerous assumption which encourages AAC clinicians, carers, families and educators to look at supports, skills and strategies that, if incorrect, will have the least negative impact on the outcomes. By assuming that a person understands everything, we may be making a dangerous assumption. By providing comprehension supports that augment a person’s understanding, we are unlikely to cause harm while potentially boosting their independence.

Assessment and implementation of AAC intervention takes time and resources. This practice guide contains some information and resources that may help in achieving successful outcomes, however there are many barriers that may continue to arise.

It is up to the speech pathologist to assist in breaking down barriers so the fundamental right to communicate is available for the person.

Resources and additional reading:

- Boulder Valley School District Assistive Technology Team [A summary on AAC](#)
- PrAACtical App [5 reasons why a speech only approach isn't good enough](#)
- Rowski, M., & Sevcik, R. A. (2005). Augmentative Communication and Early Intervention Myths and Realities. *Infants & Young Children*, 18(3), pp. 174-185
- Schlosser, R. (2003). The efficacy of augmentative and alternative communication: Towards evidence based practice. Oxford, UK: Elsevier Science
- Schlosser, R. (2004). Evidence-based practice in AAC: 10 points to consider. *ASHA Leader*, 9(12), 6

12 Future directions

The field of AAC clinical practice has evolved a great deal over the last 20 years and will continue to do so in the future. The advent of new technologies which will allow people to communicate in many different ways is an exciting prospect.

The International Society of Augmentative and Alternative Communication (ISAAC 2014) suggests speech pathologists who work with people who use AAC should explore AAC methods exhaustively and relentlessly, until a method is found that enables individuals without effective speech to communicate naturally anytime, anywhere, with anyone and about anything. It is the role of the speech pathologist to stay up to date with new advances, apply evidence and use best practice when working in the area of AAC. Speech pathologists need to be aware of ethical ramifications of any new technology systems, particularly in regard to privacy and duty of care.

As in all areas of speech pathology practice good quality research will improve performance and outcomes for clients using AAC.

12.1 NDIS and AAC funding

*The National Disability Insurance Scheme is the new way of providing individualised support for eligible people with permanent and significant disability, their families and carers. The National Disability Insurance Scheme is the insurance that gives us all peace of mind. Disability could affect anyone
- having the right support makes a big difference.*

National Disability Insurance Scheme (2014)

This scheme is scheduled to be operational for all eligible Australians by 2018. There are some trial sites already in operation in some states. The scheme will change the way many disability services are currently delivered and operate in each state and territory in Australia.

People can check if they are eligible for the NDIS online at this site - [NDIS Access Checklist](#).

Eligible people will go through a planning process which is about choice and pursuing goals. Funding for approved services and equipment is part of the plan developed.

Various supports are available for people with disabilities when making a plan for their future like [People with Disability Australia \(PWDA\)](#), and the [National Disability Advocacy Program](#).

People who use or need AAC will need to have a plan which details their needs both for equipment and services. The plan should encompass assessments needed relating to high and low tech, or aided and unaided systems, trials and training. Often people with AAC needs will need to try several different systems and types of equipment to get the best system for their specific needs. Speech pathologists need to check for approval of specific devices funded by the NDIA. The plan needs to include the intervention time, training of the person in the communication system and training and practice for them and the people in their lives in the communication system.

The plan also needs to encompass ongoing support, maintenance and upgrading of communication systems.

This plan may require the services of the various professionals and other people in the person's life. For example: for someone in a wheelchair, occupational therapists may need to explore mounting systems for any devices or communication aids; training of teachers in AAC communication systems may be needed for children at school; environmental supports may be needed for someone accessing community services using AAC; accessing a peer AAC user as a mentor, etc.

Existing AAC users may also require support to use their AAC when making plans with professionals.

Speech Pathologists [can register as providers](#) and there is information and resources available for providers on the [NDIA website](#). Sometimes hours of intervention are predetermined. This differs on a case to case basis.

[Speech Pathology Australia](#) also provides support for members in private practice with many guides and materials available.

Price lists for the National Disability Insurance Agency (NDIA) services, supports and equipment is available for the current trial sites here- [Pricing and Payment](#).

For people who are part of the current trials or who may be participants in the NDIS in the future it is important to be prepared and think ahead. Lifespan requirements of AAC needs are hard to predict. Sometimes planning AAC systems for all environments into the future can be difficult given the advances

and changes in technology. Plans have review periods and can be reviewed as circumstances and goals and needs change.

12.2 AAC and Telepractice

Technologies which allow remote access, assessment and intervention are increasingly being explored for AAC. This is often called “Tele-AAC”. Anderson and colleagues (2012) defined Tele-AAC as “a unique cross-disciplinary clinical service delivery model that requires both expertise in both telepractice and augmentative and alternative communication (AAC) systems” (Anderson et al., 2012 p.80).

People using AAC devices, particularly high tech systems pose particular challenges for using telepractice. The feasibility and efficacy for AAC services and assistive technologies must be fully investigated. A number of pilot studies conducted suggest that the service provider needs to explore the technical and logistic details prior to undertaking any service delivery (Hall & Boisvert, 2014).

Tele-AAC services delivery can be both direct (in real time in an interactive environment) and indirect (through messages such as email or use of video, images). Consultation, supervision and mentoring can also occur in real or delayed time.

When applying telepractice to the field of AAC, additional barriers are encountered These barriers can be overcome, and telepractice is not only practical and effective, but often a preferred means of service delivery.. (Rose, 2014 p.42)

12.3 AAC and virtual reality/ simulation

Teaching students about disability using virtual reality (Stendal, Balandin, & Molka- Danielsen, 2011) could be extended to using AAC within virtual reality systems.

Simulations within clinical learning practices are a viable part of an overall system (Shakespeare & Kleine, 2013). Simulations could in future include AAC users and environments for students and other to learn about AAC and users and options.

12.4 AAC and future technologies

There is a labyrinth of new technologies being developed which will change the face of AAC. One example is a Brain-Computer Interface (BCI). This allows for access to communication devices and other computer applications which replace physical inputs like keyboards and switches with neuro-transmitted messages from the brain. An example of one such product and further information is available [here](#).

Your feedback on this AAC core standard is welcome and should be sent by email using this link CIGCoreStandard@facsnsw.gov.au with the words AAC core standard as the subject of the email.

13 References

- AGOSCI. (2011). *Taking it to the streets*. Paper presented at the AGOSCI Taking it to the streets, Adelaide, Australia.
- American Speech-Language-Hearing Association. (2004). Roles and Responsibilities of Speech-Language Pathologists With Respect to Augmentative and Alternative Communication: Technical Report, from <http://www.asha.org/policy/>
- American Speech Language Hearing Association. (2014). International Classification of Functioning, Disability, and Health (ICF) Resources. ICF and Communication Disorders
- Anderson, K, Boisvert, M, Doneski-Nicol, J, Gutmann, M, L, Hall, N, Morelock, C, . . . R, Cohn E. (2012). Tele-AAC Resolution. *International Journal of Telerehabilitation*, 4(Fall 2,), pp. 79-82.
- ASHA, American Speech Language Hearing Association. (1991). Augmentative and Alternative Communication: What is AAC? Retrieved 11-06-2014, 2014
- Australian Human Rights Commission. (2014). Equal Before the Law: Towards Disability Justice Strategies.
- Baker, K, Carrillo, D, & Stanton, F. (2012). 200 a day the easy way: Putting it into practice. *SIG 12 Perspectives on Augmentative and Alternative Communication*, 125-133.
- Balandin, S. (2002). Message from the president. . *ISAAC Bulletin* 67, 67, 2. Retrieved from
- Balandin, S. (2009). AAC intervention does not hinder natural speech production for children with autism, but natural speech gains tend to be small (Commentary author). *Evidence-Based Communication Assessment and Intervention*, 3(1), pp.11-14.
- Ballin, Liora, Balandin, S, Stancliffe, R, & Togher, L (2011). Speech-language pathologists' views on mentoring by people who use speech generating devices. *International Journal Of Speech-Language Pathology*, 13(5), pp. 446-457.
- Ballin, Liora, Balandin, Susan, & Stancliffe, Roger J. (2013a). The speech generating device (SGD) mentoring program: Supporting the development of people learning to use an SGD. *Journal of Developmental and Physical Disabilities*, 25(4), 437-459.
- Bech, A., Bain, A., & Vass, A (Producer). (2008). Training of the Communication Partner provides positive outcomes in facilitating communication of children with Cerebral Palsy who use Speech Generating Devices Retrieved from <http://www.agosci.org.au/docs/trainingcatsp.pdf>
- Beukelman, D.R., Ball, L., & Fager, S. (2008). An AAC personnel framework: adults with acquired complex communication needs. . *Augmentative and Alternative Communication*, 24, 255-267.
- Beukelman, D.R., & Mirenda, P. (2005). *Augmentative and Alternative Communication: Supporting Children and Adults with Complex Communication Needs*: Paul H. Brookes Publishing Company.

- Beukelman, D.R., & Mirenda, P. (2013). *Augmentative and Alternative Communication: Supporting Children and Adults with Complex Communication Needs*: Paul H. Brookes Pub.
- Bhargava, D. (2008). *Getting Started!!! Using Visual Systems to Promote Communication*. East Victoria Park WA: Carson St School.
- Binger, C., & Light, J. C. (2007). The effect of aided AAC modeling on the expression of multi-symbol messages by preschoolers who use AAC. *Augmentative And Alternative Communication*, 23(1), pp. 30-34.
- Blackstone, S. (2008). Principles for Classrooms with Students who use AAC. *Augmentative Communication News*, 20(4), 1-7.
- Bush, M., & Scott, R. . (2009). *No Voice, No Choice*. London: Scope UK.
- Camilleri, B., & Law, J. (2007). Assessing children referred to speech and language therapy: Static and dynamic assessment of receptive vocabulary. *International Journal of Speech-Language Pathology*, 9(4), pp. 312-322. doi: 10.1080/14417040701624474
- Caulfield, F., & Carillo, D. (2010). 200 A Day the Easy Way, Putting it in Practice.
<http://www.idahoat.org/Portals/0/Documents/200%20a%20Day%20the%20Easy%20Way.pdf>: WWW.closingthegap.com.
- Centers for Disease Control and Prevention. (2014). Cerebral Palsy (CP), from <http://www.cdc.gov/ncbddd/cp/index.html>
- Cress, C. J., & Marvin, C.A. (2003). Common Questions about AAC Services in Early Intervention. *Augmentative and Alternative Communication*, 19(4), pp. 254-272.
- Dada, S., & Alant, E. (2005). "Training teachers for classroom AAC implementation" in *Augmentative and alternative communication and severe disabilities: beyond poverty* Eds E Alant and L.L.Lloyd, pp 300-322: Whurr.
- Dennis, A. , Erickson, K., & Hatch, P. (2013). The Dynamic Learning Maps core vocabulary:Overview (technical review0. In University of North Carolina Dynamic Learning Maps Professional Development Team (Ed.). <http://www.med.unc.edu/ahs/clds/files/vocabulary-overview>.
- Dew, A., De Bortoli, T., Brentnall, A. , & Bundy, A. (2014). Strengthening Supports for Children 0 – 8 years and their Families: A Literature Review.
[https://www.adhc.nsw.gov.au/_data/assets/file/0003/297390/Strengthening Supports for Children 0 - 8 years and their Families A Literature Review PDF.pdf](https://www.adhc.nsw.gov.au/_data/assets/file/0003/297390/Strengthening_Supports_for_Children_0_-_8_years_and_their_Families_A_Literature_Review_PDF.pdf): Family and Community Services, Ageing Disability and Home Care (ADHC).
- Donellan, A. (1984). The Criterion of the Least Dangerous Assumption. *Behavioral Disorders*, 9(Feb, 2), pp. 141-150
- Drager, K. (2009). Aided Modeling Interventions for Children With Autism Spectrum Disorders Who Require AAC. *SIG 12 Perspectives on Augmentative and Alternative Communication*, 18, pp. 114-120.
- Enderby, P, Pickstone, C, John, A, Fryer, K, Cantrell, A, & Papaioannou, D. (2009). Resource Manual for Commissioning and Planning Services for SLCN.
http://www.rcslt.org/speech_and_language_therapy/commissioning/aac_plus_intro.

- Fager, S., Beukelman, D., Fried-Oken, M., Jakobs, T., & Baker, J. (2011). Access Interface Strategies. *Assist Technology*, 24(Spring), p. 25-33.
- Fitzgerald, E. . (1949). *Straight Language for the Deaf. A system of instruction for deaf children.*: The Volta Bureau
- Fried-Oken, M., & Granlund, M. (). (2012). AAC and ICF: A good fit to emphasize outcomes. *Augmentative and Alternative Communication*, 28, 1-2.
- Goossens, C., Crain, S. , & Elder, P. (1992). *Engineering the Preschool Environment for Interactive, Symbolic Communication: 18 Months to 5 Years*. Birmingham, AL: Southeast Augmentative Communication Conference Publications.
- Hall, N, & Boisvert, M. (2014). Clinical Aspects Related to Tele-AAC: A Technical Report. *SIG 12 Perspectives on Augmentative and Alternative Communication*, 23(January), pp.18-33. doi: 10.1044/aac23.1.18
- Hamm, B. , & Mirenda, P. . (2006). Post school quality of life for individuals with developmental disabilities who use AAC. . *Augmentative and Alternative Communication*, 22(2), pp 134-147.
- Hemsley, B., Balandin, S., & Togher, L. . (2008). “We need to be the centrepiece”: Adults with cerebral palsy and complex communication needs discuss the roles and needs of family carers in hospital. *Disability & Rehabilitation*, 30, 1759-1771.
- Hemsley, B., Worrall, L. , & Balandin, S. . (2011). Nursing the patient with complex communication needs: Time as a barrier and a facilitator to successful communication in hospital. . *Journal of Advanced Nursing*, 68,, 116-126.
- Hodge, S. (2007). Why is the potential of augmentative and alternative communication not being realized? Exploring the experiences of people who use communication aids. *Disability and Society*, 22(August, 5), pp.457-471.
- Iacono, T. (2004). *Augmentative and alternative communication*. . United Kingdom.: Whurr Publishers.
- Iacono, T., Lyon, K. , West, D., & Johnson, H. . (2013). Experiences of adults with complex communication needs receiving and using low tech AAC: An Australian Context. . *Disability and Rehabilitation: Assistive Technology*, 8(5), pp. 392-401. doi: 10.3109/17483107.2013.769122
- Jacobi, M. . (1991). Mentoring and undergraduate academic success: A literature review. *Review of Educational Research*, 61, 505-532.
- Koppenhaver, D. , & Yoder, D (1992). *Literacy issues in persons with severe speech and physical impairments*. Paper presented at the Issues and research in special education.
- Kumin, L. (2012). *Early communication skills for children with Down syndrome: A guide for parents and professionals (3rd ed.)*. Bethesda, MD: Woodbine House.
- Light, J C., & McNaughton, D. (2014). Communicative Competence for Individuals who require Augmentative and Alternative Communication: A New Definition for a New Era of Communication? *Augmentative and Alternative Communication*, 30(1), pp.1-18. doi: 10.3109/07434618.2014.885080

- Light, J. C. . (1989). Towards a definition of communicative competence for individuals using augmentative and alternative communication systems. . *Augmentative and Alternative Communication*, 5, 137-144.
- Light, J. C., Beukelman, D. R., & Reichle, J. . (2003). *Communicative Competence For Individuals Who Use AAC: From Research To Effective Practice*. . Baltimore:: Paul H. Brookes.
- Lund, S.K., & Light, J C. (2006). Long-Term Outcomes for Individuals Who Use Augmentative and Alternative Communication: Part I – What is a “Good” Outcome? *Augmentative and Alternative Communication*, 22(December, 4), pp. 284 - 299.
- Lund, S.K., & Light, J C. (2007). Long-term Outcomes for Individuals Who Use Augmentative and Alternative Communication: Part II – Communicative Interaction. *Augmentative and Alternative Communication*, 23(march, 1), pp. 1 - 15.
- Mayer-Johnson, LLC. (2014). Picture Communication Symbols (PCS), from <http://www.mayer-johnson.com/category/symbols-and-photos>
- Michalicek, W, Sanford, A, Lang, R, Rispoli, M, Molfenter, N, & Mbeseha, M. (2010). Literacy Interventions for Students with Physical and Developmental Disabilities who use Aided AAC Devices: A Systematic Review. *Journal of Developmental and Physical Disabilities*, 22, 219-240.
- Millar, D., Light, J.C., & Schlosser, R. . (2006). The impact of augmentative and alternative communication intervention on the speech production of individuals with developmental disabilities: a research review. *Journal of Speech, Language & Hearing Research*, 49(2), 248-264.
- Murray-Slutsky, C., & Paris, B.A. . (2000). *Exploring the Spectrum of Autism and Pervasive Developmental Disorders: Intervention Strategies*, Academic Pr.
- Pless, M, & Granlund, M. (2012). Implementation of the International Classification of Functioning, Disability and Health (ICF) and the ICF Children and Youth Version (ICF-CY) Within the Context of Augmentative and Alternative Communication. 28 , 11–20
- Rackensperger, T., Krezman, C., McNaughton, D., Williams, M. B., & D’Silva, K. . (2005). “When I first got it, I wanted to throw it off a cliff”: The challenges and benefits of learning AAC technologies as described by adults who use AAC. *Augmentative and Alternative Communication*, 21, 165-186.
- Robinson, S., & Magill-Evans, J. . (2009). Young children with autism spectrum disorder: Sensory processing and daily life skills. . *Occupational Therapy Now*, 11(5), pp11-14.
- Romski, M., & Sevcik, R. A. (2005). Augmentative Communication and Early Intervention Myths and Realities. *Infants & Young Children*, 18(3), pp. 174-185.
- Rose, T. R. (2014). Case Studies for Telepractice in AAC. *SIG 12 Perspectives on Augmentative and Alternative Communication*, 23(January), pp. 42-54.
- Rowland, C., Fried-Oken, M., Steiner, S. A. M., Lollar, D., Phelps, R., Simeonsson, R. J., & Granlund, M. . (2012). Developing the ICF-CY

- for AAC Profile and Code Set for Children Who Rely on AAC. *Augmentative and Alternative Communication*, 28, 21-32.
- Schlosser, R. (2003). *The efficacy of augmentative and alternative communication: Towards evidence based practice*. Oxford, UK: Elsevier Science.
- Schlosser, R. (2004). Evidence-based practice in AAC: 10 points to consider. *ASHA Leader*, 9(12), 6.
- Schlosser, R, & Raghavendra, P. (2004). Evidence-based practice in augmentative and alternative communication. *Augmentative and Alternative Communication*, 20,, 1-21.
- Schlosser, R, & Wendt, O. (2008). Effects of augmentative and alternative communication intervention on speech production in children with autism: A systematic review. *American Journal of Speech Language Pathology*, 17, 212-230.
- Shakespeare, T., & Kleine, I. (2013). Educating Health Professionals about Disability: A Review of Interventions. *Health and Social Care Education* 2(2), pp. 20-37. doi: 10.111120/hsce.2013.00026
- Shane, H., & Costello, J. . (1994). *Augmentative communication assessment and the feature matching process*. Paper presented at the American Speech-Language-Hearing Association, Mini-seminar presented at the annual convention of the American Speech-Language-Hearing Association, New Orleans, LA.
- Simeonsson, R, Bjork-Akesson, E, & Lollar, D. J. (2012). Communication Disability and the ICF-CY. *Augmentative And Alternative Communication* 28(1), pp.3-10.
- Speech Pathology Australia. (2003). Scope of Practice in Speech Pathology. In Guidelines and Position Papers (Ed.). <http://www.speechpathologyaustralia.org.au/>: Speech Pathology Australia
- Speech Pathology Australia. (2011). Submission to the Productivity Commission Disability Care and Support. [www.pc.gov.au/ data/assets/rtf file/0007/109357/subdr0844.rtfCache dSimilar](http://www.pc.gov.au/data/assets/rtf/file/0007/109357/subdr0844.rtfCache.dSimilar).
- Speech Pathology Australia. (2012). Augmentative and Alternative Communication Clinical Guideline In The Speech Pathology Association of Australia Ltd (Ed.), *Clinical Guidelines*. <http://www.speechpathologyaustralia.org.au/>.
- Speech Pathology Australia. (2014). Submission to the Inquiry into the prevalence of different types of speech, language and communication disorders and speech pathology services in Australia. In Speech Pathology Australia SPA (Ed.).
- Stendal, K., Balandin, S., & Molka-Danielsen, J. (2011). Virtual worlds: A new opportunity for people with lifelong disability? *Journal of Intellectual and Developmental Disability*, 36(1), pp. 80-83.
- Sutherland, D. E., Gillon, G. G., & Yoder, D. E. . (2005). AAC use and service provision: a survey of New Zealand speech-language therapists. . *Augmentative and Alternative Communication*, 21, 295-307.
- Taylor. L. J. (1992). A survey of mentor relationships in academe. . *Journal of Professional Nursing*, 8, pp. 48-55. .

- The Centre for AAC and Autism. (2009). Points to Include in an AAC Evaluation for Individuals with Autism, from <http://www.aacandautism.com/therapists/evaluation-points>
- Thistle, J, & Wilkinson, K. (2009). The effects of color cues on typically developing preschoolers' speed of locating a target line drawing: Implications for augmentative and alternative communication display design. *American Journal of Speech Language Pathology*, 18, 231-240.
- Trembath, D., Balandin, S., & Togher, L. (2007). Vocabulary selection for Australian children who use augmentative and alternative communication. *Journal of Intellectual and Developmental Disability*, 32(4), pp.291-301.
- Vinson, B. P. (2001). *Essentials for speech-language pathologists*.
- Wetherby, A, & Woods, J. (2006). Effectiveness of early intervention for children with autism spectrum disorders beginning in the second year of life. *Topics in Early Childhood Special Education*, 26(2), 67-82.
- WHO, World Health Organisation. (2001). International Classification of Functioning, Disability, and Health (ICF)
- Williams, M. B., Krezman, C., & McNaughton, D. (2008). "Reach for the stars": five principles for the next 25 years of AAC. *AAC: Augmentative & Alternative Communication*, 24(3), 194-206.
- Woods, J. (2008). Providing early intervention services in natural environments. *ASHA Leader*, 13(4), 14-17, 23.
- World Health Organisation. (2001). International Classification of Functioning, Disability, and Health (ICF)
- World Health Organisation (Producer). (2003). ICF CHECKLIST Version 2.1a, Clinician Form for International Classification of Functioning, Disability and Health. [PDF checklist online] Retrieved from <http://www.who.int/classifications/icf/training/icfchecklist.pdf?ua=1>
- World Health Organisation (Producer). (2013). How to use the ICFA Practical Manual for using the International Classification of Functioning, Disability and Health (ICF). [PDF online] Retrieved from <http://www.who.int/classifications/drafticfpracticalmanual.pdf>
- Zabala, J. (2005). Ready, SETT, go! Getting started with the SETT Framework. *Closing the Gap*, 23(6), 1-3.
- Zangari, C. (2012). Helping the General Education Team Support Students Who Use AAC *SIG 12 Perspectives on Augmentative and Alternative Communication*, 21, 82-91.

14 Appendix 1: Glossary

- AAC system** - Group of communication strategies that a person uses as an alternative or to supplement their speech.
- AAC facilitator** - All persons who aid, assist, or in some way free the individual from their severe communicative difficulties related to their physical, linguistic and/or cognitive disabilities.
- Acquired disability** - A disability that has occurred after the time of birth.
- Aid** - A physical object or device used to transmit or receive messages (communication book, chart, VOCA, etc.)
- Aided AAC** - Communication, other than speech, that involves the use of a device or aid.
- Auslan (Australian sign language)** - The language of the Australian Deaf community.
- Autism** - A developmental disorder that is often diagnosed in early childhood and continues throughout adulthood. It can also be used as a broad term to refer to a spectrum of disorders.
- Cerebral palsy** - A disorder affecting body movements, which is caused by damage to the brain. This damage usually occurs before birth or in early infancy.
- Communication partner** - A person who a person communicates with.
- Complex communication needs** - Difficulty communicating using speech alone.
- Developmental delay** - A term used when a child's skills are acquired at a later age than expected.
- Digitised speech** - Recorded human voice.
- Disability** - The aspect of a disorder that is related to the reduced ability of an individual to meet their daily living needs.
- Down syndrome** - A genetic disorder that is the most common cause of a developmental or intellectual disability.
- Early intervention** - Services for children up to the age of six years who have special needs in multiple areas of development. This term can refer to the act of intervening in a timely manner for a person of any age.
- Iconicity** - Refers to the continuum that describes symbols by ease of recognition.
- Integration** - The physical presence of a student with disabilities into a regular classroom setting with same-age peers.
- Motor Neurone Disease (MND)** - A group of neurological diseases, which involve deterioration of parts of the brain leading to muscle weakness and wasting.
- Multimodal Communication** – Communication that uses a number of different 'modes' such as a combination of speech/ pictures/ signing/ gestures/typing etc.
- Multiple Sclerosis (MS)** - A chronic disease that affects the central nervous system.
- Occupational therapist** - An allied health care professional that specialises in the evaluation and rehabilitation of activities of daily living.
- Parkinson's Disease (PD)** - A degenerative condition caused by changes in the brain. Symptoms include tremor and muscle rigidity.

Physiotherapist - An allied health professional that specialises in the assessment and management of physical injury or disability.

Positioning - Positioning is a process that involves arranging a person's posture to best facilitate motor functioning which has a direct impact on the accuracy, speed, ease of the person's movements.

Progressive neurological disorders - Conditions that affect the nervous system, which become more severe over time. Some examples of progressive neurological disorders are Motor Neurone Disease, Parkinson's disease and Multiple Sclerosis.

Psychologist - A professional that specialises in the function of the human brain, and related behaviour and experience.

Rehabilitation - The restoration of, or improvement in, a person's health and ability to perform daily tasks. It usually involves a program of clinical and vocational services with the goal of returning a person to work.

Role release - This occurs when professionals release their traditional roles, so that all members of the team can work in a more holistic fashion.

Speech pathologist - Allied health care professional that evaluates and treats people with communication and swallowing problems.

Speech Generating Device (SGD) – see VOCA

Stroke - Failure of blood supply to the brain that results in injury to part of the brain.

Switch - A control consisting of a mechanical, electrical or electronic device for making or breaking or changing the connections in a circuit. It enables a person to operate a battery powered or electrical item.

Symbols - Something that stands or represents something else. The symbol could use visual, auditory, and/or tactile representation of conventional concepts (gestures, photos, manual signs, picto-ideographs, printed words, objects, spoken words, Braille).

Synthesised speech - Artificial, computer-generated voice.

Total Communication – An approach in Deaf education where multiple 'modes' of communication are used, however this term has also been used to describe an approach to implementing communication supports that's incorporates many styles and strategies for successful communication.

Traumatic brain injury (TBI) - Permanent or temporary brain damage caused by trauma to the head.

Unaided AAC - Communication, other than speech, that does not require any props or devices.

Vocabulary - The set of words/ pictures/ line drawings/ photographs used in a person's everyday communication

Voice banking - A person's voice is recorded while they still have functional speech so that it can be used with an AAC device later.

Voice Output Communication Aid (VOCA) - Device that generates spoken words using synthesised speech (artificial voice) or digitised voice (recorded human voice). Some VOCAs may also generate text. Also known as Speech Generating Device (SGD), and Electronic Communication Devices (ECD).

Adapted from: [SCOPE: For People with a Disability](#) and [AAC Terminology](#)

15 Appendix 2: Some AAC/ communication assessment tools

Name	Purpose and Age	Alternate assessments
<p>Augmentative & Alternative Communication Profile: A continuum of learning</p> <p>Kovach</p>	<p>2-21 years</p> <p>An assessment tool to measure subjective, functional skills for developing communicative competence using AAC systems, re-evaluate skill level and monitor progress.</p> <p>Also a guide to help manage people who use any type of speech generating AAC system.</p>	
<p>Adapted Sequenced Inventory of Communication Development For Adolescence And Adults with Severe Handicaps-Revised (A-SICD)</p> <p>Sequenced Inventory of Communication Development, Revised (SICD-R) Younger child version</p> <p>Hedrick et al.</p>	<p>Age range: adolescents and adults. Provides measures of receptive and expressive language for individuals with little or no speech (accommodates verbal, sign, non-verbal, augmentative forms).</p> <p>Younger child version</p>	
<p>Children's Assessment of Participation and Enjoyment (CAPE)</p> <p>And</p> <p>Preferences for Activities of Children (PAC)</p> <p>King et al.</p>	<p>The CAPE provides information about five dimensions of participation. This includes diversity (number of activities done), intensity (frequency of participation measured as a function of the number of possible activities within a category), and enjoyment of activities. It also provides information about the context in which children and youth participate in these activities (i.e., with whom and where they participate). The PAC taps into a sixth dimension of participation, i.e., children's preferences for involvement in each activity.</p>	

Name	Purpose and Age	Alternate assessments
<p>Communication Matrix-Communication Assessment for Parents & Professionals</p> <p>Rowland</p>	<p>An easy to use assessment instrument designed for individuals of all ages who function at the earliest stages of communication and who use any form of communication.</p> <p>It was designed primarily for speech-language pathologists and educators to use to document the expressive communication skills of children who have severe or multiple disabilities, including children with sensory, motor and cognitive impairments.</p>	
<p>Functional Communication Profile – Revised</p>	<p>Age range: 3 years to adult (cognitive age from 1 – 2 months) with acquired or development disability. Descriptive assessment tool rating individuals on the major skill categories of communication (accommodates verbal, sign, non-verbal, augmentative forms). The FCP-R is also relevant for clients diagnosed with autism or PDD.</p>	<p>Triple C</p>
<p>Interaction Checklist For Augmentative Communication INCH</p> <p>Oakander & Bolton</p>	<p>The simple protocol uses a checklist to evaluate, criterion-referenced measures to yield a score, or detailed comments to guide intervention. The manual includes goals, objectives, and many intervention ideas for clients at all severity levels.</p>	<p>Triple C</p>
<p>(MOSAIC) A Model of Observational Screening for the Analysis of Interaction and Communication</p> <p>Schmidt</p>	<p>Specifically designed for the adult with intellectual disability.</p> <p>Allows analysis of comprehension and expressive abilities of the person</p> <p>Includes observation of the person in a range of environments</p> <p>Is consistent with the terminology used in the International Classification of Functioning, Disability and Health (ICF)</p> <p>Includes analysis of challenging behaviour within a communication framework</p> <p>Leads to structured goal planning.</p>	
<p>Rocky Bay (WA) AAC assessment checklist</p>	<p>Positive AACtion Information Kit for AAC Teams Template</p>	
<p>Social Communication Networks Inventory</p>	<p>Assessment and intervention tool for people with complex communication needs and their families to determine the most appropriate technologies and communication strategies. Considers varying needs of listeners and different environments.</p>	<p>SICD-A SICD-R</p>

Name	Purpose and Age	Alternate assessments
Triple C Checklist of Communication Competencies	Screening checklist for adolescents and adults with severe or profound disabilities.	List A or Functional Communication Profile
Test of Aided Communication Symbol Performance	<p>Adult TASP: Test of Aided-Communication Symbol Performance is designed to foster development in the areas of:</p> <ul style="list-style-type: none"> • Communication • Resource preparation • Use of assistive technology <p>For more information on "TASP: Test of Aided-Communication Symbol Performance" read the following article by Spectronics author: Test of Aided-Communication Symbol Performance (TASP) Review</p>	
Social Networks Inventory Blackstone & Hunt Berg	Use of communication modalities, their effectiveness and efficiency within each of 5 circles of communication partners. Provides overall level of communication (emerging, context-dependent and independent). Use with child or adult with complex communication needs, regardless of disability type.	

16 Appendix 3: AAC and associated organisations

AAC Voice www.aacvoice.com

AGOSCI www.agosci.org.au

ARATA www.arata.org.au

Carers NSW www.carersnsw.org.au

Children with Disability Australia (CDA) www.cda.org.au

International Society for Augmentative and Alternative Communication (ISAAC), www.isaac-online.org

ISAAC-Australia (www.isaacaustralia.com)

NSW Council for Intellectual Disability www.nswcid.org.au/

People With Disability Australia (PWDA) <http://www.pwd.org.au/>

The International Association for the Scientific Study of Intellectual & Developmental Disabilities (IASSIDD) www.iassid.org

The Australasian Society for Intellectual Disability (ASID), www.asid.asn.au

17 Appendix 4: Sources of Funding for Assistive Technology

There are many sources of funding for devices and equipment. Each state in Australia has specific funding organisations. Here are some NSW examples:

EnableNSW

EnableNSW is responsible for the administration of the NSW Health disability support programs including the Aids and Equipment Program. This program is a NSW Government program to assist eligible residents of NSW, who have a life-long or long-term disability, to live and participate within their community by providing appropriate equipment, aids and appliances. Information on eligibility, range of equipment available along with application forms can be found on their website.

NSW Department of Education and Training

The NSW Department of Education and Training also has provision for some specialist equipment for particular students.

Technical Aid to the Disabled NSW (TAD NSW)

TAD NSW can assist in all aspects of everyday living, including equipment to assist the development of young children, tools and devices for education, work, recreation, daily living and personal care, and aids to assist older people retain mobility and independence.

Aids for Individuals in ADHC Accommodation Services (AIDAS)

AIDAS is a NSW ADHC-funded program for aids for people with a disability in ADHC- funded Group Homes. It supplies funding for aids to assist people with a disability to access the community and improve their quality of life. This program has been reviewed and a new policy is in development.

Independent Funding Organisations

Independent funding organisations and charity organisations will vary from area to area.

18 Appendix 5: Therapeutic Goods Administration (TGA)

The Australian Register of Therapeutic Goods (ARTG) is a computer database of therapeutic goods and was established under the Therapeutic Goods Act 1989 (Commonwealth).

Communication aids are exempt under the TGA guidelines. Communication boards/ aids are considered exempt from the TGA as they are considered for communication purposes not therapeutic use. If you are using materials and constructing specific specialised items or modifying any devices you need to check with the manufacturer, supplier and TGA. It is good practice to conduct a risk assessment for specific materials/ items used.

[TGA website](#) See "Goods that are not therapeutic goods 4b."