

# Matching Technology to Individual Needs

Jane Donnelly & Annie Kirkaldy

Severe communication impairment can affect all ages, children, adolescents and adults whose difficulties may be classified as:

- congenital – present from birth
- acquired – arisen in later years
- degenerative – progressive in nature

The communication difficulty may have resulted from any of the following conditions:

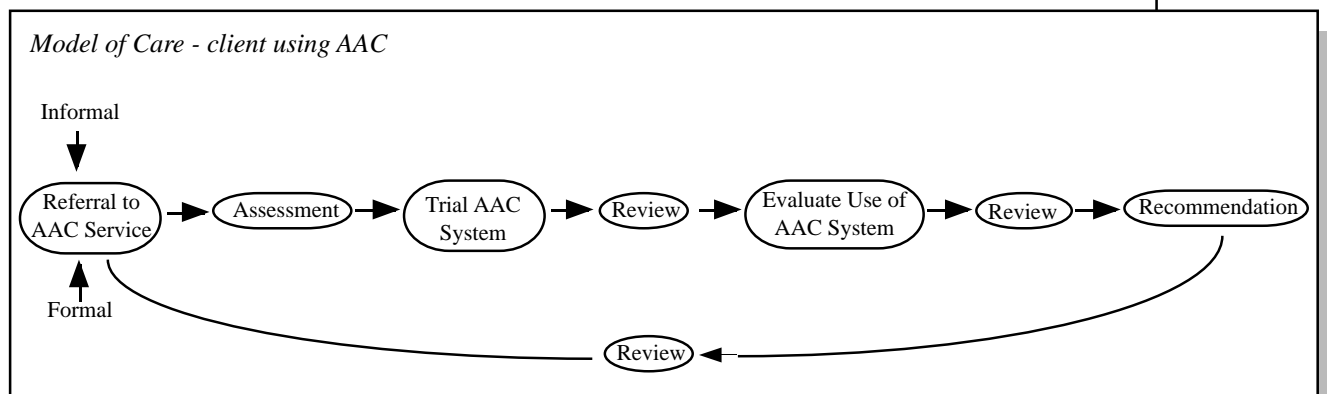
- physical impairment including Cerebral Palsy
- learning difficulties
- head injury
- stroke
- tumour
- progressive illness including
  - i) Motor Neurone Disease
  - ii) Multiple Sclerosis
  - iii) Parkinson's Disease

For those individuals with a communication difficulty so severe that their access to learning and quality of life is seriously impaired, the provision of alternative and augmentative communication (AAC) can be of enormous benefit.

As the field of AAC continues to develop rapidly, and the amount / variety of technology increases, the professional working with the communicatively-impaired client can be faced with the difficult dilemma of selecting the most appropriate AAC system to complement their client's individual needs.

Many factors (e.g. financial constraint, experience of the professional involved, awareness / availability of new technological developments) can have an influence on the type of system selected. This paper hopes to address some of the client-centred issues which should be considered before an AAC system is recommended. The assessment process within the suggested model of care outlined below will be the main area of focus.

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## **The Assessment**

The assessment process is a vital component in enabling the professional to provide suitable technology for the client.

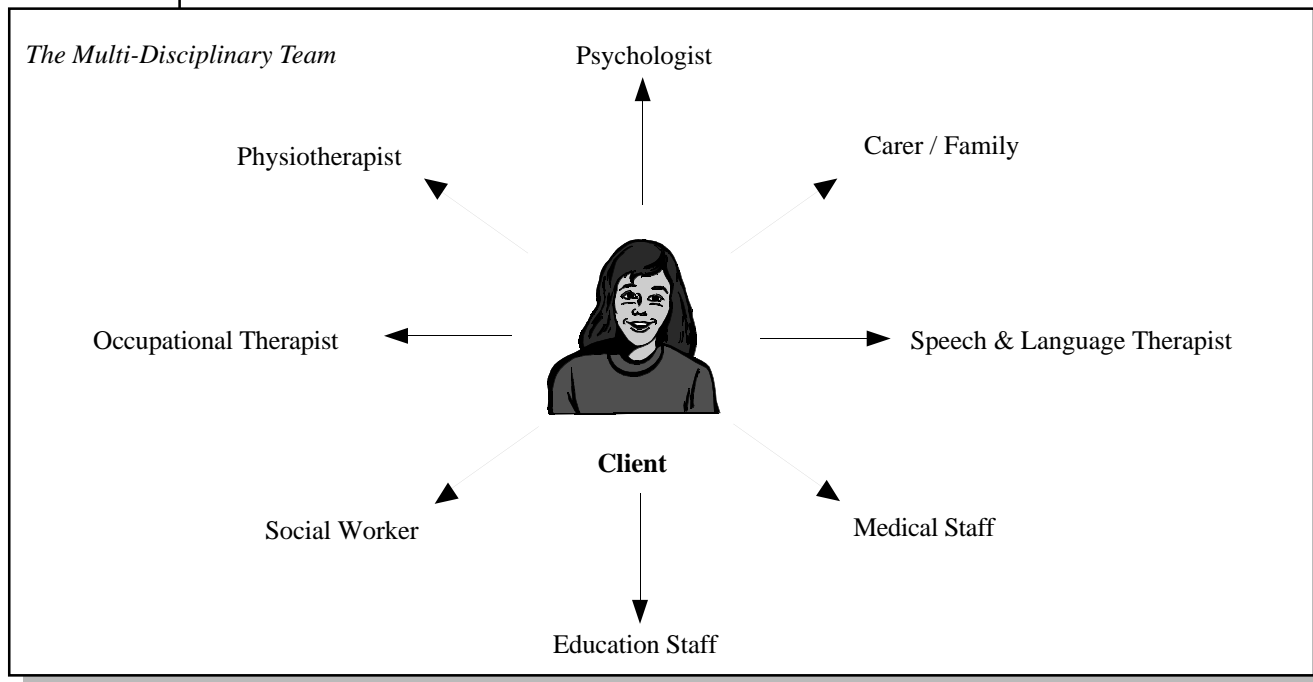
Assessment of the person's communication abilities is carried out over a period of weeks or months. The duration of the assessment period is dependent upon several factors, including the complexity of the person's physical impairment, communication difficulties and capacity for learning.

Multi-disciplinary assessment is essential in collecting all relevant information pertaining to the client from involved professionals.

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### ***The Multi-Disciplinary Team***

Although many individuals can be involved at this stage, it is important that one person coordinates the collation of information. This is often, but not always, the Speech and Language Therapist, who is in most cases involved from referral through to eventual discharge.



Information which is gathered early in the assessment process includes:

- ability to understand language and non-verbal communication
- expressive ability including non-verbal communication
- communication environment including the level of support available from carers and professionals
- motivation to communicate
- ability to learn
- seating and positioning
- gross and fine motor control
- hearing and vision
- emotional state and behaviour

The assessment may be carried out by observing the client's communication in a variety of situations and with different people, and a more formal approach may also be adopted with standardised tests and/or check-lists.

Areas which may be directly assessed include:

- auditory and visual perceptual skills
- memory and recall
- choice-making
- initiation of communication
- turn-taking
- physical ability to access a communication device
- visual tracking
- positioning of equipment
- symbolic understanding / cognitive ability – (sequencing / classifying abilities)
- literacy skills
- use of any existing low-tech systems

### ***Trials and Adaptations***

Once the initial part of the assessment has been conducted and information collated, devices or systems which may prove to be beneficial are identified and trialled by the client. Interim modifications to the hardware may have to be made at this stage and software may have to be created or adapted to make the use of the equipment feasible.

In the preliminary choice of system the following factors will have to be considered:

- communication medium – text, pictures or symbols
- selection of vocabulary / size of overlay
- type of equipment whether portable or workstation
- input system – direct selection or switch control
- output system – visual display, voice synthesiser or printer
- appropriate software package
- assessment of appropriate mounting kits, if necessary

### ***What Type of Communication Device / System may be Selected?***

Following assessment the professional may select either *Low tech, e.g.*

- a gestural communication system, e.g. *Makaton*
- a communication board, folder or frame containing pictures, symbols, photographs and / or written words phrases
- an alphabet chart
- switches which allow a degree of environmental control / independence
- simple recorded voice-output devices containing a limited number of messages, e.g. *BIGmack, Spokesman, SpeakEasy.*

or *High tech e.g.*

- electronic communication devices:
  - input being either a “qwerty” or alphabetically arranged keyboard and/or display of pictures, photographs, symbols and/or written words; e.g. *DeltaTalker, Lightwriter SL35, ORAC, AlphaTalker*, laptops with word processing packages.
  - Output may be printed, visual and/or speech. The speech may be a digitally recorded human voice or a synthesised voice depending on individual device.

In some cases it may be necessary to introduce a low-tech device or system which will allow a client to progress onto one that is more sophisticated. Low-tech systems should also be provided whenever possible, to allow users to have a back-up method of communication in case of electronic equipment failure.

### ***Introduction of the AAC System***

“*Throwing technology at a problem is not synonymous with its solution*” (T. Jones, 1994)

Once an AAC system has been selected for the client, adequate support and training is vital in ensuring the correct development / functional use of the equipment in the long-term. Goals should be set and strategies to be used discussed and agreed with carers and professionals involved with the client.

Before the selected communication device or system can be introduced, preparatory work may be necessary to overcome difficulties which may exist and to help develop necessary skills in certain areas, e.g. concentration; understanding of cause and effect relationships; hand-eye coordination; speed of reaction; making eye-contact; visual scanning.

Training in the use of the device or system is essential for long-term success. This may take the form of direct intervention with the client, demonstration for the client, carers and professionals and/or workshops. Training in use of switches to access devices or systems may be needed if clients have significant physical impairments. Switches may be positioned for use by different parts of the body e.g. hand, foot or head.

A computer system with suitable software may be chosen either to develop the above skills or as the adopted communication system.

As the client becomes skilled in the use of the device or system, and relevant carers / professionals involved gain understanding to support the user, the involvement of the multi-disciplinary team can gradually be decreased.

## Review

Once direct intervention has been completed clients should be seen on a review basis. A review of the client and their circumstances should be carried out at appropriate intervals to make sure that any changing needs over time are identified and met. Carers and professionals involved may change; the client's environment may change; the client may change (through maturation or the effects of progressive illness). Effectively matching technology to meet the individual needs of a client can be a long-term and ongoing process. Comprehensive multi-disciplinary assessment coupled with a knowledge of the current technology available is therefore very important in ensuring that an appropriate recommendation of an AAC system can be made.

## Case Study 1

M is a 5 year old boy with cerebral palsy. He currently attends nursery but is soon to enter Primary 1 in a mainstream school. M's speech is dysarthric and more or less unintelligible to all but familiar listeners / family. M is a bright, sociable child who is very motivated to communicate with those around him. Throughout assessment, he displayed well-developed comprehension skills / cognitive ability and an aptitude to learn.

Initially a 32-overlay, picture-based *ORAC* was selected for M to trial. He was extremely motivated by the voice output and quickly mastered the vocabulary selected. It became apparent that M had many ideas he wanted to communicate and that selection of an appropriate vocabulary for him by his Speech & Language Therapist was difficult and often too limiting. He required greater communicative flexibility. Following further assessment of his sequencing / classification / picture association skills he was given a 128 -overlay + *Language, Learning and Living*, a Minspeak application from Liberator Ltd.. This has proved very successful and M is currently developing / expanding his knowledge of the system. Intensive input with both M and staff has been and continues to be essential in ensuring his continued success.

## Case Study 2

G is a 70 year old lady who suffered a R-sided CVA approximately 18 months ago. She presents with non-fluent dysphasia. G has received weekly therapy which has focused on developing her language-skills, single word intelligibility and gesture to supplement her expressive output. However she had become increasingly frustrated by her inability to express a familiar word / phrase to family / friends. During assessment she was unable to accurately use a *Lightwriter* due to spelling difficulties resulting from the stroke. A *MessageMate* was programmed with 15 phrases / sentences selected by J her husband which were felt to be useful conversation starters / acknowledgements. G was also supplied with a conversation wallet containing symbols organised by category representing items relevant to her to overcome word recall difficulties and to augment her gestural skills. Combining these two low tech and high tech systems has proven to be most effective for G.

## Case Study 3

A is a 37 year old man with cerebral palsy. He uses a wheelchair.

During assessment, it became apparent that A had excellent comprehension, cognitive ability and potential to learn. His current expressive low-tech system was limiting for him consisting only of 20 symbols. Due to a lack of formal education his literacy skills were poor and it was felt that a symbol based system would best meet his needs at this time. The *Liberator* (128-overlay + *LLL*) was given to him to trial. He showed a good aptitude to understand and recall the logic of the vocabulary. Accessing of the device is currently undergoing assessment. Direct manual accessing is impossible due to level of physical impairment so a switch and scan system is used. A, however, is keen to develop his skills to use the infra-red head-pointer to allow more rapid selection of vocabulary than scanning can allow.

## References

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Jane Donnelly & Annie Kirkaldy  
FACCT, ASDARC  
Woodend Road  
Cardenden  
Fife KY8 1HL