Literature Review:

Conditions for Success in

Augmentative and Alternative Communication Practice

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Introduction

Alberta has established Regional Collaborative Service Delivery (RCSD) regions to support schools and community partners in working together to identify needs, and plan and deliver supports and services so that children and youth experience success in school and in their communities (Alberta Education, 2014). RCSD is a regional model that involves bringing together the Ministries of Health, Education (school authorities) and Human Services (including Child and Family Services, Family Support for Children with Disabilities, and Persons with Developmental Disabilities) to support schools and engage community partners in meeting the needs of children and youth throughout the school years. This includes students (from early childhood services through Grade 12) and children and youth with a low incidence disability or complex need (from birth to age 20). In Alberta, low incidence disabilities are defined as including children and youth described under the following headings:

- Blind/low vision
- Deaf/hard-of-hearing
- Deaf-blind,
- Significant communications disabilities requiring the use augmented or alternative communication systems.

This review was commissioned by the Calgary and Area RCSD to address an identified gap in the region in the area of complex communication and the needs of children and youth with significant communication disabilities requiring the use of augmentative or alternative communication (AAC) systems. The purpose of this review of the academic and practice literature is to gain an understanding of the conditions required for children and youth who are

AAC users and their teachers, service providers, and parents/caregivers to ensure sustained and successful implementation of AAC.

Approach to the Review

The approach to this review was informed by the procedures outlined by Schlosser, Wendt, Angemeier, &Shetty (2005). The authors point out because of its interdisciplinary nature, the literature pertaining to the field of AAC is scattered across numerous sources in a variety of larger fields making searches for evidence and best practices challenging for researchers. To this end a number of sources in compiling the information reported in this review. These sources include:

- a scan of authoritative textbooks in the area of AAC;
- a search of the PsychInfo, CommDis, and ERIC databases;
- a review of guidelines pertaining to AAC provision as developed by several jurisdictions;
- a scan of practice research published by the AAC Special Interest Group of the American Speech Language Association (ASHA) and the International Society of Augmentative and Alternative Communication (ISAAC); and
- the authors research in the area done during doctoral studies and AAC course development.

While the review targeted literature from the past 10 years, in some instances seminal papers in the field were included.

AAC Literature

AAC Textbooks. The scan of authoritative textbooks in the area of AAC was undertaken to identify chapters or sections that pertain to conditions of AAC success, and best practices for both pre-school and school aged children. As these texts compile research and practice across the

field, they were important to this review in terms of identifying key issues, defining terms and terminology and to provide information that can be understood as the broad consensus of the field. A list of the textbooks scanned and short summary of the content of each text can be found in Appendix A. Readers are encouraged to seek the texts themselves for more detailed information on the topics covered.

Peer reviewed journals. Data bases suggested by Schlosser et al (2005) as being those most likely to yield information on AAC practices - CommDis, PsychInfo, and ERIC - were searched with the following search terms: augmentative and alternative communication AND best practices, implementation, complex communication needs, device, technology, AND children and youth. As the vast majority of articles found reported on children and youth who were Deaf or Hard of Hearing the search was subsequently refined to exclude the terms Deaf, deafness, DHH and sign language. Subsequent searches also were refined for particular topic areas e.g. augmentative and alternative communication AND early childhood, augmentative and alternative communication AND adolescents.

A hand search of *Augmentative and Alternative Communication* (Journal of the International Society of Augmentative and Alternative Communication [ISAAC]), *Communication Disorders Quarterly* (Journal of the Division of Communication Disorders and Disabilities, Council for Exceptional Children [CEC]), and *Assistive Technology* (Journal of the Rehabilitation Engineering Society of North America [RESNA]) was done for articles published in the past 5 years, 2010 to 2015. Wherever possible, meta-analyses of research in a particular area or with respect to a particular issue in the field of AAC were drawn upon for this review.

Practice journals. The online journal *Perspectives in Augmentative and Alternative Communication (*AAC Special Interest Groups (SIGs) of the American Speech-Language-

Hearing Association [ASHA) was also searched both by the keywords used in the data base search and by scrolling through title listings for the past 10 years (back to 2005). While this online journal does not rise to the standard of peer-reviewed journals, articles published in *Perspectives* provide access to educational and clinical practice. And, members of ASHA prior to publication review these articles.

Practice guidelines and legislation

In an effort to look at guidelines for practice and policies and legislation that impact AAC provision, a web search was undertaken for legislation, policies and guidelines that impact the provision of AAC supports and services for children and youth. While the policy and legislation is beyond the scope of this particular review, it was felt important to provide these as background. Much of the research in the field of AAC comes out of the United States, and more recently Great Britain and Australia. These countries have specific Disability Discrimination Acts ("Disability discrimination acts", n.d.). As this legislation sets the context for practices in these countries, and therefore the conditions in which researchers and practitioners are situated, it is felt that an understanding of these frameworks may be helpful. A brief overview of the legislation that impacts AAC provision in these countries is provided in Appendix B.

Practice guidelines. Practice guidelines are different from legislation in that they are suggested practices developed by panels of experts based on research evidence. These guidelines reflect the consensus opinion of experts in the field. Both the research evidence and the practical knowledge of those who are working in the area, in this case in the field of AAC, inform practice guidelines. The search for such practice guidelines was done primarily by web based searches using the Google search engine. Search terms included: *augmentative and alternative*

communication practice guidelines and *augmentative and alternative communication practice guidelines Canada.*

Three formally developed practice guidelines were found:

1. those developed in 1991 by the National Joint Committee for the Communication Needs of Persons With Severe Disabilities and approved by the American Speech-Language Hearing Association (ASHA) Legislative Council (LC 49-91),
2. those developed by Communication Matters, which is the United Kingdom affiliate of the International Society for Augmentative and Alternative Communication (ISAAC), and
3. those developed by the Clinical Innovation and Governance Unit of New South Wales Family & Community Services.

While no Canadian practice guidelines were found, Speech-Language and Audiology Canada has recently published a SAC Position Paper on *The Role of Speech-Language Pathologists (SLPs) with Respect to Augmentative and Alternative Communication* (AAC) (SAC, 2015). The AAC special interest group of ASHA has also published a technical report on the roles of Speech Language Pathologist in the area of AAC. A summary of each of these documents, including web links to the entire documents, can be found in Appendix C.

Author's input. The review was further supported by the experience and practical knowledge of the author who has worked in the field of AAC in Alberta for more than 30 years. In some instances papers or texts that did not specifically come up in the various searches but were included in the review as they were found to be informative for the question and the Alberta context. It is important to note that the question being addressed by this review is broad in its scope. The field of AAC is intersects with so many disciplines: speech language pathology,

linguistics, special education, psychology, occupational therapy, rehabilitation medicine, etc. It is possible that not all the information pertinent to answering the research question may have been uncovered. That being said, it is hoped that the review will provide important guidance to the development of supports and services for children and youth with communications needs who require the use augmented or alternative communication systems.

Organization of the review

The review will begin by introducing readers to terms and definitions that are critical for understanding the field of AAC, and the population of children and youth who require AAC supports and services. The next section will review best or promising practices in the field. This section will draw heavily upon the guidelines for practice with particular emphasis on AAC provision for children and youth as currently supported by the literature. While specific focus will be on research from peer-reviewed journals, information from textbooks and publications of practitioners will also be highlighted. As the RCSD mandate covers children and youth from ages 0 to 20, AAC provision at different stages of a child's development will be discussed. Finally, the concluding section will provide a summary of some of the key ideas presented in the review.

Setting the Stage: Communication Interventions Work

In 2005 the Joint Committee for the Communicative Needs of Persons with Severe Disabilities (NJC) called for a systematic review of the past 20 years of communication intervention research involving persons with severe intellectual and developmental disabilities based on standards of evidence-based practice. Members of the NJC, which included representatives from the American Association of Intellectual and Developmental Disabilities, American Occupational Therapy Association, American Physical Therapy Association,

American Speech-Language-Hearing Association, Council for Exceptional Children/Division for Children With Communication Disabilities and Deafness, TASH (formerly The Association for Persons With Severe Handicaps), and the United States Society for Augmentative and Alternative Communication, reviewed 166 studies of communication intervention with persons with severe disabilities. The review found that 95.7% of interventions reported resulted in positive and immediate results for most or all participants with severe disabilities (Snell, Brady, McLean, Ogletree, Siegel, Mineo, Paul, Romski, & Sevcik, 2010). While some concerns regarding overall research quality (based on issues of treatment fidelity, generalization and maintenance, and research design) were uncovered in the review, Snell et al (2010) state that most compelling finding in this systematic review was its clear support for the success that individuals with severe disabilities can have in learning a broad range of expressive or interactive communication when they are provided with systematic intervention (p. 378).

Other systematic reviews and meta-analyses have also pointed to the positive effects of AAC interventions for young children (Romski, Sevcik, Barton-Hulsey & Whitmore, 2015), and for children and youth with Autism and CCN (Ganz, Earles-Vollrath, Heath, Parker, Rispoli & Duran, 2012). It is clear from the research evidence that providing AAC interventions and supports meets the standard of evidence-based practice. This review of the literature will focus on the conditions and factors that create these positive outcomes.

Background: Terms and Definitions

What is Augmentative and Alternative Communication?

Augmentative and alternative communication (AAC) includes all forms of communication (other than oral speech) that are used to express thoughts, needs, wants, and

ideas (ASHA, n.d.). While it is not uncommon for people in the field of education to understand AAC as a tool or a device, ASHA has defined AAC more broadly:

> *... AAC refers to an area of research, clinical and educational practice. AAC involves attempts to study and when necessary compensate for temporary or permanent impairments, activity limitations, and participation restrictions of persons with severe disorders of speech-language production and/or comprehension, including spoken and written modes of communication (ASHA, 2005).*

AAC involves attempts to study and, when necessary, temporarily or permanently compensate for impairments, activity limitations, and participation restrictions of individuals with severe disorders of speech-language production and/or comprehension. These may include spoken and/or written modes of communication (Beukelman & Mirenda, 2013; Glennen & DeCoste, 1997). According to Beukelman & Mirenda (2013) an AAC *system* includes the following four primary components:

1. Symbols – which may be graphic (pictographic or orthographic), auditory, gestural, and textured or tactile in nature.
2. Aids – "a device, either electronic or non-electronic, that is used to transmit or receive messages." (p. 4).
3. Technique –the ways messages can be transmitted. The techniques refer to the modes of access that the child who uses an AAC system employs to select messages. Techniques vary from directly selecting the symbol on the aid to indirectly selecting through a process of scanning through message choices.
4. Strategies –the ways messages can be conveyed to be most effective and efficient. Various strategies may be employed by AAC users to speed up the rate at which they can produce messages, navigate the communication interaction, create understandable messages and enhance social appropriateness of communication acts.

Each of the four elements – symbols, aids, techniques, and strategies must be considered when providing AAC interventions (Beukelman & Mirenda, 2013; ASHA, 2004).

Aided vs Non-Aided.

A distinction is commonly made in the field of AAC between aided communication and unaided communication (Johnston, Reichle, Feeley, & Jones, 2012; Loncke, 2014). *Aided communication* refers to the use of materials and equipment and/or devices that are external to the communicator's body. Examples of aided communication include the use of a notebook and pencil to compose messages, communication displays that may use pictographic or orthographic (letters and words) symbols to select and compose message for others to see/read, and/or electronic or computer based speech generating devices that speak the composed selected messages out loud. Unaided communication refers to methods communication that does not involve any additional materials. Examples of unaided communication methods include the use of natural speech, gestures and manual signs or signals.

There is substantial research evidence to indicate that both no-tech and technologically based devices have a place in providing appropriate AAC options (Iacono, Lyon & West, 2011). All people use AAC methods to a greater or lesser extent. For example, a person may use their natural voice to speak with someone in the room with them, may a telephone (device) to transmit their voice to those not in their immediate presence, and use a keyboard (device) when they are communicating via email or text. This is the same for a child or youth who requires AAC, they may use several different communication modalities. In fact, for children who use AAC aided symbols may account for only a small proportion of their expressive communication (Smith, 2015). A child who uses AAC may use a speech-generating device when participating in a class discussion, a communication display with letters when communicating with their classmates on

the playground, and a computer keyboard when engaging in a class writing activity. An electronic device cannot go with a child into the bathtub or swimming pool, yet these are contexts and activities where providing communication supports would be important for a child who uses AAC. As Michael Williams, an AAC user, researcher, author and advocate explains:

> *"This voice output communication device is but one of the many tools in my assistive technology arsenal that I use to communicate my thoughts to the outside world. In addition to this voice output communication device, I also make extensive use of e-mail and the fax machine. In addition to these high-tech devices, I also use a low-tech letter board." ..."I use this to spell out words letter by letter. This limited the people I could communicate with. After all, you can't use a letter board to talk with a small child, or a blind person, or a person with dyslexia." (University of Washington, n.d).*

Continuum of Aided AAC.

Aids or devices can also be viewed on a continuum from involving no technology (or at least no electronic components). So called "no tech" aids would be the communication boards/books mentioned in the previous section. This display or book might be comprised of some combination of pictographic symbols, words and letters depending on the literacy level of the child or youth who would use it to communicate. "No tech" displays are often created with computer based software programs such as Boardmaker © (http://www.mayer-johnson.com/boardmaker-software) or other commonly used AAC symbol set such as Symbol Stix© (https://www.n2y.com/products/symbolstix), Minspeak© icons (https://store.prentrom.com/product_info.php/cPath/30/products_id/163) or other commercially available symbols sets.

"Low" (or "light") technology aids typically refer to the simple battery operated devices where messages are digitally recorded. High-tech devices are computer based, and allow for more expansive speech output (including synthetic speech), access to other communication options such as email, and in many instances environmental control.

High-technology or electronic communication aids include speech-generating devices with features that vary in terms of:

a) the number of messages that can be generated (e.g., single message, multi-message devices with vocabulary organized on a single static display, or multiple-level dynamic displays);
b) the types of symbols used (e.g., graphic symbols, written words, or letters); and
c) the type of speech output (i.e., synthesized versus digitized).

High-tech communication aids can be stand-alone devices or laptop computers with communication software (Iacono, Lyon & West, 2011). These distinctions, while generally accepted in the AAC literature are not as clear as they once were given the changes in technologies over the past few decades. The impact on the field of tablet technologies will be addressed in more detail below.

AAC devices may be categorized in other ways. For example Alberta Aids to Daily Living (AADL) (Alberta Health, 2014) categorizes Speech Generating Communication Devices by whether they are simple static display devices (largely congruent with light or low tech), alphabet based devices, or dynamic display devices (largely congruent with high tech devices).

Regardless of the way devices as currently categorized, Loncke (2014) points out that given the rate at which new technologies continue to becomes available and the decreasing cost of smaller more powerful devices, the terms “high” and “low” technology are increasingly relative. What is important is not the dichotomy but rather which functions, components, and processes of communication can be technologically supported.

AAC Apps.

Recent developments in mobile technology, including the introduction of the iPad and other smartphone and tablet devices, have provided important new tools for communication for all people including those who require AAC (McNaughton & Light, 2013). The impact of these widely available, relatively low cost devices on the field of AAC has been dramatic. The distinction between high tech and mid tech has been increasingly blurred with apps being able to turn a tablet into a single message device one moment, a simple multiple message device the next, and a 'high' tech device with the ability to use a variety of strategies and techniques to generate speech output.

Potential benefits of these mobile device solutions include:

a) an increased awareness and acceptance of AAC both in the classroom and beyond,
b) greater empowerment of families and AAC users to be able to access the technologies they need to communicate,
c) increased adoption of AAC technologies by families and professionals who may not have previously considered AAC devices a viable option for children and youth, and
d) greater functionality and connectivity as children and youth who require AAC have technologies that allow them to interact with their peers through social media, such as texting (McNaughton & Light, 2013; O'Brien, 2015).

There are, however, several challenges with tablet devices as the main component of an AAC system. iPads and other table devices were not created to be used as voice output communication devices as were specialized dedicated systems. Tablets do not have the speaker

volume necessary to project a voice across a room and are not as durable as specially designed AAC devices. Consumers are finding it necessary to purchase cases with speakers to enhance the tablets capability. While there have been great strides in the past few years in creating alternative access to tablet's, the options are still very limited and, as a result, there remain many individuals with complex communication needs who cannot access these mobile technologies accurately or efficiently (McNaughton & Light, 2013). These new technologies hold much promise, however, they must incorporate alternate access if they are to meet their fullest potential as AAC tools (Chapple, 2012).

The impact of tablets on families and AAC practice.

Perhaps the greatest impact of these devices may be on the ability of families to access robust AAC device solutions without the need for and/or benefit of AAC service providers. Research suggests a growing number of families are adopting and embracing the use of iPads and other mobile technologies as AAC systems (Gosnell Caron, 2015; McBride, 2011). The availability and awareness of these mainstream systems as AAC options have increased consumer empowerment and acceptance, including expansion of support to many who may not have previously considered AAC (McNaughton & Light, 2013).

The practice literature suggests merely having access to this technology (or any technology) does not guarantee its success (Gosnell Caron, 2015). Supports for customization and learning are almost always needed, especially for the more complex AAC language based apps. While families and educators are finding it easier to iPads as AAC devices, they are not always able to afford themselves of the professional knowledge and expertise to facilitate the use of the device to meet the child's communicative needs. Caron, Costello, & Shane (as discussed by Gosnell Caron, 2015) reported that 57% of families who owned iDevices prior to assessment

also had purchased a communication application prior to an AAC assessment. Scherz and colleagues (as described in McBride, 2011) reported that only 54% of individuals who used an iPod/iPad for AAC had received an AAC evaluation to determine the most appropriate communication system; and Meder (2012) found that only 38% of families reported that professional opinions about AAC apps guided their decision making at all (McNaughton & Light, 2013, p.111).

> *… the greatest pitfall is for us to focus too much on the technology. Providing an AAC solution is a complex process. An AAC device is only a tool, one of the many components of a solution.… Rather than focusing on a particular technology, we should focus on finding the best total solution for the individual who needs speech augmentation. (Hershberger, 2011, p. 33).*

Who are the children and youth that require AAC?

Children and youth who require AAC are a diverse group. Some may have a congenital condition that impairs their ability to speak such as significant intellectual disability, cerebral palsy, autism and/or developmental apraxia of speech. Others may have an acquired condition such as traumatic brain injury. What they have in common is inability to meet their daily communication needs through natural speech (Beukelman & Mirenda, 2013). In the AAC literature these children and youth are most commonly referred to as having *complex communication needs* (CCN) (Loncke, 2014). The Department of Human Services (DHS) of Victoria, Australia created a useful definition of the term CCN in 2002:

> *People who have complex communication needs are unable to communicate effectively using speech alone. They and their communication partners may benefit from using alternative and augmentative communication (AAC) methods, either temporarily or permanently. Hearing limitation is not the primary cause of complex communication need.*
>
> (Perry, Reilly, Cotton, Bloomberg & Johnson, 2004*).*

Perry, et al. (2004) note that with this definition, the term 'complex communication need' (CNN) is synonymous with the American term 'severe communication impairment' as proposed by ASHA in 1991. Many children and youth with CCN have multiple disabilities (Iacono, 2014). For example, children with CCN may have cerebral palsy and vision impairment, autism and intellectual disability, intellectual disability and hearing loss. As the complexity of the disability increases, so does the complexity of their communication needs and of finding an effective AAC system.

Over the past 30 years there has been an increase in the number of persons with complex communication needs who would benefit from receiving AAC services (Light, 2014). Referrals for AAC now include younger children, children and youth with a greater range of disabilities, and individuals from more diverse cultural/linguistic backgrounds (Light & McNaughton, 2012). In the early years of AAC the primary recipients of AAC systems and devices were people with severe physical limitations due to conditions such as cerebral palsy. Today there is a growing understanding that children and youth with developmental disabilities, autism and those who have multiple disabilities may also require AAC in order to support the develop of their communication and language abilities (Ganz, Earles-Vollrath, Heath, Parker, Rispoli & Duran, 2012; Wilkinson & Hennig, 2007). There is also a growing understanding of the value of AAC supports and services for infants and toddlers at risk of developing complex communication needs (Romski, Sevcik, Barton-Husley, & Whitmore, 2015).

Prevalence.

There have been some attempts to understand the prevalence of children and youth with CCN (Bloomberg & Johnson, 1990; Binger & Light, 2006) yet a clear picture of the prevalence of children and youth with CCN has not been established. Blackstone (1990) suggested that 0.2%

to 0.6% of the total school-age population worldwide has severe speech impairment. Matas, Mathy-Laikko, Beukelman, & Legresley (1985) surveyed the school-age population in rural and urban sections of the state of Washington and found that 0.3% to 0.6% of the total school population and 3% to 6% of the special education population could not use speech as their primary means of communication.

Burd, Hammes, Bronhoeft & Fisher (1988) found that 2% of all students receiving special education services in the state of North Dakota were 'non-verbal", where they defined non-verbal to mean "*Children who produced no more than 15 intelligible words*". In Canada, data from the 2001 Participation and Activity Limitation Survey suggests that 1.5% of the total population older than 4 years of age have difficulty speaking and being understood. (Beukelman & Mirenda, 2013). This data includes children and adults, and it is important to note that the incidence of persons having CCN increases with age due to acquired conditions like stroke or ALS. Binger & Light (2006) reported that approximately 12% of preschoolers who received special education services 'required AAC', indicating the number of preschoolers with CCN is higher than reported in the school aged population. This difference is likely due to the fact that some young children 'grow out of' their need for AAC supports as they develop speech (Romski et al, 2015).

Goals of AAC interventions

Communication Bill of Rights

The National Joint Committee for the Communicative Needs of Persons with Severe Disabilities (1992) position paper included *A Communication Bill of Rights,* which clearly states that all persons, regardless of the extent or severity of their disabilities, have the basic right to *affect,*

through communication, the conditions of their own existence (p. 4, emphasis added). Beyond this general right to self-determination and agency through communication, there are twelve additional basic communication rights that should be ensured in all daily activities and interventions involving persons who have severe disabilities resulting in their having complex communication needs. A copy of the Communication Bill of Rights with symbols supports can be found in Appendix D. For a text only version, please refer to the *Guidelines for Meeting the Communication Needs of Persons with Severe Disabilities* (NJC, 1992).

Potential benefits of AAC

The Speech-Language & Audiology Association of Canada (SAC) states that for individuals with CCN, potential benefits to employing AAC tools and strategies include:

. an increase in the amount and complexity of language that can be produced relative to unaided speech;

. access to more effective methods for acquiring and demonstrating knowledge;

. greater social acceptance and inclusion;

. heightened self-esteem and motivation;

. an expansion or maintenance of viable communication partners and environments;

. stronger interpersonal relationships;

. increased productivity; and

. access to a greater range of vocational and academic opportunities. (SAC, 2014).

Given these benefits, the goal of AAC interventions would then be to have children with CCN develop expressive and receptive language abilities to:

a) effectively demonstrate what they know,

b) be meaningfully included academically and socially,

c) develop meaningful friendships, and

d) actively contribute to their world.

Communicative Competence

In order to accomplish these various communicative functions and reap these benefits in terms of communication and interaction, children and youth with CCN must be supported in their abilities to become competent communicators. Light (1998) proposed four competencies that persons who use AAC need to develop in order to have access to the power of communication. These are linguistic, operational, strategic and social competencies.

Linguistic competence for typically developing children involves an adequate level of mastery of the linguistic code of their native language. Children and youth using AAC systems must master two codes, their native language as spoken by the community, and must the "linguistic" cod required by the AAC system.

Children and youth who communicate with an AAC system must also develop *operational competence* - the technical skills required to operate the system. This can include the operation of a device (including navigation and access), the ability to navigate through pages of a communication book, and/or the ability to physical produce signs and other non-verbal communication acts. Given the limitations to communication imposed by AAC systems, AAC users must develop strategies to make the best use of what communication modes and tools they have (Loncke, 2014).

Strategic competence includes dealing with issues such as conversational or interaction speed. Speaking with an AAC device is extremely slow (Higginbotham & Wilkins, 1999; Look Howery, 2015; Newell, Langer & Hickey, 1998). In order to engage in verbal interactions AAC device users must be strategic in how much they can say in the time allotted by the conversation

partner(s). In addition AAC device users most often have a limited vocabulary set and therefore must understand what they can say to effectively get a message across using what words and phrases available to them.

Social competence involves the knowledge, judgment, and skill in the social rules of communication. This involves "competence as to when to speak, when not, and as to what to talk about, with whom, when, where, in what manner" (Light & McNaughton, 2012). All speakers need to develop social competence but for a person who uses AAC, the limitations and complexities of the system create challenges beyond learning the social niceties and pragmatic rules of their language. For example, small talk plays an important role in the communicative interactions of most speaking people, people chat about the weather, share gossip and tidbits about celebrities etc. None of this kind of communication is particularly informative but it plays an important role in building and maintaining social interactions. Adults who rely on AAC frequently report that social situations are very difficult for them (Beukleman & Mirenda, 2013, p.20) due in large part to their challenges in engaging in small talk. For children it may be that the importance of having access to these types of messages may be entirely overlooked leaving them out of the playground banter that is so natural for their peers.

In 2003 Light expanded her notion of communicative competence to include influence of *psychosocial factors* such as:

a) the individuals motivation to communicate,
b) their confidence in their ability to be successful at communication,
c) their attitudes and the attitudes of their family and other significant persons (e.g. teachers, assistants) towards AAC, and

d) their resilience and ability to persevere when confronted with failure in their attempts to communicate.

AAC practices that focus on communicative competence help children with CCN to develop *language* they can use *strategically* in *social* settings embedded in an AAC system they can access, navigate and *operate* across contexts with a variety of people, and thereby increase their quality of life.

Participation

The 2004 AHSA technical report states the primary role of AAC systems is to facilitate individuals' active participation and engagement in meaningful events in their daily lives. Several researchers and practitioners (Blackstone, 1995; Lund & Light, 2006) argue that the optimal functional outcome of AAC intervention is not only the use of symbols or devices, but sharing meaning and involvement in life situations.

Recently, many if the field of AAC research and practice have looked to the International Classification of Function, Disability and Health (ICF) from the World Health Organization (Fried-Oken & Granlund, 2012) to guide interventions and practices. The Child and Youth Version (ICF-CY; World Health Organization, 2007) identifies attending school, developing interpersonal interactions, and building relationships with family and friends as some of the key life areas for children. The ICF-CY also highlights the importance of environmental factors such as attitudes, supports and relationships with family, friends, acquaintances, and peers to participation in life areas (Ravendra, Olsson, Sampson, McInerny, & Connell, 2012). In the field of AAC the ICF widens the focus of intervention towards participation (Granlund & Pless, 2012). Fried-Oken & Granland (2012) suggest that the aims the ICF '*fits our international AAC community like an old shoe that we have been wearing for many years'* (p.1).

Literacy

Children with complex communication needs (CCN) who require augmentative or alternative communication (AAC) are at risk in multiple areas of development, including the development of literacy skills (Light & Drager, 2007; Smith, 2005). Koppenhaver (2000) challenges the field of AAC to embrace the notion that literacy is *included within* AAC.

> *If "communication is the essence of human life" (Light, 1997), then literacy is the essence of a more involved and connected life (Koppenhaver, 2000, p. 270).*

Koppenhaver points out that AAC users communicate through composing – that is they create texts either by stringing together a series of picture symbols or by stringing together letters and words. Sometimes these texts are then spoken aloud through the use of text-to-speech software, sometimes they are understood (or not) by the communication partner who is following along in the text (message) construction. Literacy is *in* AAC (Koppenhaver, 2000) and literacy development is vital to AAC users (Hetzroni & Tannous, 2004; Erickson, Hatch & Glendon, 2010; Light & McNaughton, 2014; Smith, 2005).

Literacy is an important goal for children and youth with CCN for a number of reasons:

1. When AAC users cannot spell words or compose texts with picture keyboards, they are more reliant on familiar communication partners (Koppenhaver, 2000).
2. Without the ability to spell, even the most advanced AAC users may not able to say what they want due to limitation of vocabulary that is available to them on their device (Look Howery, 2015).
3. Literacy is a foundational skill for learning (Alberta Education, 2000).

4. Opportunities for meaningful and interactive participation in inclusive educational, work, or social environments are severely restricted when AAC users cannot produce or interpret texts (Koppenhaver, 2000).
5. Literacy affords access to the social media experiences are so integral to the lives of children and youth in the 21st Century (Hetzroni, 2004; Light & McNaughton, 2014).

There is an increasing evidence base suggesting that even children and youth with CCN and significant intellectual disabilities can learn literacy skills at the emergent level (Erickson, Koppenhaver, Yoder & Nance, 1997; Erickson, Glendon, Abraham, Roy, & Van de Carr, 2005; Fallon, Light, McNaughton, Drager, & Hammer, 2004).

When the field of AAC was emerging 30 years ago, the focus was primarily of maximizing the communication of children and youth with CCN in face-to-face interactions. Today there is increased recognition that communication needs extent to written communication to meet the demands of school; share media experiences such as Facebook, establish membership in peer communities through texting, expressing updates and opinions through twitter and so on (Light & McNaughton, 2012). Literacy is seen as an important skill in being a competent communicator who can participate in the daily life activities of the technology dominated 21st Century.

Best Practices in AAC Provision

Concerted and well-orchestrated interventions are essential to build communicative competence and support meaningful participation in all aspects of an AAC user's life (Beukelman & Mirenda, 2013). According to the *Guidelines for Meeting the Communications of Persons with Severe Disabilities* (NJC, 1999), AAC best practices set involve four areas:

1. *Communicative Environments* – the day to day contexts and environments in which a person with CCN live, work and play must allow, recognize, facilitate, enable and respond to communication by that person.
2. *Communication Partners* – partners must be able to recognize and respond appropriately to the communication produced by the person with CCN (in whatever form it is expressed) and provide communication input that is both perceptible and comprehensible to the person with CCN.
3. *Collaborative Efforts*- combining the knowledge, skills and experiences of parents, family members and professionals from a variety of disciplines (speech-language pathology, education, occupational therapy and others) are necessary in achieving successful outcomes for people with CCN.
4. *Prepared Personnel* –expertise and training is needed *in* order to achieve the interdisciplinary collaboration necessary to develop improved communication environments. Personnel that are educated in delivering services to persons with severe disabilities including specifically preparation in the area of communication are necessary to support the AAC user and their communication partners across environments. (ASHA, 1991).

Communication Environments

An environment that supports the use of AAC systems and fosters communication is critical to the success of children and youth with CCN (Calculator & Black, 2009; Jorgensen, McSheehan & Sonnenmeier, 2007; Stoner, Angell & Bailey, 2010). Gloria Soto and her colleagues, who have focused their research in the area of inclusive education for students who use AAC, found that classroom structure that supports the learning and participation of a

heterogeneous classroom and adequate classroom support including the presence of an effective instructional assistant were among the important indicators of success for students who use AAC in inclusive classrooms (Hunt, Soto, Maier, Muller, & Goetz, 2002; Soto, Muller, Hunt & Goetz, 2001).

Several authors note the importance of creating environments where there are high expectations for children and youth who use AAC (Calculator, 2009; Giest, Hatch & Erickson, 2014; Joregnsen, McSheehan & Sonnenmeier, 2007). Well-designed environments start with an unwavering expectation that all students can and will communicate effectively, regardless of the severity of disability (Giest, Hatch & Erickson, 2014, p. 178). Supportive environments for children and youth who use AAC create the opportunity and time required for student to use their communication systems (Calculator & Black, 2009).

Quality Standards for AAC services have been developed in the United Kingdom (Communication Matters, 2011). These standards document state importance of creating supportive environments where people are aware and accepting of the various methods of communication used by the person with CCN. The standards further suggest the importance of creating opportunities for and youth who use AAC to come together with others AAC users to share experiences.

> *In order for the AAC speaker to use his communication system, the people around him need to be aware and accepting of different methods of communication. This may be difficult to achieve in the wider community, but in the immediate environments the AAC speaker finds himself, communication partners should be aware of the different methods of communication used. Being part of a community is important to all of us. AAC speakers are no exception, but this can be difficult to achieve for children who perhaps are the only child in their class or school using AAC or the only adult in the workplace. It is good practice to make sure there is an environment where the AAC speaker is able to meet with other AAC speakers to share information and network. This may be through social networks (electronic environments, Skype etc.), personal contacts and more formal environments such as school, or work.*
>
> Communication Matters (2012), p. 18.

Communication Partners

People with CCN must rely on the skills of others to help them be a part of a conversation (Iacono, 2014, p. 83). Due to their unique and complex communication needs, the roles of communication partners and their training needs are particularly important (Goldbart & Caton, 2010).

The importance of communication partner instruction is widely recognized in the AAC literature (Binger, Kent-Walsh, Ewing & Taylor, 2010; Bruno, 1997; Kent-Walsh, Murza, Malani & Binger, 2015). Research has shown that for many individuals with CCN, typical interaction patterns include taking relatively few turns in a conversation, infrequently initiating or even responding in an interaction, asking few questions, and using a restricted number of linguistic forms (de Bortoli, Arthur-Kelly, Mathisen, Foreman & Balandin, 2010; Myers, 2007; Chung, Carter, Sisco, 2012)

Kent-Walsh, Binger and Malani (2010) developed the ImPAACT (Improving Partner Applications of Augmentative Communication Techniques) Program to systematically teach communication partners to facilitate the early language and communication skills of children with CCN. They suggest that one of the biggest challenges in the field of AAC is teaching the various communication partners in a child's life to have the knowledge and skills necessary to support his or her communication and language interventions. Too often these teaching opportunities are not done in a systematic and meaningful way. As they state, however well intentioned, spending 5 to 10 minutes showing a partner how to use a new technique simply fails to work a great deal of the time (p. 156).

Kent-Walsh, Murza, Malani & Binger (2015) undertook a meta-analysis of the effects of communication partner instruction on the communication of individuals using AAC. They found that communication partner instruction has positive effects on communication performance of individuals using AAC, and that communication partner interventions can be effectively implemented across a range of communication partners, including caregivers, educational assistants, parents, peers, and teachers. The authors conclude that partner instruction should be viewed as an integral part of AAC assessment and intervention.

Teams and Teaming

The 1991 ASHA guidelines clearly state creating enabling communicative environments will require the knowledge, skills, and experiences of parents and professionals from a variety of disciplines including speech-language pathology, education, occupational therapy, physical therapy, and other disciplines (p.5). Guidelines put forward by the government of New South Wales strongly reinforces the importance of an AAC team adding to the list of possible professionals involved and noting that person centered practice always include the person with CCN themselves (New South Wales, 2014).

The AAC literature clearly supports the establishment of a multi-disciplinary team to provide AAC supports and services (Beukelman & Mirenda, 2013; Loncke, 2014; Lund & Light, 2007; McSheehan, Sonnenmeier, Jorgensen, & Turner, 2006). For children and youth who use AAC systems, the educational team must work together to integrate an often complex array of technologies used for learning, mobility, and classroom participation (Erickson & Koppenhaver, 1995; Soto, Muller, Hunt, & Goetz, 2001; Stoner, Angell & Bailey, 2010). The ability of teams to successfully collaborate has been linked to positive long-term outcomes for students with complex communication needs (Lund &Light, 2007). Bailey, Stoner, Parette & Angell (2006)

found effective teaming to be a primary facilitator of effective AAC device use by students in junior high and high school. Collaborative practice involves more than having a group of professionals linked together as a team. Teams that supported effective device use functioned well together, communicated frequently, and were focused on increasing the communication skills of their students. Despite those finding, and the preponderance of research suggesting collaborative relationships are highly valued and encouraged among researchers, school-based professionals, AAC consumers, and the families of students who use AAC, successful partnerships often elude educational teams (Fallon, 2008).

The importance of teams and teaming can also be found in articles discussing AAC provision for young children who are at risk of communication disability or delay (Binger & Light, 2006; Grandlund, Bjorck-Akesson, Wilder, & Ylven, 2008; Iacono & Cameron, 2009). Binger & Light (2006) for example, point out that there are a number of professionals involved preschoolers with CCN (or those at risk of ongoing communication challenges), and therefore professionals other than SLPs should have knowledge and skills in AAC provision.

Batorowicz & Shepherd (2011) examines teamwork practices in AAC centres in Ontario, Canada. As the Ontario model of AAC device provision is similar to the current Alberta model of creating AAC authorizers attached to AAC Centres (Alberta Health, 2014), this research may be particularly relevant to the Alberta context. In Ontario AAC services are provided by clinical teams consisting of SLPs, OTs, technicians/technologists, and clinical supports staff (Batrowicz & Sheperd, 2011, p. 26). The study evaluated the Practice Review process (a regular meeting during which all members of an AAC team discuss clinical cases), a required practice of the Ontario AAC Centres since their inception in 1983. The authors found that the PR process was

valuable in terms of providing learning, providing quality service, team support and decision making.

In a study designed to look at interagency collaboration in AAC, Alant, Champion & Colone-Peabody (2013) found that collaboration between the mother of a child who used AAC, a school based SLP, a university based SLP, and a special education researcher (an AAC specialist with the same university) resulted in positive outcomes for the child and positive perceptions on the value of such teaming. The authors suggest that this type of teaming supported the development of competencies of the SLPs involved in the collaboration. They also note, however, it is clear that while the teacher and paraprofessional did allow time for collaboration within their school schedule, intervention with the child and training of classroom staff and parents required further attention.

The literature is clear regarding challenges around teaming (Hunt et al, 2002; Stoner et al, 2010). Batorowicz & Sheperd (2011) found working with teams that included professionals with a range of experience was challenging. While experienced professionals mentoring new members of an AAC team may be valuable, it may create more challenges in working together. Pre-service training for professionals on an AAC ‘team’ does not typically focus on acollaborative, shared decision making model whereby all members of an educational team have the knowledge, experience, and responsibility for designing and implementing inclusive educational and social supports for students with disabilities (Hunt et al, 2002). Teaming takes time. Successful collaborative teaming depends on regularly scheduled opportunities for members of educational teams—including parents—to share their expertise, identify common goals, build plans of support, and determine responsibilities for implementation (Hunt et al, 2002; Soto et al, 2001; Stoner, 2010). In review of AAC in the school Fallon (2008) points out

that time to fully and effectively participate in AAC team meetings is critical, and unfortunately, usually in short supply. Support of administrators is needed to allocate the time and resources needed for teams to carry out meetings and service delivery activities.

Skilled professionals

The need for high-quality, well-prepared professionals with the knowledge and skills to provide communication and literacy supports and interventions is a repeating theme in the literature (Fallon, 2008; Iacono & Cameron, 2009; Kent-Walsh, Stark & Binger, 2008). In one of the few investigation into long- term outcomes for individuals who use AAC, the limited expertise of school-based professionals was identified as one of the most significant barriers to achieving successful AAC outcomes (Lund & Light, 2007).

The role of Speech Language Pathologists.

SLPs are critical members of AAC service delivery. SLPs bring a combination of expertise in spoken language, written language, and AAC practice to the team (Fallon & Katz, 2008).

In Canada the Speech-Language and Audiology Canada (SAC) position paper on the roles of SLPs states that:

> *all speech-language pathologists (S-LPs), regardless of their work settings, should have basic knowledge of the augmentative and alternative communication (AAC) tools and strategies that can support the expressive and receptive communication needs of their clients. All S-LPs should be prepared to apply their knowledge of AAC strategies in the course of assessment and intervention. S-LPs also have a responsibility to refer to specialized AAC services where required.*
>
> SAC, 2105, p. 1.

SAC (2015) further outlines both universal roles for SLPs as well as particular roles for SLPs working with children. SAC suggests that S-LPs serving children who require AAC should:

1. Introduce AAC early, especially to promote receptive language development and provide immersion in the AAC system.
2. Ensure an AAC system is designed to meet the child's immediate communication needs and also to facilitate further linguistic development.
3. Act on the knowledge that AAC does not inhibit natural speech development.
4. Ensure the child has abundant opportunities to observe proficient use of an AAC system. This will ensure that the child using AAC, like his or her typically developing peers, benefits from observing fluent communication in his or her own expressive modality.
5. Work in conjunction with a child's family, teacher and other professionals to ensure that AAC recommendations are consistent with language, learning and other goals. In schools, these goals would often be identified in a student's individualized education plan.
6. Analyze the communication and participation skills and patterns of the child's peers to inform vocabulary and implementation planning.
7. Consider core vocabulary needs to ensure a combination of developmental, environmental and functional vocabulary is included in the child's system.
8. Support a child's communication partners in knowing how to use the AAC system and how best to interact with the child using the system. (SAC, 2015).

While the expectation for all Canadian SLPs is that they have basic knowledge in AAC, there is some evidence that suggests SLPs with more experience may employ better processes during an AAC assessment, providing a more personalized and dynamic approach to the process. Dietz, Quach, Lund & McKelvey (2012) found that general practice SLPs approach AAC

assessment differently than SLPs who are AAC specialists or AAC researchers. The study defined SLPs as specialists if they allocate at least 50% of their job duties to AAC-related tasks and often instruct others AAC personnel. AAC researchers may work as AAC specialists but they also provided pre-professional training in AAC, developed AAC policy and/or conducted AAC research. The study found that general practice SLPs approached AAC assessment in a more linear fashion involving two steps: language assessment and symbols assessment.

AAC specialists were found to approach assessment in a more holistic fashion involving a six-step process:

1. communication assessment using scenarios,
2. consideration of the need for alternative access,
3. incorporation of multiple modalities (both low and high tech options),
4. AAC instruction,
5. assessment of a variety of symbols sets, and
6. device trials.

Specialists also varied the point of entry to the assessment depending on the needs of the person and the family. The study points to the value of experience in AAC when conducting AAC assessments and potentially when providing AAC interventions.

The role of Occupational and Physical Therapists.

Occupational and Physical Therapists play important roles in AAC service delivery (Beukelman & Mirenda, 2013; Glennen & de Coste, 1997). Physical therapists (PTs) are typically responsible for carrying out gross motor assessments related to use of AAC techniques, ensuring adequate and appropriate positioning and seating for AAC users, and providing guidance and instruction to team members, including parents, in these areas. Occupational

therapists (OTs) are critical team members as they provide assessment and information on fine motor, visual/perceptual skills and abilities necessary for AAC use. They also assess and support access methods for AAC device users including:

1. switch site identification for users who require indirect selection methods,
2. assessing environmental settings for opportunities and barriers, and
3. providing guidance and instruction to other team members in these areas.

PTs and OTs may also be involved in designing technological interfaces for various assistive technologies (e.g. powered wheelchairs, computers) and the persons AAC device.

The role of Educators in AAC.

While much is written about the roles and responsibilities of SLPs in the provision of AAC supports and services to persons with CCN, there is a paucity of literature on the role of the teacher. In 1992 Locke and Mirenda surveyed 204 teachers who had been identified by school administrators as having students with AAC needs in their classrooms. They found that the special education teachers roles were both numerous and diverse. Over 70% identified more traditional roles such as adapting curriculum, writing goals and objectives for AAC users, and providing ongoing skill development. Less traditional teaching roles identified by over 75% of respondents included:

1. determining communication needs of the student,
2. identifying vocabulary, and
3. determining students' motivation and attitudes toward AAC techniques.

In a more recent paper, Kent-Walsh and Light (2003) point out that general education teachers are increasingly being called upon to support students who use AAC in their classrooms. They suggest general education teachers must identify appropriate curriculum goals

and determine how all students, including those who use AAC, can meet these goals. They go on to note that research has shown roles played by general educators, in addition to those played by special education teachers, are integral to the successful inclusion of students who use AAC (p. 104).

In recognition of the crucial role teachers play in promoting educational participation of students with CCN, de Bortoli, Arthur-Kelly, Mathisen, Foreman & Balandin (2010) explored factors that impact teacher's abilities to communicate with their students. While this study does not explicitly explore the role of the teacher in AAC provision, it does suggest that much work needs to be done to help teachers communicate and interact with students who have significant disabilities. The authors conclude that despite teacher education initiatives, the level of communication interactions in classrooms is low and has not increased over the two decades the study explored. Given the importance of communication in learning and social development, the authors recommend that a systematic approach is needed to explore this situation and develop more effective strategies.

Families as the key

In order to increase a child's chances of success parental involvement is vital at all stages of the AAC process (Goldbart & Marshall, 2004*). Success in AAC intervention is highly dependent on the family's involvement and shared commitment to the goals of intervention* (Angelo, Jones, and Kokoska, 1995, p.193.) As parents and families are the primary supports and advocates for children and youth with CCN, understanding and acting on their issues critical across the AAC assessment and intervention process (Angelo, Kokoska & Jones, 1996). Several studies have sought the views of parents on their child's use of AAC and, in particular AAC devices. Marshall & Goldbart (2008) suggest that based both the research and their clinical

practice parental perspectives and experiences with regard to AAC are important to successful service provision. Despite this, they found that parental perspectives are often not fully accessible to professionals during formal assessment and in intervention settings. Parents' struggles to be heard and valued by AAC professionals have been widely reported in the literature (Angelo, Kokoska & Jones, 1996; Bailey, Parette, Stoner, Angell & Carroll, 2006; Marshall & Goldbart, 2008).

Bailey et. al (2006) studied family members' perceptions of children's AAC device use. While all participants expressed the view that the devices were helping to make their children more independent communicators and to have a wider range of communication partners, they also expressed many challenges. These challenges include:

1. the amount of time and energy it takes to learn to use the device,
2. the lack of support by educators and others in the community for device use, and
3. the lack of access to trained professionals who could support their children in learning and using their SGDs (Bailey, et al, 2006; McNaughton, et al, 2008).

Angelo, Kokosko & Jones (1996) suggest that AAC professionals need to adopt family centered philosophies, practices, and attitudes. This would mean AAC professionals develop competencies in working with families in ways that will make family members feel competent and empowered rather than dependent upon professionals and services.

Assessment Practices

AAC assessments are guided by the premise that everyone can and does communicate - only requirement considered for AAC is that speech is not functional for an individual in all situations (Fishman, 2011). In the early days of AAC practice a so-called *candidacy model* was commonly used to guide access to AAC. The idea behind this approach was that individuals

needed to be good 'candidates' for AAC services in order to obtain them. As Beukelman and Mirenda (2013) explain this often meant denying services to those not deemed to be good candidates for AAC based on the fact they had too few skills, had too many skills (e.g. could produce some intelligible speech), were not ready for AAC, or that the person did not have sufficient discrepancy between their cognitive and language/communication functioning. In 2003 these practices, and the 'candidacy" model were explicitly challenged by the National Joint Committee for the Needs of Persons with Severe Disabilities in the following statement:

> *It is the position of the National Joint Committee for the Communication Needs of Persons with Severe Disabilities that eligibility for communication services and supports should be based on individual communication needs…. Eligibility determinations based on a priori criteria violate recommended practice principles by precluding consideration of individual needs. These a priori criteria include, but are not limited to:*
>
> *(a) discrepancies between cognitive and communication functioning;*
> *(b) chronological age;*
> *(c) diagnosis;*
> *(d) absence of cognitive or other skills purported to be prerequisites;*
> *(e) failure to benefit from previous communication services and supports;*
> *(f) restrictive interpretations of educational, vocational, and/or medical necessity;*
> *(g) lack of appropriately trained personnel; and*
> *(h) lack of adequate funds or other resources.*
>
> *National Joint Committee for the Communication Needs of Persons with Severe Disabilities (2003)*

Beukelman and Mirenda (2013) suggest that due to this statement and subsequent advocacy efforts, the candidacy model is no longer used in most developed countries (p. 106).

The Assessment Team

Completing an augmentative and alternative communication (AAC) assessment is a complex process that involves many stakeholders and professionals. To help clarify professional roles and provide assessment guidelines, Binger, Ball, Dietz, Kent-Walsh, Lasker, Lund, McKelvey & Quach (2012) developed an AAC Assessment Personnel Framework. This framework outlines the assessment process for individuals who require AAC, discussing the

roles of the various personnel who may be involved. These roles include: AAC finders, general practice SLPs, AAC clinical specialists, facilitators and communication partners, collaborating professionals, AAC research and policy specialists, manufacturers and vendors, funding agencies and personnel, and AAC/assistive technology agencies and personnel.

Table 3 provides an overview of these personnel and their roles and responsibilities as presented by Binger and colleagues with some additions relevant to the Alberta context.

Table 3. Overview of Personnel Roles and Responsibilities in AAC Assessment

Personnel Category	**Stage of involvement**	**Roles & Responsibilities**	**Who this might be:**
AAC Finder	Referral, case history	Identification of potential AAC beneficiaries, refer for AAC assessment	Person with CCN, family members, friends or peers, medical personnel, and educational personnel.
General Practice SLP	Referral, case history, diagnostic questions, identify and recommend AAC options, funding	Case management, speech-language evaluation, facilitate AAC decision-making, support funding documentation, AAC clinical implementation, AAC troubleshooting	SLPs in general practice.
AAC Clinical Specialist	Case history, diagnostic questions, identify and recommend AAC options, funding	AAC evaluation, AAC device/strategy selection, complete funding reports, AAC technical supports, AAC clinical implementations, AAC troubleshooting	SLPs who typically spend at least 50% of their working day on AAC related activities Must have both general SLP and AAC specific skills. Knowledge of feature matching (Glennan & deCoste, 1997) and the participation model (Beukelman & Mirenda, 2005)
AAC Facilitator and Communication Partner	Referral, case history, diagnostic questions, evaluation	The role of the facilitator is to assist with the individual's day-to-day AAC needs Advocate, facilitate AAC evaluation & decision making, support funding documentation, AAC clinical/educational implementation, AAC troubleshooting	May be family members, friends, general practice SLPs, AAC clinical specialists, educators, agency personnel, and others.
Collaborating Professional	Referral, case history, diagnostic questions, evaluation	OT/PT/Vision/Hearing evaluation, facilitate AAC decision making, support funding documentation, AAC clinical/educational implementation, AAC troubleshooting	Often include a wide range of professionals, including clinical, educational, and medical personnel. Examples: OTs, PTs, vision specialists, audiologists, general educators, special educators, teaching assistants.
AAC Research/Policy Specialist	External to evaluation process	Develop evidence base to support AAC assessment	Include university professors, consultants, researchers, technology developers, policy makers (e.g. special education directors) and administrators in specialized service programs.
AAC Manufacturer/Vendor	Identify AAC options, funding	Facilitate evaluation process, provide equipment loan, rentals for AAC evaluation trials, acquire funding from documentation	In Canada AAC vendors include: Bridges Canada, Aroga, TobiDynavox and Mayer Johnson.

		provided, interact with funding agencies, provide AAC equipment, accessories	For a listing of Canadian AAC Vendors please see Appendix.
AAC Funding Agency/Personnel	Funding	Benefits qualification determination. Provide benefits based on individual policy; provide benefits based on agency policy.	May come from a variety of sources. US: private insurance companies, Medicare, Medicade, voc rehab agencies, private non-profit organizations (e.g. ALS society) Alberta: AADL
AAC/ AT Agencies and Personnel	Evaluation, identify & recommend AAC options	Provide equipment loans for AAC evaluations and trials, facilitate AAC evaluations, support AAC evaluations, provide AAC training, technical support	US: "Tech Act" agencies

Binger et al (2012) point out that knowledge and skill barriers exist for many if not all AAC personnel discussed. This proposed framework is one means of identifying and breaking down barriers through systematically guiding stakeholders and professional AAC assessment.

Models and Resources that Guide Assessment

This section of the review will provide a brief overview of two models of assessment of the AAC needs of students with CCN that are widely discussed in the AAC literature. The Participation Model and the International Classification of Functioning, Disability and Health models have many similarities, most particularly the need to understand not only the child/youth's abilities but also the opportunities and barriers to communication that may be inherent in the child/youth's environment (s).

The Participation Model.

First developed by Buekelman and Mirenda in 1988, the Participation Model (PM) provides a systematic process for conducting AAC assessments and designing interventions based on the functional participation requirements of peers without disabilities of the same chronological age as the person with CCN (Beukleman & Mirenda, 2013). This information is

then used to determine what communicative interaction the person with CCN could or may need to engage in, as well as how interactions could be made more effective.

The participation model focuses on assessing characteristics of the individual with CCN and emphasizes the need also assessing the environment(s) in which the individual is expected to participate. There are four phases in this model:

1. Identification of the current communication abilities and participation patterns of the child or youth with CCN,
2. Identification of peer communication patterns and interactions,
3. Evaluation the effectiveness of the child with CCN relative to the children and youth in the same situations/environments,
4. Identification of barriers that limit the participation of the child with CCN.

The participation model suggests that both *opportunity* barriers, which are those imposed by the environment, and *access* barriers, which are barriers related to the capabilities, attitudes, and limitations of potential AAC users themselves, must be assessed in order to effectively plan an AAC intervention.

The American Speech-Language-Hearing Association (2004) endorsed the Participation Model as a framework for carrying out AAC assessments and interventions. In addition to being influential in the way the field of AAC understands the assessment process (Light & McNaughton, 2014; Thirumanickam, Raghavendra, & Olsson, 2011). The participation model has also been used in research activities (Schlosser et al., 2000) and to reflect on participation expectations and needs of children and youth in school settings (Carter & Draper, 2010). Recently, the PM has provided the foundational framework exploring how AAC devices connected to interactive white boards can increase communication and participation for students

with CCN in school settings (Dunn & Inglis, 2011). Readers who are interested in learning more about the Participation Model are referred to Beukelman & Mirenda (2013), particularly chapter 5, pages 101- 130.

International Classification of Functioning, Disability and Health- Children & Youth Version.

Disability is a multi-dimensional phenomenon that arises out of the interaction between features of an individual's health status and his or her physical, social, and attitudinal environments (Raghavendra, Bornman, Granlund, Bjorck-Akesson, 2007). Recent work in the field of AAC has drawn upon the World Health Organization's International Classification of Functioning, Disability, and Health (ICF) to develop tools and processes for AAC assessment and goal setting. Two examples of these are the Social Networks Tool (Blackstone & Berg, 2003) and the Communication Supports Inventory- Children and Youth (CSI-CY) **(**Rowland, Fried-Oken, Steiner, 2014; Granlund, Bjorck-Akensson, Widler & Ylven, 2008).

Social Networks.

Social Networks: A Communication Inventory for Individuals with Complex Communication Needs and their Communication Partners (Blackstone & Hunt Berg, 2003; 2012) is an assessment and planning tool that enables AAC practitioners to collect and interpret important information that is likely to influence the outcomes of AAC interventions (p.18). The authors indicate that Social Networks draws upon the ICF framework, supports the Participation Model and reflects Light's model of communication competence. Social Networks borrows from the Circle of Friends paradigm (Forest & Snow, 1989) to identify Circles of Communication Partners. The assessment process involves a trained administrator who has expertise in disorders of speech, language and communication conducting a series of guided interviews with family

members who spend the most time with the person (someone in the AAC users first circle), a paid AAC worker such as SLP or teacher who can answer questions about the individual's language skills (someone in the AAC users fourth circle), and the individual themselves whenever possible. Information from these interviews is then used to guide practitioners in establishing goals that enable individuals with CCN to interact with family, friends, acquaintances, service providers and strangers in ways that enhance their quality of life and promote participation in daily activities.

Communication Supports Inventory- Children & Youth (CSI-CY).

The Communication Supports Inventory- Children & Youth (CSI-Cy) uses the ICF and focuses particularly on children and youth with CCN. While the CSI-CY was designed primarily as a guide to help special educators and speech pathologists in educational planning for students with complex communication needs, the authors suggest there are other ways in which it can be useful (Rowland, Melanie Fried-Oken, & Steiner, 2009). These include:

1. Educational Planning. Both professionals and parents can use the CSI-CY to bring their concerns and expectations to their student's IEP meeting.
2. In-service training. Often, teachers and therapist have only one or two students with complex communication needs on their caseload. The CSI-CY can be a useful guide to training your staff to address all that is involved in successful communication when working with students with CCN.
3. Pre-service training. Likewise, the CSI-CY can serve as a curriculum guide to introduce students in training programs to the complexity of communication, for students with CCN and communication in general. The CSI-CY suggests the importance of starting with participation in order to understand communication.

4. Documenting of AAC in medical records. The AAC code set developed for the CSI-CY can be used to integrate AAC concerns into electronic medical records.
5. Supporting and designing AAC research. The CSI-CY can serve as a metric for characterizing a research cohort of students with complex communication needs. See http://phdautism.blogspot.com/search/label/CSI-CY for a current research project that includes the CSI-CY.

The tool and supports for its use are freely available to AAC professionals and family members from the website http://icfcy.org/aac. Readers who wish to learn more about this tool are encouraged to explore this site.

Communication Matrix.

The Communication Matrix is an assessment system designed for early communicators of all ages. The matrix uses observational data to build a profile of a student's communication abilities to guide instructional planning. This tool has been validated and refined based on ongoing research since its publication nearly 25 years ago (Rowland, 2012). The Communication Matrix can help SLPs as well as teachers, related service providers, and parents become aware of and document early communication behaviours, functions, and stages that occur before and up to the point students begin to demonstrate symbolic language understanding and use (Geist, Hatch & Erickson, 2014). The communication matrix is freely available for use. It and documentation supporting its use can be found at the website https://www.communicationmatrix.org/.

A Pragmatic Approach.

This model or approach focuses on getting a picture of the child/youth pragmatic abilities to communicate in contexts and with a variety of partners. Pragmatics involves the ability to understand the intended meaning of a communication act or behaviour. This model or approach

focuses on gathering information to understanding the child/youth communicative behaviours and communicative intentions as understood by their communication partners.

Implementation Models

All effective implementation models address the issues discussed thus far in this review. The focus on implementation however, is on supporting the use of the AAC systems for children and youth once the assessment and procurement process has been completed. Recently, research in the area of children and youth who require AAC focuses on their participation in general education settings (Sonnenmeier, McSheenan & Jorgensen, 2005; Soto, Muller, Hunt & Goetz, 2001; Calculator, 2009; Stoner, Angell & Bailey, 2010) in the United States. Yet, in the United States most children and youth with CCN are educated in special education classrooms (James McLeskey, 2015, personal communication; Karen Erickson, 2015, personal communication).

The three models discussed represent recently developed, specialized or unique models of providing AAC supports to children and youth, their families and their school teams. The models also represent an array of providing services from those provided in an inclusive school environment, to those provided in a very specialized school, to those provided as an extension of the school year.

In the United States where federal legislation sets the context for their educational expectations and educational supports. Three pieces of legislation in particular impact implementation of AAC supports and services:

1. The Tech Act which mandates the provision of Assistive Technology (AT) devices and services - AAC devices are included as AT and SLP services would be required to support the AAC/AT device;

2. The No Child Left Behind Act (NCLB) which requires that every child make progress against the general education curriculum, hence making progress in reading and writing. This act further specifies that their teachers be highly qualified (e.g. special education licensure is required for teaching students with disabilities); and
3. The Individual with Disabilities Education Act (IDEA) which provides Extended School Year (ESY) services designed to support a student with a disability to maintain the academic, social/behavioral, communication, or other skills that they have learned as part of their individualized education program.

Each of the models discussed below as well as vast majority of studies related to implementation of AAC supports and services are undertaken by American researchers. Understanding the legal context can help to understand some of the apparent assumptions made by the researchers.

Beyond Access Model (An inclusive education approach).

Beginning with similar foundational beliefs as those suggested by Beukelman & Mirenda's (2005) Participation Model, researcher from the University of New Hampshire, Institute on Disability designed and evaluated the Beyond Communication Access Model (Jorgensen, McSheehan & Sonnenmeier, 2010). This model as the name suggests, focuses on moving beyond providing access to communication tools and devices to facilitating student progress toward full membership, participation and demonstration of learning in the general education classroom (Jorgensen et al., 2010, 2007; McSheehan, 2006). The guiding principle for this intervention model was an expectation that all students are able to learn "general education" curriculum content. Furthermore, support for the teacher and the team was just as necessary as

support for the student. The Beyond Access (BA) focuses on professional development - beginning with a 2-day training workshop, followed by monthly workshops and on-site technical assistance. The students targeted had significant communication disabilities. After implementation of the BA program the educational teams involved reported changes in how they viewed the students, most particularly an increase in their understanding of the students' ability to learn grade level curriculum (Jorgensen et al., 2007; McSheehan, et al., 2006 and Sonnenmeier et al., 2005). The authors suggest the first step toward improving student learning is to raise the expectation of educational team members (McSheehan, 2006) – to move to a vision of "presumed competence". For a detailed description of the model and how to use it to support students with CCN in inclusive education settings, readers are directed to the book *The Beyond Access Model* (Jorgensen, McSheehan & Sonnenmeier, 2010).

Specialized educational settings: The Bridge School Model.

Models of supporting students with AAC needs in settings which offer specialized services, while not commonly described in the literature, are the common practice for children and youth with significant disabilities in the United States (McLeskey, 2015, personal communication; Erickson, 2015, personal communication). The purpose of a specialized educational setting would be to ensure students have access to the specialized educational team required for AAC provision.

Through provision of specialized supports it is expected that students may become competent communicators and be successful in educational and other environments. The Bridge School in the San Francisco Bay area is an example of a specialized setting that focuses particularly on AAC supports and services. To overcome the challenges involved in educational inclusion of students with AAC needs the Bridge School was designed as short term (although

this could be years) placement with the primary goal to provide students with appropriate AAC technologies and functional communication skills so that they are sufficiently prepared to continue their education in their own local school districts (Hunt-Berg, 2005, p.117).

Hunt-Berg (2005) undertook a longitudinal descriptive study set in the Bridge School to document the nature and success of participants' initial educational experiences while attending and subsequent to leaving the school. The description of the school as reported in the study is as follows:

> *The Bridge School is a specialized school that specifically serves students with CCN. Bridge School is located on a suburban public school site in northern California, USA. The site is shared with a preschool and a public elementary and middle school. Bridge School serves up to 14 students per school year, with classroom sizes ranging from four to seven students. Each class is co-taught by a full-time special education teacher and a full-time speech-language pathologist, both of whom have expertise in AAC. The school's curriculum adheres to California standards for public education. Classroom teachers are certified in areas of orthopedic or severe handicaps. In addition, classrooms are consistently staffed by two instructional assistants and a shared assistive technology specialist (p.119)*

The study reviews information received from roughly half of the students who attended the Bridge School over a 15 year period. The data indicated that each of the 16 participants had gained functional use of a complex voice output communication device and that clear expectations for both their social and academic participation had been developed. Thirteen of the 16 participants made successful transitions to inclusive settings. Successful transitions were those where the students maintained social and academic participation in their inclusive school setting. Hunt-Berg report that the receiving schools of demonstrated strong evidence of effective collaborative teaming for most participants. The schools where participants did not report success in academic or social participation upon leaving the Bridge School had no team or less well functioning teams to provide ongoing support for the student. These results suggest that

communication interventions for students require a well-functioning educational team approach to obtain successful educational and AAC outcomes.

The Bridge School staff provides ongoing supports at no cost to the receiving schools. Transition staff consisted of a full time SLP and a special educator each of whom had formerly taught at the Bridge School. Follow-up supports were provided regularly for 12 of the participants in the study. Initially Bridge School transition staff provided supports on a weekly basis, after the initial transition period contacts occurred on average one to three times per month for the first year. Supports from the Bridge School were reported to have continued for up to 12 years after the student was transitioned back to their community school. For one participant Bridge School supports continued at least weekly, as there was not a full inclusion support team in place at the receiving school.

Short-term immersive experiences.

AAC Camps.

The provision of AAC services in the context of summer camps is becoming a popular method for providing children and youth with immersive learning experiences while offering the opportunity to teach their parents, teachers and caregivers about supporting their AAC system (Dodd & Gorey, 2014; Dodd & Hagge, 2014; Kent-Walsh, Binger & Malani, 2010).

The success of AAC camps as a supplementary service provision opportunity has been reported in the literature as early as 1997. Bruno (1997) describes Camp Chatterbox whose mission was:

1. to help children become more interactive in the use of their AAC systems and to have fun in the process,

2. to help parents gain the necessary skills to facilitate functional device use at home, and
3. to provide opportunities for professionals employed in the field to gain hands-on experience working with children using AAC devices.

Outcomes for children, parents and professionals were all positive. Parents suggested that not only did they value the learning experiences, but also valued the opportunity to meet and bond with other parents who shared many of their life experiences.

Dodd & Hagge (2014) describe Chapman University's *All About Communication (AAC)* Camp as an alternative to school based service delivery models. The camp is provided to extend the school year for students with CCN. This provision of an Extended School Year (ESY) is legislated in the United States under the Individuals with Disabilities Education Act (IDEA, 2014). ESY refers to special education services (e.g. speech-language intervention, occupational therapy) that are provided to a student beyond the normal school year to prevent the excessive loss of skills or deterioration of behavior that is likely to occur in the presence of an extended break such as summer vacation (Dodd & Hagge, 2014. p.125). The model described by Dodd and colleagues provides intense language intervention services for children with CCN by creating an immersive language rich environment based on the child's AAC language system. During the two week camp experience each child is paired with a graduate student clinician who models and supports the use of the child's symbolic language system – referred to by Dodd as his or her 'communication guide'. These graduate students participate in the AAC Camp in fulfillment of their practicum course, which occurred immediately following the completion of a course in AAC.

Kent-Walsh, Binger and Malani (2010) also reported using an immersive camp experience to teach partners to support communication skills of young children who use AAC. In order to find opportunity to change this outcome these researchers used the context of a 2-week AAC day camp for instruction and intervention based on their ImPAACT Program.

The children involved in the study were between three and seven years of age. Four of the children had been using SGDs extensively prior to the camp experience; six had experience with their SGDs for less than two months. Adult participants included 7 mothers, 2 fathers and one grandmother. Campers were supervised by undergraduate students and three additional professionals (an OT, an SLP, and a teacher) who had experience with children having disabilities provided support. Children were reported to have spent the majority of their camp time engaged in activities such as dress up and arts and crafts while their adult caregivers participated in training session. The children participated in activities with their caregivers as caregivers moved along in the instructional sequence of the program.

The results of this approach were very positive. Caregivers successfully learned to use strategies designed to improve language outcomes for their children and the children demonstrated significant gains in their production of aided AAC messages. Based on the success of this project Kent-Walsh et al suggest that this model not only can produce positive results for children with CCN, it also can reduce frustrations that are experienced when suggestions from experts are not understood and therefore followed by colleagues and family members.

AAC Summer School.

Myers (2007) reports the results of a study of an intensive, 4-week summer intervention program. Four elementary school children with severe speech and physical impairments who used augmentative and alternative communication (AAC) aids took part in this program. The

program provided language and literacy instruction for children with complex communication needs that included:

1. an integrated approach and curricula;
2. constant modelling of AAC usage;
3. family involvement; and
4. follow-up visits to schools.

All students were successful in extending their language and literacy skills during the summer program. Two of the students maintained this success after returning to their schools. The author suggests reasons for this difference, including:

1. the innate abilities of the students themselves,
2. the advocacy abilities of their families,
3. the expectations of the schools regarding the abilities of the children and
4. the type of tools used by the children in the classroom.

As well as uncovering useful instructional approaches, curricula, and contexts for supporting communication, this study revealed that access to inclusion will ultimately depend upon a school district's ability and willingness to work in partnership with parents, to manage transition periods, and to ensure the adequate training of personnel closely involved in educating children with CCN (Myers, 2007, p.227).

AAC throughout the Child's Development

AAC in Early Childhood

Early access to multiple forms of AAC is essential for early communication development in young children at risk for expressive communication impairments (Cress & Marvin, 2003). In

a recent review of the literature on early intervention and AAC, Romski, Sevcik, Barton-Hulsey (2015) report that AAC interventions promote early communication and language development. Studies over the past 30 years consistently reported that AAC use is viable for supporting and increasing young people's communication attempts and early language development. AAC provided early in life can greatly enhance a child life and the lives of his or her family. Romski et al (2015) conclude that clinicians and families must be supported in understanding of the value of AAC early in life.

According to Beukelman & Mirenda (2013) a number of principles guide AAC interventions for young children (infants, toddlers and preschoolers). These include:

1. AAC teams should be aware that norm-referenced assessment tools cannot accurately measure the abilities of most individuals with CCN, especially when they are very young.
2. It is critical to build on young children's strengths rather than focus on their impairments.
3. AAC interventions should operate under the assumption that all children have the potential to make significant gains. (p. 228).

They highlight the importance of providing AAC tools and supports to young children in the following statement:

> *The goal should be that, by the time children who rely on AAC reach first grade, they have the tools necessary for academic participation and instruction. These include augmented reading and writing supports (either electronic or nonelectronic), in addition to a communication system that is appropriate to meet their needs for social interaction. (Beukelman & Mirenda, 2013, 356)*

While there is much evidence to suggest that the family's role in AAC decision making and implementation is critical (Granland et al, 2008), it is arguably most critical for very young children with complex communication needs as their communication environments and their communication partners will be predominately family members.

There are few studies focusing involvement in AAC decision making for young children (Hunt, Soto, Maier, Liboiron, & Bae, 2004; Romski & Sevick, 2005). Studies seeking parents' perception of AAC and the AAC process that suggest parents often feel they would like to have stronger voices in the AAC process, that they need more ongoing help and support with AAC, and their particular cultural or family values may not be considered (Angelo, 2000; Bailey, et al., 2006; Marshall and Goldbart, 2008).

Romski & Sevick (2005) suggest that the provision of AAC services and supports with infants and young children has been limited due in large part to a series of myths that have developed around the appropriateness of such interventions with this population. In making their case for the importance of AAC as an early intervention for any child at risk of developing communication disabilities, Romski & Sevick debunk these pervasive myths about AAC:

1. AAC is a last resort in speech-language intervention.
2. AAC hinders further speech development.
3. Children must have a certain set of skills to be able to benefit from AAC.
4. Speech generating devices are only for children with intact cognition.
5. Children have to be a certain age to benefit from AAC.
6. There is a representational hierarchy of symbols from objects to written words (traditional orthography).

The authors suggest empirical evidence disproves each of these statements about AAC. They state that AAC should never be seen as the last resort as children who struggle with speech need multiple expressive and receptive modes to develop language. Ideally AAC should be introduced before communication failure occurs (p. 179).

Studies show that the use of AAC actually improves speech development where possible, and it can be argued that it improves language development in all cases (Cress & Marvin, 2003; Romski & Sevick, 1996). Despite this research base, Cress (2004*)* noted that family objections to the use of AAC, especially for young children, presented a significant challenge to clinicians. Wilkinson and Henning (2007) note that it is not only parents' concerns around provision of AAC but suggest that practitioners requiring children to demonstrate "prerequisite" skills is also used as a basis for exclusion from services. Cognitive ability or chronological age should not be considered prerequisites to provision of AAC supports and services. Communication challenges may in fact contribute to cognitive development and lack of participatory experiences so provision of AAC systems may help a child in all areas of development.

Access to speech generating devices for young children with CCN is widely supported in the literature. In a study that sought perceptions and experiences of SLPs working in AAC and early childhood intervention, there was a strong belief in the benefit of providing AAC devices to young children (Iacono & Cameron, 2009). As one therapist stated:

> *The time they need the most amount of pictographic language is actually between the ages of four and seven and eight. You know, they actually need the most expensive device at that time, and they need it before they go to school (p.240).*

Other findings from Iacono & Cameron's exploration of SLPs perceptions suggest the some of the myths around AAC and young children that Romski & Sevick refuted in their 2005 study were still impacting the field in 2009. The SLPs interviewed by Iacono & Cameron reported attitudes that reflected the candidacy model - the idea children had to demonstrate prerequisite skills or abilities in order to access AAC devices and services. They also reported parents being concerned with AAC provision as giving up on their child speaking. In response to these concerns the SLPs interviewed stress the importance of providing a variety of strategies to

address families concerns such as referring to multimodal communication (not AAC) or to find some support in the literature as a means of gently introducing AAC to families.

Family involvement was a theme in the data (Iacono & Cameron, 2009, p.246). SLPs talked of means to support families, with one SLP suggesting "you have to have an in depth conversation with parents about their entire life before deciding on their intervention goals" (p. 242).

Iacono and Cameron (2009) concluded that as there is little literature on best practice in early childhood intervention. There is, however, a great deal of pressure put onto professionals to gather information from a paucity of sources. They stress the need for further research across number of areas to help build the evidence and practice base for meeting the needs of young children who require AAC and its subsequent impact on learning and development.

Finally a paper by Culp (2003) provides guidance to AAC teams working with young children and their families. Culp suggested the family can develop a framework for service delivery with assistance by the AAC professional(s) involved. Noting that service delivery models in early intervention should always be flexible, Culp suggest that discussing issues such as:

1. times and locations of meetings and interventions;
2. what will happen when schedules need to be changed (either by the family or professional);
3. family members preferences about how they like to learn or receive information;
4. family member's preferences on how much input they want.

It is also important to let families know that they are welcome, and that they should let professionals know at any time if they disagree with an activity. Finally Culp suggests that

professionals tell family members in advance that their feedback will be sought after every session.

AAC in Schools

School environments create specific demands that require communication skills to meet social and academic expectations (Hunt, Soto, Maier, Mueller, & Goetz, 2002). Students who use AAC require extensive support to succeed in their general education classrooms (Kent-Walsh & Light, 2003; Soto, Mueller, Hunt, & Goetz, 2001).

These students often face the task of simultaneously learning operational aspects of AAC technologies and developing language skills that are assumed to be possessed by their peers in general education classrooms (Zangari, 2012). As previously mentioned, positive educational outcomes are heavily dependent on support services that facilitate the use of AAC devices and strategies, the acquisition of literacy skills, and access to the academic curriculum within supportive classroom communities (Fallon, 2008). The educators, speech-language pathologists (SLPs), and paraprofessionals supporting these students face multiple challenges, including learning the operational aspects of the AAC system, understanding how to best support language and literacy development, and understanding how best to include these students into classroom activities so that they can maximize their social participation and academic achievement (Fallon & Katz, 2008).

Calculator & Black (2009) reviewed the AAC literature to compile and then validate an inventory of best practices in the provision of AAC services to students with severe disabilities who were included in general education classrooms. They borrow a taxonomy originally devised by Jackson, Ryndak & Billingsley (2000) to classify useful practices in inclusive education. These practices include:

- *promoting inclusive values*: critical importance of teaching AAC skills that fostered membership in the school community and friendship with typical peers
- *collaboration between general and special educators:* teachers need to understand their role in students' education.
- *collaboration between educators and related service providers:* SLPs and teachers need to work together to identify how AAC use can be integrated into the general curriculum.
- *family involvement:* AAC programs need to reflect the cultural values and beliefs of students' families if AAC is to be integrated successfully into the home environment.
- *choosing and planning what to teach:* not only is design and implementation of AAC a shared responsibility, but plans must also consider that every student needed multiple methods of communication and that all decisions needed to include the child's life priorities as well as the needs of their communication partners.
- *scheduling, coordinating, and delivering inclusive services:* AAC should be pervasive across the curriculum and AAC objectives should be combined with broader academic and social goals.
- *assessing and reporting student progress:* evaluations carried out in natural settings are far more useful than those that take place in specialized or isolated settings.
- *instructional strategies:* this category is multifaceted. Calculator & Black (2009) suggest instruction should target students as well as their communication partners' use of AAC; that students will be more successful in communicating with others when they have access to multiple methods of communication; AAC systems should be introduced as soon as students identified to be at risk of being able to use speech as a primary method of communication; AAC systems should be provide with consideration of students'

present level of communication while modeling and promoting more sophisticated systems that have robust language systems[1]; teachers and others may need to be encouraged to engineer or modify classroom/learning experiences to foster students' uses of AAC; finally students should be encouraged to assume increasing responsibility for events affecting them directly and personally.

The authors point out that best practices are dependent upon collaboration between SLPS, teachers, administrators, parents and other stakeholders who share a common vision and overall mission. They suggest all evidence-based practices are evidenced by students' participation in the curriculum as well as other settings outside the classroom where functional skills are required.

Beukelman & Mirenda (2013; 2005) suggest that the best place for students to develop communication and life skills is in the general education curriculum. They articulate the value of goals for students with complex needs deriving from the general curriculum and what may be the negative consequences for AAC users if this does not occur. When students "fall out" of the general education curriculum someone must develop a personalized curriculum. In theory this does not sound problematic, if fact, it could be taken to be what Individual Education Plans are all about. But individual programs or curriculums often lack continuity and the carefully developed, cohesive scope and sequence of a curriculum developed for general education. Each year a new teacher or even a new team may change the program / curriculum based on their

[1] While there is no widely agreed upon definition of a robust language system, Carol Zangari (2014) describes it as follows: Linguistically-robust language systems are those that will allow someone to construct grammatically correct utterances. Burkhart (2015, personal communication) suggests that for AAC users the system must also be available in its entirety in both low tech and high tech modalities.

knowledge, views or philosophies of learning. “Inadequate longitudinal management of a totally personalized curriculum over the years usually results in a splintered educational program that is replete with gaps, redundancies, and oversights” (p.398).

When students aren’t involved in the general education curriculum they lose out on the benefits of peer pressure and support. Learning to be a competent communicator means learning to read, write and participate. Pressure and support from peers they argue can be helpful in this quest. Clearly failure to be involved in the general curriculum means students won’t have the same opportunities to interact and instruct and/or receive instruction from their peers. And finally, Beukelman and Mirenda point out that failure to participate results in negative perceptions of the student by themselves, their teachers and their peers.

McSheehan, Sonnenmeier, Jorgensen & Turner (2006) argue that educational teams often lack the knowledge and skills necessary to support a student with AAC needs’ membership and participation in general education classrooms and learning of the general curriculum. Their research finding suggest that any evaluation of the student abilities should be postponed until there is a high level of confidence that the necessary conditions and supports for learning have been in place consistently. These necessary conditions and supports for students with communication and developmental disabilities include the implementation of quality AAC. This in turn includes:

1. assessment and identification of the device(s) for the student,
2. team based design and support of the use of the AAC system,
3. a systematic approach to professional development for the team, and
4. ongoing use of data to evaluate student outcomes (Sonnenmeier et al., 2005).

Finally, Blackstone (2008) outlines a set of classroom principles that help children who rely on AAC to be successful. These principles were developed based on perspectives of AAC specialists and studying the Bridge School program. Blackstone presents both a set of principles for classrooms and set of principles for students' instruction. These principles are also consistent with suggestions for supporting young children who use AAC and their families. The principles she outlines for classrooms are listed below in Table 2 along with comments about the principles by the author. Readers are encouraged to go to the online article to explore principles for instruction.

Table 2. Principles for Classrooms with Students Who Use AAC: Program Level (From Blackstone (2008, p.4)

PRINCIPLE	SUGGESTIONS FOR AAC PROFESSIONALS	COMMENTS
1. Services are coordinated, consistent and result in measure-able benefits for students who use AAC.	Show respect for all team members. Build consensus about what is being worked on and how. Divide the labor and identify responsibilities (backups, programming, charging, keeping track of communication book, when there is a problem, who develops materials). Use planning tools (participation plans, action plans).	Teams need good leaders to function effectively, build consensus and foster collaboration. Good teams require good communication strategies. Members need to be on the same page. Team members need to fulfill their roles and responsibilities and be held accountable.
2. Professional staff have the skills they need to support the learning process for all students, including those who use AAC.	Do not lecture. Give practical tips about how to include a student in a meaningful way. Help teacher/SLP understand the trajectory of a student's progress and next steps to work toward. Find things staff are doing well and give them positive feedback.	Teachers and clinicians have a desire to succeed and do a good job with children. The reluctance to take a student with CCN in a class or on a caseload may reflect a professional's fear of not doing a good job.
3. Paraprofessionals who work with students with CCN are prepared to carry out their day- to-day responsibilities and held accountable for doing so.	Provide ongoing training activities so classroom and personal aides know how to carry out IEP goals, support communication throughout the day, foster friendships and increase independence. Provide accountability by setting performance objectives and reviewing performance over time.	Classroom aides often spend more time with a student than anyone else. They can make an enormous difference. They need thoughtful training and support to do their job well.

4. Students with CCN develop academic and social skills. They also develop friendships and social networks in school.	Demystify the student and stuff that goes with him/her (g-tubes, AAC devices, *etc.*) and help classmates learn how to interact successfully with a student who uses AAC techniques. Set up situations that enable unmediated interactions to occur.	A critical component of a successful educational program is promoting meaningful peer relationships. Sometimes peers get to know students better than adults. During times of transition, they can play an important role.
5. 5. Families are engaged in ways that are culturally and linguistically appropriate, so they can participate in their child's program	Ensure open lines of communication between school and home by using a variety of strategies (e.g., translators, phone, email, notes, log, diary etc.) Do whatever works. Put aside judgmental attitudes. Be clear, encouraging and understanding. Communicate effectively. Express your professional opinion and discuss options in a respectful manner. Avoid direct confrontation. Refer difficult matters to administrators.	Families are key team members and influence successful outcomes. Limited support/involvement rarely reflects a lack of interest. In some cultures, parents may do not expect to be included or may feel intimidated by professionals. Families deal with multiple stresses. At times, communication may not be on their priority list.

AAC in Adolescents

To date, the development of AAC technology has emphasized the shared disability of CCN, and given limited attention to the unique needs of different age groups such as adolescents (McNaughton, Bryen, Blackstone, Williams & Kennedy, 2012). This may be changing however as several authors are now writing and researching in this area (McNaughton & Kennedy, 2010; Smith, 2015). These authors suggest there is strong evidence that many individuals with disability enter the adult world without appropriate communication systems and skills and with limited preparation to act in a self-determined manner (McNaughton & Kennedy, 2010, p.11). To make smooth transition to a fulfilling, self-determined adult life, young people who use AAC need *effective services* that meet their individual needs and make the most of the advances in technology (Carter & Draper, 2010).

Smith (2015) suggests that adolescents who use AAC to consider the uniqueness of this period of development in a child's life. Adolescence is a time of major social, physical, cognitive, linguistic and emotional change, all of which have significant impact the use AAC devices and strategies. Rapid skeletal growth may impact seating and positioning and means of access to AAC devices. Curricular demands increase dramatically and students are expected to take more responsibility for their own learning and lives. Smith notes that participation in post-secondary learning and employment is extremely low for adolescents and young adults who use AAC. She attributes much of this to persistently low literacy rates. She also notes that socio-economic factors also contribute to challenges faced by many young people who use AAC.

Smith also points out the changing language needs of young people who use AAC. Language styles, the rapidity of nuances of conversational styles that is used by typical adolescents is particularly difficult for young people who use AAC. This is made more challenging by the need for code switching between verbally symbolic language systems and visually symbolic language systems by the AAC system user. The sheer pace of verbal interactions within groups may make it difficult for an adolescent using aided communication to contribute in synchrony with the group, while the nuances of layered meaning may be particularly difficult to convey through graphic symbol-based communication systems (p. 113).

Smith reminds us that the development of self-esteem, autonomy, and independence are hallmarks of adolescence. For young people who use AAC, establishing personal autonomy and independence present significant challenges. Many may remain physically or cognitively dependent upon others.

In order to provide more positive outcomes for young people who use AAC, Smith posits four essential elements when working with adolescents and young adults who use AAC. These four elements are:

1. emphasizing social networks and authentic, valued interactions;
2. harnessing the energy and insights of peers in interventions;
3. recognizing the pivotal role of vocabulary in effective communication; and
4. supporting curriculum access, particularly access to literacy opportunities (p. 114).

As language links all aspects of development, providing communication and language skills for children and youth with CCN is critical.

In their discussion of transition from school to adult life, McNaughton & Beukelman (2010) argue that although the adult world presents many new demands for the individual with complex communication needs, there are two skills are fundamentally important: communication skills and self-determination skills. They argue that with these skills, individuals with CCN will be able to develop other skills and access needed supports.

Conclusion

> *For people with disabilities, the consequences of not being able to speak or not being understood are far-reaching and often serious. Their complex communication needs require urgent attention (Iacono, 2014).*

The purpose of this review of the literature was to help the Calgary and Area Regional Collaborative Service delivery team better understand the conditions in which positive outcomes for children and youth who require AAC supports and services may be seen. Several themes can be seen in this review.

1. The research on the benefits of providing AAC supports and services to children and youth with CCN and services is strong. The research supports the provision of AAC supports and services for:
    a. infants who may be at risk of communication disability;
    b. children and youth who cannot effectively communicate through speech alone; and
    c. adolescents whose communication patterns and demands are changing as they become young adults.
2. AAC practices that focus on communicative competence help children with CCN to develop *language* they can use *strategically* in *social* settings embedded in an AAC system they can access, navigate and *operate* across contexts with a variety of people, and thereby increase their quality of life.
3. AAC is a complex and quickly changing field. Technological change in turn impacts the pace at which technological changes are being made to AAC devices. AAC practitioners and families of children and youth with complex communication needs are challenged to keep pace with these changes.
4. There is substantial research evidence to indicate that both no-tech aids and technologically based devices are necessary in order to appropriate AAC options to children and youth with CCN.
5. The children and youth who require AAC supports and services are a diverse group including those whose speech impairment is the result of physical impairment, cognitive disability, and/or autism.
6. Assessment for AAC supports and devices should be focused on the child's ability to communicate and participate in daily activities. Assessment processes need to consider:

   a. the skills, abilities, needs and attitudes of the child,
   b. the supports or barriers provided in the environment, and
   c. the skills, abilities, needs and attitudes of the child's communication partners.

7. AAC success involves face-to-face and written communication modalities. Literacy instruction is key to the child/youth achieving autonomy and communicative competence.
8. AAC provision is a collaborative process requiring teams and teamwork. While SLPs are often the leads in these teams, parents, educators, paraprofessionals, the child and other therapists (OTs, PTs) are also key players in creating AAC success. Despite the clear importance of teaming, the literature suggests teaming is difficult largely due to time constraints, lack of experience with collaboration, and competing agendas.
9. There are various models of AAC provision for children and youth. The research suggests models which involve some kind of immersive experience for children with use AAC and their families, educators and other caregivers have positive results. Learning to communicate through AAC systems is challenging.
10. Intentional training of communication partners is seen as very important to supporting the AAC users. The research suggests that parents, siblings, friends, teachers, and para-educators benefit from ongoing collaboration and support of professionals trained in AAC techniques.
11. AAC needs change as children grow and develop. The demands and expectations of their communication environments change; their physical, cognitive and emotional states change; their need for language changes; and technological tools and solutions change. AAC provision is as a dynamic process that involves constant attention to environment, expectations, and needs of the growing child.

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Appendices.

Appendix A. Textbooks and Research to Practice Texts Reviewed

Resource (Title, Author, Date)	Type of Text & Focus	Contribution
Ganz, J. B. (2014). *Aided Augmentative Communication for Individuals with Autism Spectrum Disorders.* New York: Springer.	Textbook SLPs Educators All ages (but primarily children & youth) Autism	This text covers a variety of key areas in understanding the needs of people with ASD and CCN as well as the interventions that are currently in use with this population. Topics include: • AAC and assessment of people with ASD & CCN • Interdisciplinary issues and collaboration in assessment & intervention • AAC intervention mediated by natural communication partners • The controversy surrounding facilitated communication • Sign language versus AAC.
Loncke, F. (2014). *Augmentative and Alternative Communication: Models and applications for educators, speech-language pathologists, psychologists, caregivers, and users.* San Diego: Ruffin.	Textbook SLPs Educators All ages All disabilities	While this text aims to be a primary text for graduate level courses in AAC, it is written in a manner and style that lends itself to being accessible to anyone interested in the field. This text is somewhat unique in that it draws from the fields of psycholinguistics, communication sciences and social psychology to help readers understand AAC. Topics addressed in this book include: • issues of access • symbols as the units of meaning • prelinguistic development and AAC • language acquisition and learning for a person using AAC • literacy development • AAC assessment • AAC use and the community
Beukelman, D. & Mirenda, P. (2013). *Augmentative and alternative communication: Supporting children and adults with complex communication needs* (4th ed.).	Textbook SLPs Educators All ages All disabilities	Now in its fourth edition, the Beukelan & Mirenda text has come to be seen as the definitive text in the field of AAC. This is an introductory textbook targeted at practicing professionals, pre-professional students and others who are interested in learning more about communication options for people with CCN. Topics include: • AAC processes including an introduction to the Participation Model for assessment and intervention planning • A review of AAC interventions for individuals with developmental disabilities including those which relate to beginning communicators, language development and CCN, and literacy and CCN • AAC interventions for those individuals with acquired communication disorders. Interwoven in the text are perspectives of people who rely on AAC.

Johnston, S. S., Reichle, J., Feeley, K. M., & Jones, E. A. (2012) *AAC strategies for individuals with moderate to severe disabilities.* Baltimore, MD: Brookes.	Textbook Educators SLPs All ages (predominately children & youth) Developmental Disabilities	This text focuses on interventions and instructional strategies for school based professionals in establishing a beginning functional communication repertoire for learners with severe disabilities. Topic covered include: • establishing an intervention framework: social functions and communication intentionality, means of communication, features of AAC systems, design of AAC systems, and instructional strategies • establishing functional communication: using graphic symbols, to request, to escape and avoid activities, and to gain and maintain access to other people. While the book does primarily focus on behavioral methods to intervention, the authors' also express their belief that a developmental approach to AAC intervention can serve many learners very well.
Binger, C. & Kent-Walsh, J. (2010). *What every speech language pathologist/audiologist should now about Augmentative and Alternative Communication.* Boston: Pearson.	Practice Guide SLPs All ages All disabilities	Simple quick guide for practice in AAC for SLPs Topics include: What is AAC? (aided & non-aided); AAC Across Clinical Settings (early intervention, pre-school, schools, hospitals, nursing homes, private practice); Key Players in AAC: Assessment Basics; Intervention Basics.
Jorgensen, C. M., McSheenan, M. Sonnenmeier, R.M. (2010) *The Beyond Access Model: Promoting membership, participation, and learning for students with disabilities in the general education classroom.* Baltimore: Brookes.	Research to Practice Children & Youth Developmental Disabilities	While this book is not strictly speaking an AAC resource, the Beyond Access research and Beyond Access Model have become widely referenced in educational practices for children and youth with CCN. This book provides a guide to how educators, including SLPs can create inclusive classrooms where children and youth with CCN not only participate and communicate, but also learn academic content. Key areas covered in the text include: • Foundations of the model: presuming competence, participation and learning, and collaborative teaming • Structured guidance in the implementing the phases of the Beyond Access model The book also comes with a CD that provides readers with the checklists and forms that support implementation of the model In the forward by Dr. Pat Mirenda, the connections to the Participation Model are explained as well as how the Beyond Access model goes more deeply into the goals of meaningful participation and learning.
McNaughton, D, & Beukelman, D. (2010). *Transition Strategies for Adolescents & Young Adults who use AAC.*	Textbook SLPs Transition & Employment specialists Educators	This text covers a wide range of issues related to the process of transition to adult life for young people who use AAC. Topics covered include: • Foundations for successful transitions including self-determination and young adults who use AAC • Education and transition including literacy instruction and making school matter • Employment and volunteer programs

	Adolescents All disabilities	• Relationships and social engagement This text combines research-based best-practices with personal stories of young people who use AAC to provide professionals and families with knowledge and strategies to help young people with CCN meaningfully participate in all aspects of adult life.
Mirenda, P. & Iacono, T. (2009) *Autism Spectrum Disorders and AAC.* Baltimore: Brookes.	Textbook All ages Autism	This text is intended for practicing professionals and graduate students who are interested in expanding on their knowledge in the area of ASD and AAC. Topics include: • history of AAC & ASDs • approaches to assessment • overviews of communication modalities commonly used by people with ASD and CCN including a meta-analysis of the use of graphic symbols and sign, and a review of SGD research • information on AAC interventions and instructional approaches for people with ASDs including Picture Exchange Communication System (PECS), aided AAC systems, and functional communication training • AAC implementation covering literacy, inclusive education and supporting participation of adolescents and adults with ASD & CCN This text is particularly noteworthy as topics are addressed by current experts in each of the topic areas.
Soto, G. & Zangari, C. (2009) *Practically Speaking: Language, literacy, & academic development for students with AAC needs.* Baltimore: Brookes.	Textbook SLPs Educators Children and youth All disabilities	This text provides information for professionals and pre-professionals who serve children and youth with significant communication challenges in school settings. The authors' stated goal in writing this resource is to provide clear and accurate information on how to facilitate language, academic, and social growth in children who require AAC. Topics include: • key issues in assessment of skills and abilities of students with CCN, from emerging communication to literacy development • reviewing key concepts, issues and strategies for instruction and intervention with students who use AAC • topics important to the support of students who use AAC and their educational teams. While the authors recognize that students with AAC are educated in a wide variety of settings, this text is based upon the fundamental belief that professionals working with students who require AAC must be committed to providing access to the general education curriculum for all students.
Light, J.C., Beukelman, D. Reichle, J. (2003). *Communicative Competence for individuals who use AAC: From research to effective practice.* Baltimore: Brookes.	Textbook All ages All disabilities	While this text is now more than a decade old, it is important in its discussion of what has come to be a foundational understanding of what communication competence means for people who use AAC. Topics covered in this seminal text include: • A framework for considering the development of communicative competence in people who use AAC • Factors that impact the development of communicative competence including personal,

		cognitive and psychosocial unique to the individual as well as factors that pertain to the demands of the communicative environment of the AAC user The text includes chapters written by various experts in the field of AAC focusing on the development of linguistic, operational, social and strategic competencies needed by persons who use AAC
Glennen, S. & DeCoste, D. C. (1997). *The Handbook of Augmentative and Alternative Communication.* San Diego: Singular Publishing Group.	Textbook All ages All disabilities	Now although significantly dated, this text remains useful in that it provides a breadth and depth about AAC not found in many recent texts. The first section of the book provides an introduction to the field of AAC for those who are approaching the field for the first time. Sections 2 and 3 are targeted toward professionals in the field who need more in-depth information The text connects the diverse disciplines that interact in the field of AAC including occupational and physical therapy, education, and speech and language. Many practical examples of putting aided AAC systems (from low to high tech) are presented with text and images, making it a continually valuable reference for SLPs and educators.
Romski, M. A. & Sevcik, R. A (1996). Breaking the speech barrier: Language development through augmented means. Baltimore: Brookes.	Research to Practice Children and youth Developmental Disabilities	While now over a decade old, this book in important to the field in that it describes seminal research in using speech output devices and augmentation of language input (System for Augmenting Language or SAL) to support communication and language development in children with CCN. This book describes a the authors brought their research from the language lab to the school setting in order to determine how the process of language learning through augmented means develops, conditions that may facilitate it, and its broader impact on the general course of development of youth with significant developmental disabilities. Their approach was unique in that it was based upon naturalistic exchanges between communicative partners using speech output devices.
Von Teitzchner, S. & Grove, N. (2003). *Augmentative and Alternative Communication: Developmental Issues.* Philadelphia: Whurr.	Textbook Children SLPs Educators Developmental Psychologists	While now more than a decade old, this book provides an often overlooked perspective on the lives of children who use AAC. This text provides a developmental approach to the question of AAC by exploring the development of alternative language forms through the lens of typical child and language development. The text includes chapters written by several important voices in the field of AAC from Europe, North America and the Middle East that on how the use of AAC impacts and influences language development in children who must use alternative forms to be understood. This text also includes a chapter on AAC implementation and teacher training.

Appendix B. Context: Legislation & Policy Influencing AAC Provision & Practices

United States

Tech Act	http://www.ataporg.org/summaryact.html
NCLB	NCLB is actually one iteration of the Elementary and Secondary Education Act (see http://www.ed.gov/esea) it was just called NCLB in its latest reauthorization. See a 2015 report on this at http://ies.ed.gov/ncee/pubs/20154006/pdf/20154006.pdf
IDEA	**http://idea.ed.gov/** **Extended School Year** (**ESY**) services are designed to support a student with a disability as documented under the Individuals with Disabilities Education Act (IDEA) to maintain the academic, social/behavioral, communication, or other skills that they have learned as part of their individualized education program.

United Kingdom

Government of the United Kingdom: Department for Children, Schools and Families Department of Health, (2008). Better communication: an action plan to improve services for children and young people with speech, language and communication needs. Retrieved from http://webarchive.nationalarchives.gov.uk/20130401151715/http://www.education.gov.uk/publications/eOrderingDownload/Better_Communication.pdf

Australia

New South Wales Family and Community Service Core Standards for practitioners who support people with a disability

http://www.adhc.nsw.gov.au/sp/delivering_disability_services/core_standards

http://www.adhc.nsw.gov.au/__data/assets/file/0010/302401/Augmentative-and-Alternative-Communication-Appraisal-.pdf

Canada

Legal Considerations and AT in the Educational setting in Canada.

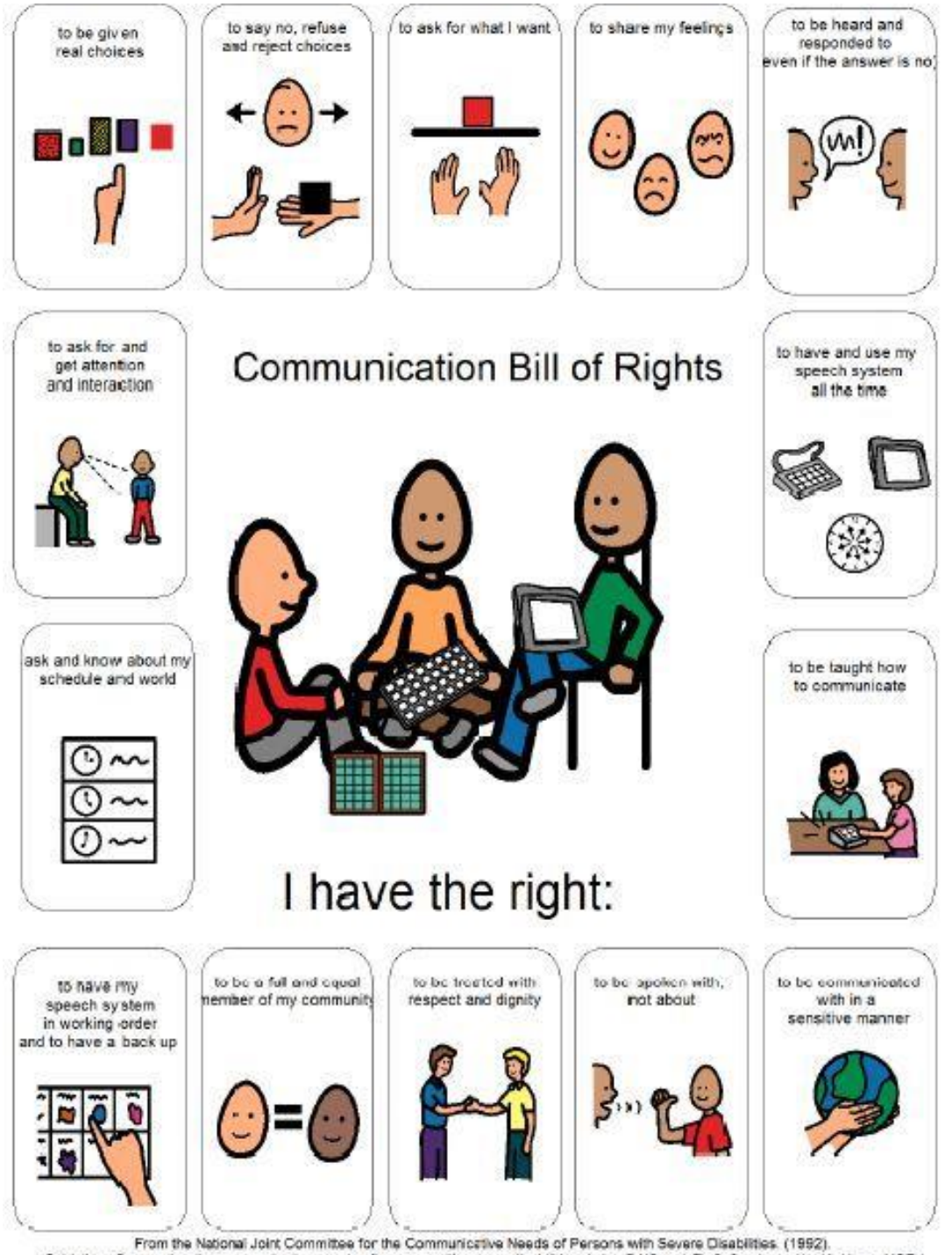
http://www.snow.idrc.ocad.ca/node/220

Appendix C. AAC Guidelines and Standards

Author, Date, Weblink	Purpose of Guidelines (if stated)	Summary
ASHA (1991) *Guidelines for Meeting the Communication Needs of Persons With Severe Disabilities.* Retrieved from http://www.asha.org/policy/GL1992-00201 April 24, 2015.	Three purposes: • to state clearly the philosophy that undergirds current efforts to provide intervention services appropriate to the communication needs of persons with severe disabilities. • to focus on current best practices in intervention for persons with severe disabilities. • identify the substance and the professional competencies that are necessary for an interdisciplinary team to implement the philosophy and best practices	The current (1991) best practices in facilitation and enhancement of communication among persons with severe disabilities reflect six major tenets: a. communication is social behavior; b. effective communicative acts can be produced in a variety of modes; c. appropriate communicative functions are those that are useful in enabling individuals with disabilities to participate productively in interactions with other people; d. effective intervention must also include efforts to modify the physical and social elements of environments in ways that ensure that these environments will invite, accept, and respond to the communication acts of persons with severe disabilities; e. effective intervention must fully utilize the naturally occurring interactive contexts (e.g., educational, living, leisure, and work) that are experienced by persons with severe disabilities; and f. service delivery must involve family members or guardians and professional and paraprofessional personnel. These six tenets have resulted in assessment, intervention, and service delivery models that offer maximum responsiveness to the need to establish communication repertoires that will allow persons with severe disabilities to function effectively in least restrictive environments—in productive interactions with others.
Communication Matters (2012) Augmentative and Alternative Communication (AAC) Services Standards. Retrieved from http://www.communicationmatters.org.uk/sites/default/files/downloads/standards/aac_services_standard_aug_2012.pdf	The Quality Statements in this document aim to: • promote equality of access and quality of services • support the provision of AAC strategies and equipment appropriate to individual needs, preferences and choices • respect and protect human rights • support local teams to develop their expertise and skills • require clear AAC recommendations for individuals so funding can be made available for equipment and strategies required to develop the communication skills of the client.	This document provides quality standards in the areas of assessment, training, and implementation of AAC. The quality statements are written from the perspective of the AAC speaker and should be taken to mean the individual themselves and/or their family or support worker who is authorised to make a decision with and on behalf of that individual if they are a child or someone without the ability to make decisions independently. The document also provides information on prevalence of AAC users in the UK, information on Communicative Competence and AAD, and links to policies and services pertaining to AAC in the UK.
New South Wales Family & Community Services (2014). *Augmentative and Alternative Communication (AAC) Guidelines for speech pathologists who support people with a disability* Retrieved from http://www.adhc.nsw.gov.a	These guidelines have 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) • new graduates • who want to update knowledge/practice	This guideline has been designed as a practical resource to provide basic or core level information on AAC for speech pathologists. 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

u/__data/assets/file/0011/302402/Augmentative-and-Alternative-Communication-Practice-Guide.pdf April 24, 2015.	• returning to work.	• use and evaluation of AAC.
Speech-Language and Audiology Canada (SAC) (2015). *The Role of Speech-Language Pathologists with Respect to Augmentative and Alternative Communication (AAC).* Retrieved from http://sac-oac.ca/sites/default/files/resources/aac_position-paper_en.pdf April	• AAC is a domain of speech language pathology that may be relatively unfamiliar to many S-LPs. S • Generalist S-LPs may find themselves increasingly involved in AAC interventions • an increase in the number of individuals with access to high-tech AAC systems	Recommendations, organized by client population or need, were made in the following areas in order to provide general guidance to S-LPs whose clients may benefit from AAC interventions. Recommendations were 1. Universal Recommendations which apply to all client populations 2. Recommendations for AAC and Literacy 3. Recommendations for AAC and Children 4. Recommendations for AAC and Adults Of particular note for the present review is the note that services for children who require AAC are complex because S-LPs are not only introducing a new communication tool with a new symbolic vocabulary, but also supporting the development of language in general.

Appendix D. Communication Bill of Rights.



From the National Joint Committee for the Communicative Needs of Persons with Severe Disabilities. (1992). Guidelines for meeting the communication needs of persons with severe disabilities. Asha, 34(Suppl. 7), 2–3, adapted by K. Ahern, MSEd