Augmentative and alternative communication: a review of current issues

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Abstract
Augmentative and alternative communication (AAC) includes a range of approaches aimed at supporting or replacing speech for children and others for whom natural speech is not sufficient to meet their needs. For some children it also offers a support to the process of language learning. A wide range of medical conditions may lead to a child requiring AAC, either temporarily or on a more permanent basis. AAC systems may be unaided or aided, in the sense of requiring some form of equipment. They vary on the level of technology required from none to specialized computer-based devices offering synthesized speech output. Management of children requiring AAC must involve parents and a multidisciplinary team of health and education professionals, in addition to active involvement on the part of the child.

Keywords AAC; augmentative and alternative communication; communication aid; dysarthria; language; non-verbal; non-vocal

Aims

In this review we will:

- define augmentative and alternative communication (AAC)
- outline the forms AAC may take and provide a taxonomy of types of AAC
- provide some prevalence data on AAC use
- describe the children who are likely to benefit from use of AAC
- consider the implications — both advantages and disadvantages — of learning language through atypical means
- provide guidelines for engagement with children who use AAC in health settings
- provide suggestions for further reading.

We will not consider the use of sign languages by deaf people or the deaf community.

What is AAC?

AAC includes any method of communicating that supplements (augments) or replaces (provides an alternative to) the usual methods of speech and/or writing where these are impaired or insufficient to meet the individual's needs. AAC may also have a role where the child is having difficulty learning speech and language. In this and other cases, children may use AAC in the short to medium term or as their life-long means of communication.

Whilst AAC is usually thought of as an 'output' system, a means for someone to express themselves, AAC can also be used to support the person's understanding of language and communication.

AAC is equally appropriate for children and adults, but in this review we will focus on children and young people for whom natural speech is unlikely to be their primary means of communicating. We will describe the major client groups below. There are many different types of AAC, including:

- eye-pointing, natural gesture, and use of manual signs, all of which are regarded as 'no-tech' or unaided systems
- photographs, symbols, and word boards, which are considered to be aided but 'low-tech' systems
- speech output devices, which include 'light-tech' simple battery-operated, single-message devices
- speech output devices which also include 'high-tech' aided systems; these are typically highly complex and flexible computer-based pieces of equipment known as voice-output communication aids in the UK and speech-generating devices in North America.

Sign languages, in the sense of the natural languages of deaf people (e.g. BSL, ASL), are a specific aspect of AAC, often dealt with separately in the literature and in practice. Some children, however, may use signs taken from for example BSL within their AAC system.

AAC systems

There is more to AAC than the right piece of equipment, especially when the person using it has significant physical impairment or learning difficulties. Consequently, it is more useful to think of AAC systems as comprising four interconnected components.

- The ***mode***. This covers, in gross terms, the components (no-, low-, light- and high-tech) described above, the method by which the message is being sent to the communication partner. As we have described, this could be anything from the direction of the child's gaze to the words generated from a computer-based speech output device.
- The ***means*** by which the child accesses the communication mode. Direct access involves pointing, or pressing the keys on a keyboard. Children with very severe physical involvement, however, may not be able to access the communication mode directly. In this case they will need to be taught to use an indirect approach: for example, using a scanning system involving one or two switches.
- The ***representational system.*** In typical conversation we use spoken words to represent the meanings we want to convey. In AAC many different types of symbol set may be used; written words or letters, photographs, line drawings, or a formalized set of symbols such as Blissymbols or Picture Communication Symbols. The use of symbols which appear less abstract in relation to the words or ideas they represent is often seen as a facilitating the child's acquisition of language.

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Sometimes the symbol set is designed so as represent signs from a formal sign system, to make it easier for the child to use both signing and a symbol system.

- ***Interaction strategies.*** The strategies children learn as typical speakers — for example for starting conversations, changing topics, and repairing misunderstandings, have to be formalized for children who use AAC. Using an AAC system changes conversational dynamics. The development of good skills in this aspect of communication will help children and young people who use AAC to interact successfully with a range of communication partners.

In addition to these four components, it is helpful to add the role of the communication partner. Whatever AAC system is being used, communication via AAC is slower than typical communication. Strategies for the communication partner to support the child using AAC are described below.

Prevalence

Because this form of intervention is of use to children with many differing conditions or impairments, and because access to AAC is determined at least in part by service availability, it could be argued that prevalence data are less than meaningful. For the purposes of this review, however, it seems helpful to provide some indication of the extent of AAC use where data are available.

The prevalence of cerebral palsy in Western countries (countries of the North) is between 2 and 2.5 per thousand, 60% of whom are likely to have severe communication problems. To this, we can add some children with severe learning difficulties, specific language impairment and autism who may also benefit from AAC, in addition to a small number of children with rare syndromes which have implications for speech or language (e.g. Apert's syndrome, leucodystrophy, Friedreich's ataxia). This would suggest prevalence in line with the figures from NHS screening which suggest that ***at least*** two children per thousand experience severe long-term speech, language or communication difficulties (excluding hearing).

In less developed countries (countries of the South) very similar prevalence data for cerebral palsy are reported. Knowledge about and access to AAC services, however, are likely to be far lower, even in countries such as India where well-developed provision exists in major cities. Thus the prevalence of AAC use is likely to be considerably lower.

A framework for describing the needs of children who may use AAC

It is useful to contextualize communication according to the children's reasons for, or need to use, some form of AAC. This may be described in the following ways.

- Expressive language group: this group would describe children who generally have intact language skills but have inadequate motor speech that renders their communication attempts unintelligible to all but the most familiar communication partners. The largest proportion of children in this group would present with cerebral palsy, and from a speech and language perspective would have dysarthria or anarthria; other members of this group may present with severe verbal dyspraxia; and less often, expressive aphasia. Children with major structural anomalies — such as those associated with Apert's and other craniofacial syndromes — may also use AAC to support speech, especially with unfamiliar communication partners. Some children may have a less permanent need for AAC if they present with structural inadequacy (e.g. unrepaired cleft palate) or post-surgery have a temporary inability to express themselves through speech (e.g. temporary tracheotomy).
- Receptive language group: this group would include children who present with significant language delay or disorder, potentially in addition to inadequate motor speech skills. The children in this group can benefit from AAC in two ways. The symbolic representation of language can actually support their learning of language, and the use of their AAC system increases their communicative effectiveness by increasing their intelligibility. This group typically includes children who present with language disorder (specific language impairment, SLI). These children are unlikely to present with any other significant medical condition, but show major difficulties in acquiring speech and/or language despite appropriate input and adequate hearing. This context would also describe children who present with moderate to severe learning difficulties and whose difficulties in acquiring language reflect their more global impairments. These children may have a range of associated medical conditions, including hearing and visual impairments.
- Social interaction group: This group would most often describe children who present with social communication difficulties, and as such includes children who have a diagnosis of autistic spectrum disorder. In this context an AAC system, such as Picture Exchange Communication System (PECS), can provide the child with a means of learning to act and communicate effectively within their environment through learning the transactional nature of communication. Any individual child may fall in to one, two or three of these categories.

In discussing AAC, there is often confusion between the terms *verbal*, *non-verbal*, *vocal*, and *non-vocal*. Table 1 demonstrates how modes of communication and representational systems may be described according to these dimensions.

Management considerations

There are two broad considerations relevant to this discussion.

- Is the use of AAC to be temporary or long term?
- Is the language available on the AAC system for general communication across many contexts or set up for use in a specific context?

Here are some case examples.

Child A is a pre-literate child experiencing a planned hospital admission for surgery that will result in 2—3 days' intubation. During this time natural speech will not be possible, but the child will be able to point to items on a page. The child's potential anxiety can be partially relieved by the availability of a simple, low-tech communication board or book containing symbols/pictures (in the example shown in the box 1 below the words would be substituted with the relevant symbol/pictures) by means of which the child may be supported to communicate. If the system is personalized ***before*** the child is hospitalized, as in