RCSLT RESOURCE MANUAL FOR COMMISSIONING AND PLANNING SERVICES FOR SLCN

APHASIA

Aphasia

Key Points

1. Speech and language therapists play a unique role in identification and assessment of those with aphasia. The ability to identify levels of comprehension and expression as well as retained communication abilities are unique skills of speech and language therapists.

2. Difficulties with communication are a predominant feature in reducing access to education, employment and social integration

3. Speech and language therapists should be integral members of services supporting children and adults with aphasia, their families and carers.

4. Speech and language therapists have a key role in educating/training, others involved in care of those with aphasia including the family, health, education and social care staff.

5. Methods of speech and language therapy, supplemented by supported conversation provided by assistants, lay persons and family members show benefits in improving conversational skills

6. Computer-based therapy directed by a speech and language therapist is beneficial, cost-effective and acceptable.

7. Specific speech and language therapy programmes aimed at reducing certain impairments have been found to be effective with some patients.

8. Communication aids (AAC), improves communication competence of some persons with aphasia

9. Persons with aphasia remain at risk as defined by the Mental Capacity Act (2005)/ Incapacity Act and speech and language therapists are integral to assessing competence for consenting etc

Aphasia

1. What is Aphasia?

Aphasia is a term used to describe a language disorder that results from damage to those areas of the brain that are responsible for language. For the majority of people the left hemisphere of the brain is dominant, controlling most aspects of language processing. Any damage to this area from head injury, disease, infarction or a bleed affects language functions (verbal, written and gestural). Additionally, the right hemisphere of the brain is involved in certain aspects of language processing and damage to this hemisphere can also cause some loss of function. The location, depth and size of the incident determines the degree of impairment present. There can be a total or partial loss of the ability to use or understand language; (National Institute of Deafness and Other Communication Disorders, 2002). It can affect one or several modes of communication including different modes of comprehension and expression, including speech, sign language, writing, and sometimes drawing and gesture.

There are different types of aphasia, which result from the area of brain affected. Terminology relating to the classification of aphasia has caused much debate, and it is recognised that different aphasias are not easily categorised.

Aphasia may exist while other cognitive abilities remain intact, though it commonly co-exists with other disorders. It is a long term and life changing condition, with approximately half of those initially affected going on to have long term aphasia. Although it can occur in children, it is predominantly a disorder of older people (Steele R D et al, 2003.)

2. How many people have Aphasia?

A cerebral vascular accident (a bleed or infarction) is the most common cause of aphasia and this condition is more prevalent in those over 55 years with the incidence rising with age. In the under 75s, men have a higher incidence of stroke (The Stroke Association, 2008).

Estimates of incidence and prevalence of aphasia following stroke vary (MacKenzie, 1992, cited in Greener et al, 2008), and there are no official figures (RCSLT, 2006).

Table 1: Incidence and Prevalence of Stroke and Aphasia

Stroke	
Incidence	**Prevalence**
Approximately 150,000 people in the UK have a stroke every year. Around 1000 people under 30 have a stroke each year. (The Stroke Association, 2008)	47 per thousand population, aged 55 years and over. 15 per thousand population-all ages Different prevalence rates indicated within different countries and populations
Communication disability	
Incidence	**Prevalence**
One third of people left with a communication disability following stroke (Department of Health 2007)	
Aphasia	

Incidence	Prevalence
11400 people in Britain become aphasic every year following stroke (Enderby 1986, cited in Greener et al 2008). Aphasia present in a quarter of conscious patients who had a stroke within the previous 7 days (Wade 1986, cited in Greener et al 2008). 66 per 100000 population (Enderby P and Emerson J, 1995) One-third of stroke survivors are affected by aphasia (Backheit et al 2007, van der Gaag 2005).	At any time there are around 250,000 people in the UK who have aphasia and many of these people will be under retirement age. (The Stroke Association, 2008). 12 % of stroke survivors are still aphasic at 6 months (Wade 1986, cited in Greener et al, 2008). 50 per 100000 population at six months post stroke (Enderby & Emerson, 1995) Between 30-43% of those affected will remain severely affected in the long term (Bakheit et al, 2007).

3. What causes Aphasia?

Aphasia is caused by damage to an area of the brain responsible for language.

The damage may be caused by:

- Stroke
- Head injury
- Brain tumour
- Neurosurgery
- Brain infection e.g. Encephalitis
- Neurological diseases e.g. Progressive supranuclear palsy, multiple sclerosis
- Drug misuse
- Dementia (Primary Progressive Aphasia)

As a result of this damage, the pathways for language comprehension or production are disrupted or destroyed. For most people, this means damage to the left hemisphere of the brain but can also occur following damage to the right hemisphere of the brain.

Stroke is the most common cause of Aphasia, and risk of Stroke is associated with a positive family history, heart disease, lifestyle, presence of obesity, diabetes and high blood pressure and incidence is higher in the Asian, African and African–Caribbean communities. Lifestyle issues include high cholesterol, smoking, heavy drinking and a fatty diet (The Stroke Association, 2008).

Aphasia is most commonly a disorder of older adults, but can appear in children as a developmental disorder.

4. How does Aphasia affect individuals?

Aphasia

Aphasia affects both the individual and those around them. The person with aphasia, their family and friends, and the wider society, all need to adapt to facilitate communication.

Steele et al., (2003) describe Aphasia as having a "devastating impact on the lives of people who are – prior to onset – typically fully competent communicators" (p98).

Effect on abilities

A person with aphasia often finds that his/her ability to understand, speak, read or write is affected, yet their intellect remains intact. A person with aphasia may have problems in answering the telephone, watching television or listening to the radio. Everyday tasks can become impossible. This often leads to frustration, social isolation and a breakdown in close relationships (Speakability, 2006)).

Effect on roles and position

The practical impact of the disability can be severe, with two income families adapting to living on benefits, as often as well as the patient being unable to work, their partner must give up work in order to care for them (Parr, 2007). What can result are a loss of position within the family and other areas of life, which may result in a loss of self-worth. Relationships with family members can also be strained due to communication breakdown, leading to frustration and tension (Parr, 2007).

Effect on participation in society

People with aphasia may face barriers to full participation in society. Returning to previous employment may be difficult depending on the flexibility of the workplace, and studies suggest that there is not a strong relationship between severity of language impairment and return to work (Hinckley et al, 2002). Parr et al 1997 (cited in Hinckley, 2002) found that return to the same level of work as pre-onset was rare. Additionally, participation in many other social roles including household management and recreation has been widely found to be negatively affected by aphasia (Hinckley, 2002).

Psychological affects

The psychological affects of aphasia can be compared to the grieving process, as the individual may experience loss of their former self as well as a disconnection from those around them. This can be exacerbated by the affects of brain damage, which can predispose a patient to anxiety, depression, neglect and excessive emotion (Tanner, 2003).

Interviews with people affected by long term Aphasia by van der Gaag et al (2005), found that there were issues around loss of control, loss of independence, loss of desire to participate, and day-to-day frustrations. Simmons-Mackie and Damico (2007) suggest that people with Aphasia face exclusion from full participation in conversations, from obtaining information, and from making important life decisions.

Vulnerability

Aphasia can also create vulnerability within the individual, and risk of abuse, as the individual with Aphasia may not able to control their own environment or seek help. They may be unable to consent to treatment, in which case family members may have to act of their behalf. This may be particularly applicable if Aphasia is accompanied by other cognitive difficulties, in which case it is necessary to follow the guidelines set out in the Mental Capacity Act (2005).

"Aphasia has a significant negative impact on the patient's well-being, independence, social participation and quality of life and is often associated with severe depression" (Bakheit et al, 2007).

Table 2: International Classification of Functioning: Impact of Aphasia

ICF Dimension	**Impact**
Impairment	Area of brain damaged Auditory or reading comprehension Verbal or written expression Dyspraxia
Activity	Severity of communication problem Aspects of communication affected Ability to communicate thoughts and ideas Ability to communicate with others Ability to express and gain wants and needs Ability to learn
Participation	Participation in everyday activities Work/education Social life Reduced autonomy Diffident in control over life Limitations in decision making Limited social integration Limitations in educational activities Limitations in independence Risk of not having needs understood, or abuse
Wellbeing	Emotional distress Stresses on relationships Depression

The long term and wide reaching impact of Aphasia has implications for the role of Speech and Language Therapy. The patient with aphasia requires contact with a Speech and Language Therapist, not just in the initial stages of recovery, but for some it is appropriate as part of the long-term care package. Life changes for the patient may necessitate the communication needs to be considered and supported in a different ways. The Speech and Language Therapist may also be required to educate and work with other people in the life of the person with Aphasia, which again may mean that the input of the Speech and Language therapist can be needed many years after the initial onset of Aphasia.

The risks of non-treatment are that the individual with Aphasia is unable to participate in family life and society, leading to unemployment, family breakdown, and psychological challenges, all of which have an ultimate cost to health and social services.

5. What are the aims and objectives of Speech and Language Therapy for individuals with Aphasia?

When working with the person with aphasia, the SLT will often be working as part of a Stroke or multi disciplinary team.

Recent policy, most notably the National Clinical Guidelines for Stroke (Intercollegiate Stroke Working Party, 2004), and the National Stroke Strategy (Department of Health, 2007), has emphasised the need for a unified, multidisciplinary response to stroke, continuing from prevention, through acute care and rehabilitation, into community and long term care. As such the aims and objectives of Speech and Language Therapy must be seen within the wider aims of this strategy, and indeed will be to some extent dictated by these guidelines.

The remit of the Speech and Language Therapist goes beyond simply providing therapy for a specific communication problem, by the very nature of communication, which impacts on all areas of life. Therefore, SLTs must also take into consideration in a wider sense the findings of the National Clinical Guidelines, that patients and carers want timely access to good quality and appropriate services, and to be treated by staff who understand their needs, including their communication needs.

There is no universally accepted treatment which can be applied to every aphasic person (Greener et al 2008). This is due to the great variation of persons with aphasia, in terms of symptoms and severity of these, and in individual differences in lifestyle needs and preferences. A recent Cochrane review by Kelly et al (2008), emphasised the importance of functional approaches to therapy, stating that “The aim of rehabilitation in aphasia is primarily to maximise successful communication in day-to-day interactions” (p35).

In general, Aphasia therapy strives to improve an individual's ability to communicate through multiple strategies by aiming to:

- help the person to use remaining abilities.
- restore language abilities as much as possible by developing strategies.
- compensate for language problems.
- learn other methods of communicating.
- Coach others (family, health and social care staff) to learn effective communication skills to maximise the aphasic patient’s competence

About half of recovery from stroke occurs within the first month, but it can continue up to 6 months post stroke (Wade 1997, cited by Greener at al 2008) and beyond. Single and group case studies have demonstrated improvements in language recovery after many years post-stroke (Fillingham et al 2002, Mortley et al 2004, Hickin et al 2002). There is evidence for the potential of neuroplasticity in the brain, that is the ability of the brain to use other regions for functions where the original region has been damaged, and that early, intense treatment can enhance this (Bakheit et al, 2007).

Treatment can involve individual therapy that focuses on the specific needs of the person and/or group therapy which offers the opportunity to use new communication skills in a comfortable, more social context.

Aphasia is an experience which is “largely shaped by how other people react and behave within different settings” (Parr, 2007, p21). Family, friends and any services provided should all be considered within the therapy process.

Aphasia

Family involvement is often a crucial component of aphasia treatment so that family members can learn the best way to communicate with their loved one, and facilitate access to support networks. The therapy aims to help family members:

- understand aphasia
- understand the new ways their family member may be using to communicate
- learn how to adapt their own communication to enhance that of their partner
- learn how to support the person in treatment, for example, helping them become involved outside the home.

(NIDCD, 2008)

Table 3: International Classification of Functioning: SLT aims in Aphasia therapy

ICF	Aims
Impairment	Regain lost function, including understanding of language and ability to use expressive language.
Activity	Minimise communication disability by ensuring maximum use of current abilities. May include compensatory strategies and alternative means of communication.
Participation	Enable participation according to individual's circumstances and preferences. Develop social skills and confidence, promote independence and decision making. Reduce isolation and increasing social integration.
Well being	Maximise individual's sense of well being and quality of life. Develop coping strategies.

The aims and objectives of Speech and Language Therapy in the area of Aphasia, imply the need for ongoing and seamless availability of input, from the acute stage, to rehabilitation, and into the community.

The management process will differ for people who develop Aphasia e.g. through a progressive neurological disorder, or brain tumour. The above principles of timely and effective intervention still apply. However, rather than an acute stage followed by some recovery, we would expect a mild onset followed by a progressive worsening of the disorder. In this case, continual review and adapting therapy and communication aids to a changing ability will be key.

6. What is the management for individuals with Aphasia?

The Speech and Language Therapist will be working as part of multidisciplinary team, including people from health, social and voluntary organisations. They will also be including within the management process the individual's family members and others in their communication environment. There are time implications for the education and training that SLT's provide to other professionals and family members. Working as part of a multidisciplinary team necessitates taking on team roles, and attending meetings, which also have time implications.

The National Stroke Strategy (2007) emphasises inter-disciplinary input at the following key points, and Speech and Language Therapy should be viewed as a part of a team providing this:

- stroke specialised rehabilitation within the hospital
- transfer of care from hospital to community
- locally available resources to support long term needs of individuals and their carers
- review 6 weeks after leaving hospital, before 6 months has passed, and then annually
- opportunities to participate in community life and then return to work

The following is a detailed explanation of the role of the Speech and Language Therapist.

Assessment

Initial assessment will take place in the acute phase for stroke patients and patients with brain injury, and at the point where symptoms become apparent in patients with a progressive Aphasia. For all individuals, clarity about communication abilities will assist other disciplines involved in care, as will training in appropriate communication with the individual.
The Speech and Language Therapist will assess the individual's communication strengths and weaknesses, including the nature and extent of the aphasia to establish a baseline from which to measure change and timing for review. Formal assessments and informal approaches are used, e.g., observation and conversational sample (Steele et al, 2003). Assessment aims to identify the nature and extent of Aphasia, residual communicative skills, impact on individual and their family, individual psychosocial situation and general well-being.

Of particular importance in management of people with aphasia is for the assessment to take into account the psychosocial issues which may affect them, including emotional state and interpersonal relationships. Due to the challenges the person with aphasia may face in expressing their thoughts about such issues and because of the importance of significant others in the therapy process, it may be necessary to use specially designed assessment for this. One example of such an assessment is the Code and Muller Protocols (1995) which were developed to assess psychosocial issues specifically for people with aphasia. This includes 'aphasia friendly' visual aids to assist the person with aphasia to answer questions and is intended to gather information from them, their family and therapist.

Table 4: International Classification of Functioning: Assessment in Aphasia Management

ICF	Assessment
Impairment	Thorough assessment of the individual to identify which aspects of language are affected.
Activity	Assessment of individual's remaining abilities Assessment of their ability to communicate functionally Assessment of communication environment to understand potential for communication.
Participation	Identify aspects of life/role, which are impeded by communication deficit. Establish from individual and family the person's preferences and priorities, in order to establish short and long term goals for participation.
Wellbeing	Establish individual's mental and emotional state through formal and informal assessment. Establish their readiness to engage in therapy.

Intervention

The Clinical Guidelines for Stroke RCP (2008) state that "Patients should undergo as much therapy as appropriate to their needs as they are willing and able to tolerate", and "the team should promote the practise of skills gained in therapy into the patients daily routine in a consistent manner" (p24).
The assessment results inform the aims and objectives of intervention. These will have been negotiated with the individual and as appropriate with their family/carers. Both prognosis and social needs may differ for younger patients (National Clinical Guidelines for Stroke, 2004).
The management process has the person and others in their environment playing a central role in decision making about intervention, including therapy goals. Where appropriate referring the individual to other relevant sources of support (Royal College of Speech and Language Therapists, 2006).
The speech and language therapy intervention aims to target the areas of need. These may be addressed on an individual level, within a group, or working in partnership with carers and other professionals. No one approach is necessarily more important than another and there is professional consensus that some people benefit from a range of approaches.
Intervention will also involve working with others involved with the persons care to ensure they are aware of the communication difficulties and understand the best way to communicate with the patient. This may include anyone involved in the person's rehabilitation, or in some cases end of life care.

Table 5: International Classification of Functioning: Therapy in Aphasia management

ICF	Therapy
Impairment	• Targeting specific processes. • Maximising potential of brain plasticity. • Retraining functions to access language areas of brain. • Relearning lost vocabulary. • Neurolinguistic programming.
Activity	• Teaching the individual compensatory strategies such as topic fronting and environmental modifications. • Introducing alternative methods of communication where appropriate such as gesture, drawing and symbols, or computers and other technology. • Work with communication partners to maximise effectiveness, facilitate decision-making and promote opportunities for communication.
Participation	• Treatment and techniques to support the individual and their significant others to achieve short and long term goals, e.g. using Participation Therapy, or Total Communication. • Assisting with lifestyle and identity changes. • Facilitate access to employment, education, goods and services where appropriate, including signposting to local community and voluntary organisations.
Well being	• Providing full and appropriate information to individual and their family about aphasia. Providing support to patient and family during an adjustment period • Referring for counselling or other emotional support in necessary.

Long-term rehabilitation

The SLT should be involved in discharge planning and long-term rehabilitation. The National Clinical Guidelines for Stroke (RCP, 2008) state that, “any patient with reduced activity at 6 months or later after stroke should be assessed for a period of further targeted intervention. For Speech and Language Therapy, this implies regular reviews of people living with long term communication problems following stroke, and looking at further intervention which may at this stage focus on activity and well being, and involve voluntary and community groups. The availability of intervention in the long term is emphasised in the National Stroke Strategy (2007) which states, “for months or even years after a stroke, there may be a need for specialised, therapeutic help – for example to improve speech or mobility” (p2).

Augmented and Alternative Communication

Augmentative and Alternative Communication (AAC) refers to any system of communication that is used to supplement or replace speech, to help people with oral communication impairments to communicate. For individuals with aphasia this could range from ‘low tech’ aids such as drawing and writing, or communication books, to ‘high tech’ aids such as computerised voice output communication aids.
The objectives of introducing AAC to an adult with an acquired communication problem is to maximise their communicative function in the areas of life that are seen as a priority by the patient, and continually review the changing needs of the patient. It is necessary to:

- identify participation and communication needs
- assess capabilities in order to determine appropriate options
- assess external constraints
- find strategies for evaluating the success of interventions.

(Beukelman & Mirenda, 1998))

To ensure appropriate access to the range of resources available, individuals who may benefit from communication aids should have access to an AAC specialist or team, who are skilled in assessment, planning, intervention and review in this area.

Cultural diversity

Individuals who use English as their second language and have aphasia, along with their families, may need help to access services. An interpreter may be required to assist with conducting the SLT assessment to ensure it is both accurate and reliable and to facilitate understanding of therapy and implementation of treatment strategies. There are time and cost implications when working with interpreters/co-workers for example, in taking a case history, completing a full assessment in all languages spoken by the individual and their family. SLTs working with people with aphasia need to be aware of cultural and religious factors which may impact on ability to access services, e.g. timings of services need to be culturally sensitive, for example, not offering appointment times which coincide with religious observations (Communicating Quality 3, 2006).

Aphasia

Literature synthesis – Updated 2014

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October 2013

	Country	Study design	Subjects	Intervention
Abo, M. (2012)	Japan	Pilot study	24 patients with aphasia post-stroke	Low-frequncy rTMS and intensive speech therapy
Adrian, J. (2011)	Spain	Interventional study	15 chronic aphasia patients-range from mild to moderate anomia.	Computer-assisted Anomia Rehabilitation Program (CARP-2). 15 weeks of computer-assisted therapy for anomia.
Aftonomos, L. (1997)	USA	Interventional study	23 chronic aphasic patients-range of types and severity of aphasia	Computer-based therapy. Software with interactive icons semantically associated with nouns, verbs and adjectives
Aftonomos, L. (1999)	USA	Interventional study	60 chronic aphasic patients-range of types and severity of aphasia	Community-based treatment programme
Allen, L. (2012)	Worldwide	Systematic Narrative Review	21 studies of poststroke patients with chronic aphasia	Therapeutic interventions
Bakheit, A (2007)	UK	RCT	116 patients with acute aphasia following first-ever stroke	Intense therapy vs. standard therapy (Five 1 hour sessions per week vs. two 1 hour sessions per week, for 12 weeks)
Barthel, G (2008)	Germany	Clinical trial	12 patients with chronic aphasia-range of types and severity. [Subjects from Meinzer 2005 study used as comparisons]	Model-orientated aphasia therapy (MOAT): an intense mode of therapy delivered daily over a 2 week period. Therapy delivered on an individual basis with task difficulty increasing gradually.
Barwood, C. (2012)	Australia	RCT	12 people with chronic nonfluent aphasia	Low-frequency repetitive transcranial magnetic stimulation (rTMS) for 10 sessions of 20 minutes each day over 2 weeks. Control group received sham rTMS
Basso, A (2005)	Worldwide	Literature review	Studies looking at intensity and duration of treatment	Intensity and duration of treatment
Best, W. (2008)	UK	Interventional Study	8 people with aphasia and their conversation partners, range of types and severity of aphasia	Impairment-based therapy for anomia
Best, W. (2011)	UK	Interventional study (controlled study)	13 adults with aphasia	Impairment-based therapy for anomia
Blom Johansson, M. (2013)	Sweden	Multiple case study	3 people with moderate to severe aphasia following stroke and their	Family-oriented programme comprising support, information

			significant others.	and skills training, for example communication partner training. Sessions were for 45 minutes weekly for 6 weeks and led by an experienced Speech-language pathologist (SLP). Sessions 1, 2 and 6 were for the significant other and sessions 3, 4 and 5 were for the person with aphasia and their significant other.
Bowen, A. (2012a and 2012b)	UK	RCT	170 patients with dysarthria or aphasia. 153 were classified as having any aphasia with 93 having severe aphasia.	Enhanced communication therapy compared with social contact from employed visitors.
Brady, M. (2012) update of Kelly, H. (2010) and Greener, J. (1999)	Worldwide	Systematic review	59 RCTs	Formal speech language therapy Social support and stimulation
Carragher, M. (2012)	UK	Literature review	People with aphasia	Impairment-focused therapy
Caute, A. (2013)	UK	Interventional study	14 patients with severe aphasia.	Gesture and naming treatment vs. gesture and naming treatment with additional strategic therapy.
Cherney, L. R. (2008)	Worldwide	Systematic review	10 studies	Intensity of constraint-induced language therapy
Code, C. (2010)	UK	Interventional study	8 patients with chronic aphasia, range of severity, and their closest family member	Intensive 1-month treatment comprising individual and group session and group counselling sessions for family member.
Conklyn, D. (2012)	USA	Pilot RCT	30 acute stroke patients with non-fluent aphasia, range of severities	Modified melodic intonation therapy
Conroy, P. (2009)	UK	Case series	9 people with chronic aphasia, range of types and severity	Comparison of errorless and errorful therapy for verb and noun naming.
Croft, S. (2011)	UK	Case series	5 bilingual aphasic patients. Participants were bilingual in English and Bengali.	Patients received naming therapy in English and Bengali.
Cunningham, R (2003)	UK	4 case studies	4 aphasic patients and their 4 partners Severe expressive difficulty and moderate/severe comprehension difficulty	Supported conversation for adults with aphasia (SCA) with a friend or relative.
Elman, R (1999)	USA	Clinical trial	28 chronic aphasic patients – range of types and severity	Group communication treatment-therapy delivered to groups of 7 patients
Ferguson, N. F. (2012)	USA	Pilot study	4 people with aphasia following stroke	Comparison of intention and pantomime gesture treatment for noun retrieval
Fillingham, J. (2005)	UK	Case series	7 chronic aphasic patients- range of types and severity	Errorless learning (where errors are eliminated during therapy) vs. errorful therapy (where errors are not controlled during therapy)
Godecke, E. (2012)	Australia	Pilot RCT	59 patients with acute stroke causing moderate to severe aphasia.	Daily aphasia therapy compared with usual care.
Jong-Hagelstein, M de. (2011)	Netherlands	RCT	80 post-stroke patients with aphasia	Cognitive linguistic treatment (CLT) compared with

				communicative treatment.
Kagan, A (2001)	Canada	RCT	40 aphasic patients and 40 volunteer conversation partners, paired Moderately severe-severe aphasia	'Supported Conversation for adults with aphasia' (SCA). Volunteer conversation partners received training in how to acknowledge and reveal the competence in adults with aphasia.
Laska, AC (2011)	Sweden	RCT	123 post stroke aphasic patients randomised	Intensive language enhancement provided to intervention group. No intervention to control group.
Kelly, H. (2009)	UK	Interventional study	12 aphasia patients – range of severity	Daily one-to-one training sessions over 4 consecutive days.
Kendall, D. L. (2008)	USA	Pilot clinical trial	10 people with aphasia and anomia following stroke	Phoneme-based therapy for 1 hour 4 time a week for up to 12 weeks.
Kiran, S. (2010)	Canada and USA	Case series	4 people with bilingual aphasia, range of severitues	Semantic feature analysis treatment
Kohnert, K. (2009)	Worldwide	Literature Review	12 studies	Impact on cross-language generalisation of treatment for bilingual speakers with aphasia
Marshall, J. (2012)	UK	Interventional study	14 severe aphasia patients, post-stroke	Gesture and naming therapy
McKelvey, M. (2010)	USA	Experimental study	8 patients with severe aphasia resulting in limited or no conversation	Importance of using personally relevant and contextualised pictures to aid conversation
McVicker, S. (2009)	UK	Service evaluation	Trained volunteers and people with aphasia.	Provision of volunteer conversation partners to people with aphasia.
Meinzer, M (2005)	Germany	Interventional study	27 chronic aphasic patients-range of types and severity	Constraint-induced aphasia therapy (CIAT and CIATplus): Patients assigned to groups of 2/3 that took part in a communicative language game which consists of a set of pairs of cards with drawings on.
Meinzer, M (2007)	Germany	RCT	20 laypersons (Patients' relatives)	Layperson training to deliver CIAT.
Menke, R. (2009)	Germany	Interventional study	8 patients with chronic aphasia	Computer-assisted naming therapy.
Mortley, J (2004)	UK	Case series	7 aphasic patients with difficulties in retrieving words	Computer-based remote speech and language therapy (i.e. therapist in contact via phone and email)
Mumby, K. (2012)	UK	Cohort study	39 people post-stroke with aphasia	Participation in the Communication Hub for Aphasia in North Tyneside (CHANT).
Robey, R (1998)	Worldwide	Meta-analysis	55 studies investigating speech language therapy for aphasia	Investigating the effect of the amount of treatment, type of treatment, severity of aphasia, type of aphasia on outcomes for aphasic patients.

Snell, C. (2010)	UK	Meta-analysis and case series	Meta-analysis of 21 anomia treatment studies and case series of 13 individuals with aphasia who had varying degrees of anomia.	The impact on outcomes of the number of words used in anomia therapy.
Van de Sandt-Koenderman, M (2005)	UK/Portugal/ Netherlands	Interventional study	22 chronic aphasic pateints. Relatively good auditory comprehension, limited verbal expression.	Portable communication aid (PCAD) called TouchSpeak
Van de Sandt-Koenderman, M (2007)	Netherlands	Interventional study	34 chronic aphasic patients-severe aphasia	Portable communication aid (PCAD) called TouchSpeak
Wade, J (2003)	UK	Qualitative study	7 aphasic patients with difficulties in retrieving words	Computer-based remote speech and language therapy (i.e. therapist in contact via phone and email)
Webster, J. (2012)	Worldwide	Systematic review	26 studies of patients with aphasia	Therapy for spoken verb retrieval
Whurr (1992)	Worldwide	Meta-analysis	45 studies investigating speech language therapy for aphasia	Description of what constitutes 'typical' speech and language therapy for aphasic patients
Wilkinson, R. (2012)	Worldwide	Systematic review	People with aphasia and their significant others	Behavioural intervention aimed at improving communication between people with aphasia and their significant others.
Wisenburn, B. (2009)	Worldwide	Meta-analysis	People with aphasia	Word-finding treatments, therapies categorised as semantic, phonological or mixed.
Worrall, L (2000)	Australia	Interventional study	20 chronic aphasic patients-range of types and severity	Functional communication therapy programme, called Speaking Out, delivered by laypersons.
Worrall, L. 2010	Worldwide	Qualitative study	Use data from 3 projects with 50, 30 and 25 people with aphasia	Life-coaching approach.

Introduction

The review published on the RCSLT website in 2009 has been updated with the addition of 32 new papers included.

Study quality

The quality of the included studies was variable. The Cochrane systematic review (Brady 2012) was of excellent quality; Cochrane reviews are generally considered to be high quality examples of the systematic review methodology. The other systematic reviews (Cherney, 2008, Allen 2012, Wilkinson 2012, Webster, 2012 and Carragher, 2012) were of good to excellent quality. Allen (2012) only included RCTs in the review, however, the small number of RCTs meant that conclusions drawn were often only supported by a single RCT. Cherney (2008), Webster (2012) and Carragher (2012) included study designs other than RCTs making any conclusions based on the evidence somewhat weaker. There was a lack of detail about the methodological quality of the included studies in the review by Wilkinson.

The three meta-analyses (Robey,1998, Whurr, 1992 and Wisenburn, 2009) had a number of methodological problems. Whilst these studies provide a good overview of the effectiveness of speech language therapy for aphasia, their results should be interpreted with caution.

The literature reviews (Basso, 2005 and Kohnert, 2009) again provide some clarity in this complicated area but the results must be interpreted with caution since there has been no systematic method used in identifying and synthesising the research contributing to the literature review. The findings of the literature review are based on one person's interpretation and could be subject to bias.

The randomised controlled trials (RCTs) were generally of good quality. Common errors in the RCTs were failure to disclose methods of randomisation and small numbers of individuals taking part in the studies. This latter error indicates that caution must be applied if generalising study results to the entire population of aphasics.

The clinical trials were of fair quality. The results from these studies need to be interpreted with caution due to the limitations of all clinical trials i.e. lack of randomisation introducing bias. The pilot studies were well-conducted methodologically but used small samples meaning that the results cannot be generalised to the larger aphasia population.

Whilst results from interventional studies and case studies have been included in this synopsis it is important to note these provide weaker evidence of effectiveness of treatment. Generally, small numbers of individuals took part in the studies, and often those who did take part were motivated individuals willing to take part.

Lastly, it is worth noting that the findings from the non-UK papers need to be interpreted cautiously due to generalisability of findings to the UK population.

Details of studies

All studies were published in English, with the earliest being published in 1992. Eighteen studies were conducted in the UK, seven in the USA, four in Germany, three in Australia, two in Canada, two in the Netherlands and one in Japan, one in Spain and one in Sweden. One study was conducted in three countries which were UK, Portugal and the Netherlands. Ten studies synthesised results from studies worldwide; three meta-analyses, five systematic reviews and two literature reviews. The number of individuals who took part in the studies ranged from 3 to 170. The studies covered a range of interventions and associated factors including laypersons involvement in therapy, augmentative and alternative communication, intensity of speech language therapy, computer-based therapy, delivery or format of therapy and treatment for bilingual aphasia.

Synthesising pre-existing studies

A number of studies attempted to draw together the conclusions of the studies investigating therapy for aphasic individuals. Three meta-analyses, five systematic reviews and three literature reviews aimed to confirm that speech and language therapy does work for aphasic patients. Furthermore, the studies synthesised research to identify which qualities of therapy (e.g. intensity, duration) make for successful treatment. It is essential to draw attention to the variable quality of the following studies discussed fully in "**Study Quality"**.

Greener, et al (1999) undertook a Cochrane systematic review that addressed a number of questions relating to the treatment of aphasia using speech and language therapy. This included whether therapy was better than no treatment at all, whether delivery of therapy by laypersons affected the outcomes and what types of aphasia therapy worked best. The review focused on identifying randomised controlled trials, which are generally considered to be the gold standard study design when assessing effectiveness of treatment. Twelve trials were ultimately included in the review, with the number of participants ranging from 12-191. The average age of participants was 65-75 and the delivery of intervention ranged from immediately after stroke to 17 years post stroke. Overall, speech language therapy could not be shown to be clearly effective or clearly ineffective within a randomised controlled study design. Studies identified were old and mostly with a poor methodology or lacked detail in their reporting.

In 2009, Kelly, H et al undertook an update of this review, published in 2010. The authors identified an additional 20 studies published January 1999-June 2008 and synthesised the findings from these studies with 12 trials included in the original review. All studies were randomised controlled trials and included a total of 2014 participants. Findings were similar to those reported in the Greener et al Cochrane review (1999). There is no evidence that speech and language therapy (SLT) post-stroke for aphasia is clearly effective or ineffective. Therefore, there is no evidence that the provision of SLT post-stroke for aphasia should change. There are some problems in synthesising evidence from randomised controlled trials in this field. Whilst it is essential SLT for aphasia is individually tailored according to the patient's specific needs, this makes synthesising individual studies difficult; i.e. it is hard to compare interventions that differ significantly between each other. The authors make the important point that several guidelines (RCP 2008, SIGN 2002) support the provision of SLT for patients who have aphasia as a result of stroke, based on non-RCT evidence. The authors also report that there may be some evidence to suggest that high intensity interventions produce better outcomes for patients. However, it seems patients struggle to complete intensive courses of therapy which is an important clinical implication to take into account. It is clear that there is much work needed in this area to devise robust and sufficiently populated studies to explore components of treatment programmes that may affect outcomes.

A further update of the review was completed in 2011 (Brady, M.), published in 2012. Searches were conducted for studies up to July 2011. The update included an additional 9 trials making 39 included RCTs with a total of 2518 participants and findings were similar. The review concluded that there is some evidence that speech and language therapy is effective for people with aphasia following stroke in terms of improved functional communication, receptive and expressive language. However, there were not significant differences on all measures, sample sizes in studies continue to be small and there is some indication that highly significant findings from one or two studies impacted upon the meta-

analysis. The potential benefit of intensive over conventional speech and language therapy was confounded by a significantly higher drop-out rate from the intensive than the conventional total of 2518 participants. Social support interventions also had higher rates of withdrawal than speech and language therapy interventions.

The Greener review(1999) made different comparisons and there was little data for meta analyses in that review. The Brady and Kelly reviews restructured the comparisons and were able to include considerably more trials and data for inclusion in the meta-analyses. Whilst Kelly was unable to provide clear evidence of effectiveness of SLT the Brady review demonstrated the effectiveness of SLT versus no therapy on a number of outcome measures.

A good systematic review (Cherney, L.R. 2008) synthesised the evidence on the effects of constraint-induced language therapy (CILT) and the intensity of treatment for individuals with aphasia caused by a stroke. The review included 10 studies, 5 on treatment intensity, 4 on CILT and 1 investigating both. The included studies provided modest evidence for CILT and for more intensive treatments in patients suffering from chronic aphasia. However the dearth of studies in this area and the methodological weaknesses in the studies mean that the findings should be treated as preliminary. Additionally, comparison of studies was difficult due to the variety of primary and secondary outcomes investigated. The review highlights the need for more rigorous clinical trials in this area.

Allen, L. et al (2012) produced a very good narrative review on therapeutic interventions for aphasia. Studies in the review were RCTs of people with aphasia following a stroke that had occurred more than six months before the start of the intervention. Twenty-one RCTs were included in the review providing good evidence that computer-based therapy, constraint-induced treatments, group language therapies, intensity of therapy and training conversation partners are effective therapies for people with chronic aphasia. Additionally, rTMS, tDCS and the use of drugs piracetam, donepezil, memantime and galantamine were also shown to be effective in this population. However, the evidence for each treatment is based on 1 or a small number of RCTs, judged as good or fair, making any conclusions weak. Variability between studies, particularly mean time after stroke and mean age of study participants, made making comparisons between different treatments difficult. The review concludes that further research needs to be conducted on treatments for chronic post stroke patients with aphasia.

Robey, R (1998) and Whurr (1992) undertook meta-analyses that incorporate study designs other than randomised controlled trials. Both have methodological flaws, mostly due to very poor reporting methods. Both fail to describe how studies were selected for inclusion in the meta-analyses, for example if a predefined set of criteria were used. Whurr (1992) does not describe how studies were identified.

Whurr (1992) presents a detailed description of the characteristics of the 45 studies included in the meta-analysis. The most common setting for treatment was a hospital or clinic. Expressive aphasia was the most common condition. Most treatment in the studies commenced less than 6 months post-stroke, i.e. in the acute phase of aphasia but a number of studies did look at the chronic phase of recovery. In terms of details about the intervention/treatment programme, again details were limited. Length of treatment, on

average, was 28 weeks. Of those who did specify the number of treatment sessions (only 35% studies), the average was 63. Treatment was most often delivered on an individual basis and an overwhelming majority of the studies provide therapy of the language stimulation type. In terms of the person providing the treatment, 84% did not specify this criterion.

Robey (1998) looked at how the therapy amount and type and severity and type of aphasia affects the outcomes for aphasic patients. Fifty-five studies were included in the meta-analysis, of variable study design. On average, treatment for aphasic patients was shown to be effective. When treatment is begun in the acute phase of recovery, the effect size is 1.83 time greater for treated than untreated individuals, demonstrating therapy needs to begin as early as possible post-stroke. When treatment is begun in the post-acute and chronic stages of aphasia, although the difference in effect size is smaller in treated and untreated individuals, it still remains. The more intense the treatment, the greater the change and therapy is best provided on a 2-hour plus per week schedule. In terms of severity of aphasia, treatment for severely aphasic individuals results in significant effects. Most studies tended to look at moderate or severe aphasia or a mixed population. In terms of the type of aphasia, there were no real outcomes to report. However, studies tended to include populations of different types of aphasia. Similarly, there were no outcomes to report about the effectiveness of different types of treatment, with most studies not specifying a type of treatment.

Basso, A (2005) undertook a literature review to examine the effects of intensity and duration of aphasia treatment and the findings from this review support those in the meta-analysis by Robey, R (1998). Studies that did not find a significant difference between treated and untreated individuals had fewer sessions, fewer hours of therapy per week and were of shorter duration.

Wisenburn (2009) performed a meta-analysis on the results from studies of word-finding therapy for people with aphasia. The 47 included studies investigated at least 2 people with aphasia and were generally investigating a small sample. The review did not exclude studies of poor methodological quality. The number of included studies was reduced to 44 after outliers were excluded. 17 of the included studies investigated semantic therapy, 15 phonological therapy , 16 mixed therapy and 4 of the studies evaluated more than one type of therapy. The meta-analysis demonstrated that based on the included studies word-finding treatments are efficacious. The study is unable to conclude whether semantic, phonological or mixed treatments are most effective although semantic therapy appeared to generalise to more untreated words. Additionally, the analysis found that gains for participants with acute aphasia were less than for participants who had had aphasia for more than 1 year. Information about the most useful treatments for different types and severities is still sparse.

Wilkinson and Wielaert (2012) reviewed the literature on behavioural interventions to improve conversation between people with aphasia and their significant others. All of the studies were case series and key assessments of conversations were audio or video recording of one or more conversation between the dyad. The behavioural interventions were personalised for each person with aphasia. The results of each of the included studies indicated that changes can occur in the conversations of people with aphasia. The review concluded that further research in this area could beneficially move beyond single case

studies and incorporate stronger evidence of change and additionally investigate whether changes are maintained.

Webster and Whitworth (2012) reviewed the evidence on therapy for verb retrieval in people with aphasia. The impact of the therapy on treated and untreated verbs was considered along with any impact on sentence production and connected speech. The review found that verb therapy was effective in improving participants retrieval of verbs but there was limited impact on retrieval of untreated verbs. The review found that further research is required to enable comparisons between therapies to determine the most appropriate approach.

Kohner (2009) reviewed the literature on whether bilingual speakers with aphasia experienced cross-language generalisation following treatment. The review discussed 12 studies of varying treatment and time post onset of aphasia. Six of these studies did not consider the possibility of spontaneous recovery and were therefore omitted from the final analysis. The remaining studies found mixed results with 4 finding cross-language generalisation under certain conditions and 2 finding only benefits to treated language. Included studies were case reports or single-subject studies which are poor quality evidence. Additionally, some of the studies were old. The review did conclude that treating only 1 language appeared not to harm the other language(s) relevant for speech and language therapist speaking only 1 language.

A review synthesised the evidence on impairment-based therapies for people with aphasia(Carragher, 2012). The main outcome was changes in the person with aphasia's conversations with a specific conversation partner. The review found 5 studies investigating the impact of verb or noun retrieval on conversation demonstrating the infancy of the research area. All of the included studies were small and had methodological limitations. In addition to the small number of study participants only a few samples of conversation were analysed in the studies. Many of the studies did not investigate the statistical significance of changes in conversation following therapy. The evidence suggests that impairment therapy can potentially have an effect on the conversations of people with aphasia but that generalisation to conversation is not conclusively proven. The review found that more research in this area is needed and in particular the reliability and validity of the measures used for conversational analysis.

Despite the methodological flaws of a number of these studies, they provide a good summary of a complicated area and show some clear indications that treatment for aphasia does work and works better if more intensive and of longer duration. Additionally, they demonstrate the need for further research in aphasia of a high methodological standard.

Laypersons Involvement in Therapy

Several studies investigated the value of laypersons' involvement in speech and language therapy for aphasic individuals. Sometimes this was in supportive role whereas other studies investigated the role of laypersons delivering therapy themselves. A layperson could be an aphasic patient's partner, a friend or a trained volunteer.

Aphasia

A recent good RCT (Bowen, A. 2012 a and b) investigated the effectiveness of enhanced communication therapy provided by speech and language therapists compared with social contact for aphasic and dysarthric patients in the first four months post stroke. The communication therapy was tailored for each patient and was agreed best practice although better resourced than actual practice at most sites. The therapists created a manual comprising best practice guidelines and useful resources to help with treatment fidelity. Patients received up to 3 sessions weekly for 16 weeks. The social contact group met the employed visitors for a similar frequency and amount as the intervention. The study found an overall improvement of 0.8 on the activity level of the Therapy Outcome Measure. A similar degree of improvement was found in both groups demonstrating that patients who received speech and language therapy intervention improved their communication at the same level as patients receiving social contact from non-professionals. The results did not differ when subgroup analysis was undertaken by diagnosis i.e. any aphasia or dysarthria. The study concludes that a reorganisation of early communication therapy could be beneficially investigated in a further trial and that speech and language therapists have an important role in diagnosing speech and language impairments.

Kagan, A et al (2001) investigated the efficacy of an intervention called 'Supported Conversation for adults with aphasia' (SCA). They looked at both how feasible it was to train volunteers as conversation partners for aphasic patients and the effect of having trained volunteers to converse with on those with aphasia. Forty patients with moderately severe or severe aphasia were paired up with 40 volunteer conversation partners. The volunteer conversation partners were randomly assigned to two groups- a comparison group and a training group. Those in the training group took part in a one day workshop in which they received formal training on how to acknowledge and reveal the competence of aphasic patients. The workshop included a conceptual/motivational module, technical module and role-play. The volunteers also took part in 1.5 hours hands on session working with a group of adults with aphasia. Those in the comparison group were merely exposed to aphasics and received no training. The volunteers were videoed whilst carrying out a semi-structured interview with an aphasic conversation partner pre and post the SCA intervention. Volunteers who had received SCA intervention scored much higher in the post-SCA interview than the first in terms of acknowledging and revealing competence in their aphasic conversation partners. Volunteers in comparison group did not improve at all. In addition, the aphasic patients partnered with the volunteers who had received the SCA intervention were involved in more conversation, interaction and transaction than those in the comparison group.

Cunningham, R et al (2003) conducted a small study using the SCA intervention, where a partner or friend acted as the conversation partner. Four aphasic patients and their partner/friend were videoed having a conversation for 15 minutes. The pairs then received 5 weekly 1.5 hours sessions that included discussion of expectations, problems and knowledge of aphasia; explanation of conversation structure; examination of the pre-SCA video recording looking at sections demonstrating successful and unsuccessful patterns of conversation and finally role play sessions. A further 15 minute video recording of the aphasics and partners conversing demonstrated that three of the four pairs improved in conversation and use of gestures. Whilst this study was very small and results did not reach statistical significance, it indicates that SCA delivered to couples can be beneficial.

McVicker, S. (2009) evaluated the first 3 years of a scheme training volunteers to be conversation partners for people with long-standing aphasia following a stroke. Volunteers undertook training for 6 hours introducing then to different conversation techniques and then support sessions with other volunteers every 6 weeks. People with aphasia were referred to the scheme by speech and language therapists or other health professionals and were matched with a volunteer. The study participants had long-standing aphasia following a stroke and no further therapy would be available to them. Volunteers met their partner, in their own home or at a mutually agreed location, regularly for 6 months. The project was evaluated from the perspective of the person with aphasia, their conversation partner and the referring therapist with outcomes from all perspectives positive albeit varied. People with aphasia increased their communication skills and confidence, volunteers developed their communication and life skills and therapists had another beneficial service to offer their patients with long-standing aphasia. The scheme provided them with a person to interact with and was low-cost due to the use of volunteers. The scheme demonstrates that volunteers can be trained to successfully converse with people with aphasia and help develop their conversation skills and confidence after formal therapy has ended.

Blom Johansson, M. (2013) investigated a family-oriented programme in Sweden consisting of support, information and skills training including communication partner training (CPT) in ‘early rehabilitation’. Three patients with moderate to severe aphasia and their significant others were provide with 6 sessions of tailored therapy. All sessions were delivered by an experienced speech-language pathologist (SLP). Three of the sessions were just for the significant other and 3 for the dyad. Significant others perceived increased knowledge and understanding of aphasia and felt that the emotional support and information were important. Video recordings demonstrated improvement of communication skills after the intervention. The results provide further support for the need for family-oriented SLP programmes that are individualised and flexible. Results also provide support for providing services soon after stoke and with repeated contact. The study indicates that early CPT could be useful but a study with a larger sample and more robust methodology is required to prove the value of CPT soon after stroke.

Meinzer, M (2005, 2007) undertook some research into a particular type of therapy called Constraint Induced Aphasia Therapy (CIAT). These studies demonstrated that both partner involvements in therapy in a version of CIAT called CIATplus and delivery of CIAT/CIATplus by laypersons are successful in improving outcomes for aphasia patients. These studies are discussed in more detail in the section titled **“Intensity of aphasia therapy.”**

The studies reviewed above indicate that volunteers or family member’s can be trained to conversation partners and that this training is advantageous to the person with aphasia.

Intensity of aphasia therapy

Several studies investigated the value of high intensity speech language therapy for aphasia.

Meinzer, M (2005) investigated the efficacy of short-term, intensive language training called constraint-induced aphasia therapy (CIAT). The principles of this therapy are to undertake an intense programme of 30 hours training within two weeks. CIAT consists of

communicative language games of increasing level of difficulty undertaken in groups of 2/3 aphasic patients. The games consisted of pairs of cards with object drawings on. Players are encouraged to ask for matching cards using verbal expressions and phrases. Nonverbal communication strategies are constrained. Twenty-seven patients with chronic aphasia (15 moderate, 10 mild and 2 severe) were divided into groups of 2/3 and assigned to a CIAT group or a CIATplus group. CIATplus included extra sets of cards in the communicative language game not included in the standard CIAT and additional exercises were set to practice with a family member. Patient's relatives were asked to encourage verbal communication as much as possible. There was significant improvement for both groups after training on language function tests,, which remained stable after a 6 month period. The quality and quantity of everyday communication was rated as improved by patients and relatives after therapy. In the follow-up, this was more pronounced for the CIATplus group. Improvements were seen equally for all patients, irrespective of age, severity and duration of aphasia, demonstrating a wide range of patients can respond to CIAT.

Meinzer (2007) further investigated the CIAT programme to examine if laypersons could be trained to apply the programme for chronic aphasics. 10 laypersons (patients' relatives) received a 2 hour introduction into the principles of CIAT which included: materials and procedures, approaches to constraining communication to verbal expressions and how to adjust individual task difficulty. A sample of 20 mild/moderate/severe aphasics took part in the study with symptom duration of greater than 6 months. All aphasics received the CIAT programme for 3 hours per day on 10 consecutive days in groups of 2/3. Ten aphasics, received all sessions from an experienced therapist. The other group of aphasics received sessions led by the trained layperson. During the first two sessions, laypersons were supervised by an experienced therapist. For the remaining 8 sessions, the trained layperson led the session with an expert therapist on hand nearby in case of major problems. Post-training, aphasia severity was reduced in both treatment groups according to language functions tests. There was no difference between the two groups, indicating CIAT therapy was successful in reducing aphasia whether delivered by an expert therapist or trained layperson. It is important to note that experienced therapists were on hand to help (although not utilised in this particular study) and that the laypersons were patients' relatives who were chosen because of their motivation and availability.

Bakheit, A (2007) undertook a prospective randomised controlled trial over a 5 year period to determine if more intense treatment has a significant effect on recovery from post stroke aphasia. One hundred and sixteen patients, who had just suffered their first stroke, were randomised to two groups. Forty-six received standard treatment which consisted of two therapy sessions of 1 hour per week for 12 weeks post-stroke. Fifty-one patients received intensive treatment of five 1 hour sessions per week for 12 weeks post stroke. The Western Aphasia Battery was administered at 4, 8, 12 and 24 weeks following treatment. Whilst both groups significantly improved, there were no differences between the two groups. However, the study findings suggest patients may not be able to cope with such intense treatment immediately post-stroke. Two patients withdrew from the standard treatment group compared with 9 in the intense treatment group. Additionally, only 13 of the 51 patients in the intense therapy group received 80% (i.e. 4 sessions per week for 12 weeks) of the prescribed therapy.

Basso, A (2005) reports the findings of a small case study on 3 pairs of patients matched in severity of aphasia. One from each pair acted received 'standard' treatment of 1 hour daily

sessions for 6-20 months. The other patient in the matched pair received long and intensive therapy which consisted of 3-4 hours per day, 7 days per week over a period of 14-40 months. Patients receiving long and intensive therapy improved more in daily use of language than those receiving standard therapy.

Laska (2011) reports a prospective, open, randomized, controlled trial which was carried out with blinded endpoint evaluation of SLT. The intervention started within 2 days of stroke onset and lasted for 21 days. 123 consecutive patients with acute, first-ever ischemic stroke and aphasia were randomized to receive intensive SLT or none. The SLT treatment was Language Enrichment Therapy. This intervention had no effect on the degree of aphasia in unselected acute aphasic stroke patients. However, SLT resulted in a significant improvement as compared to controls in patients with more fluency and a higher educational level.

Godecke (2012) investigated the efficacy of a very early aphasia therapy for patients following a stroke. Patients that had an acute stroke which caused moderate to severe aphasia were recruited to the study 0-10 days after the stroke, median: 3 days. Patients were randomised to the daily aphasia therapy or usual care therapy. The daily therapy was tailored to each participant and was provided for the hospital stay or period of the intervention (up to 4 weeks post stroke), median: 19 days, range: 5-76. Therapy sessions lasted for approximately 45 minutes with participants having about 2.5 hours therapy per week. The intervention used a combination of lexical-semantic therapy, mapping therapy and semantic feature analysis meaning that therapist could tailor the therapy to individual patients. At 4 weeks post stroke the daily therapy group scored more points on the aphasia quotient and on the functional communication profile compared to the usual care group. This study indicates that daily aphasia therapy very soon after a stroke can improve communication outcomes of people with moderate to severe aphasia. The study also demonstrated the feasibility of 2.5 hours aphasia therapy per week starting within the first week after the stroke. This pilot RCT followed rigorous methodology but the strength of any conclusions are limited by the small sample size. Additionally, the study also suffered from slow recruitment rate. Furthermore, the mix of therapies used in the intervention made it impossible to draw conclusion about the effects of the different individual therapies.

Jong-Hagelstein, et al (2011) investigated the efficacy of an early treatment for patients with aphasia following stroke. Patients started the study within 3 weeks of their stroke and received either cognitive-linguistic treatment (CLT) or communicative treatment. Treatment was tailored to the individual patient by speech and language therapists. All patients had treatment for at least 2 hours per week for 6 months and were assessed at the start of the treatment and then at 3 and 6 months. The primary outcome was the Amsterdam-Nijmegen Everyday Language Tests (ANELTA-A) and secondary outcomes were semantic and phonological tests. At 3 and 6 months the mean scores on the language test showed no differences. Significant differences in favour of CLT were found in the mean scores of 2 of the 6 specific semantic and phonological tests. The findings from this study indicate that patients with aphasia following stroke do not benefit more from CLT that communicative treatment. A limitation of this study was the lack of a control group without language treatment to compare patient's natural recovery.

Menke (2009) investigated the impact on brain activity of computer-assisted naming therapy for anomia on short and long-term improvement in a naming task. The study participants had

chronic aphasia following a stroke with word finding difficulties ranging from middle to severe. Training comprised 50 names of items, tailored for each patient. The computer-assisted naming therapy was daily for 3 hours over two weeks. Sessions were supervised by a speech and language therapist. The naming task was assessed during the patients fMRI session. The study found that the performance of all patients in the naming task improved during the training with improvement remaining stable when assessed at 8 months after the therapy. Initial learning was found to require different brain regions to the long-term consolidation indicating a dynamic process that involves both hemispheres. This study demonstrated that intensive speech and language therapy had a direct effect on cortical activity.

Code (2010) investigated the impact, on scores on validated measures of aphasia and communication, of an intense one-month therapy for patients with chronic aphasia. The therapy comprised individual and group therapy from trained speech and language therapists. Group counselling was also provided for the family members. Overall, participants demonstrated significant improvement in overall language performance after the therapy with the improvement generally maintained at the 1 month follow-up. Individual participants responses to the treatment varied. Generally, people with less severe aphasia improved more than people with more severe aphasia with some exceptions. The study concluded that the results indicate that 1 month of intensive therapy can improve outcomes for people with chronic aphasia. It remains unclear whether the severity of aphasia impacts on the outcomes of therapy.

Abo and colleagues (2012) investigated the effectiveness of low-frequency transcranial magnetic stimulation- rTMS combined with intensive speech therapy in patients with aphasia following a stroke. Patients received 10 treatments of rTMS and intensive speech therapy. The rTMS lasted for 40 minutes. Patients received the speech therapy from a speech therapist for 60 minutes with the treatment tailored to the severity of each patient's aphasia. The study found that patients' with non-fluent aphasia improved significantly in their auditory and reading comprehension and repetition. Patients' with fluent aphasia only had significant improvement in their spontaneous speech. No adverse side effects were recorded during the study. The pilot study demonstrated promising results of a feasible and safe treatment that requires further investigation in a larger randomised controlled trial to determine more conclusively the effects of the treatment. Additionally, it was impossible to determine the relative effects of the rTMS and intensive speech therapy individually only the combined effects of the intervention.

Kendall (2008) examined whether phoneme-based therapy improving naming ability in people with anomia. Patients received up to 96 hours of therapy, 1 hour four times a week for up to 12 weeks. Naming ability improved and was maintained for 8 patients at follow-up. This small study provides tentative evidence for potential of phoneme-based therapy and ideas for adapting treatment to improve effectiveness.

The studies demonstrate that intensive therapy can be effective. There is a lack of conclusive evidence though about the most effective type and degree of intensity or duration of therapy.

Long-term management

Many persons live with the challenges of being aphasic for a long time. The long-term management, encouragement of self-management and continued support of persons with aphasia is an important area that warrants further investigation. The delivery of speech language therapy by computer was examined by a number of studies. In one case, this was in the setting of a hospital or clinic, with time outside sessions to practice on the computer. However, two studies investigated the use of delivery therapy remotely via a computer and internet connection under the direct supervision of a speech language therapist.

Aftonomos, L (1997) looked at the use of a computer-based system at two clinics. Twenty-three patients with a wide range of deficits and aphasia types received therapy via the Lingraphica System (LG), a laptop computer platform with software that displays interactive icons that are semantically associated with over 2000 nouns, verbs, adjectives etc. All patients received 1 hour sessions with a therapist using Lingraphica. The duration of therapy was variable, ranging between 2-38.3 weeks (mean=16.2) with an average of 2 sessions per week. In between sessions, all but one patient had access to the computer-based therapy at home. Pre and post treatment tests demonstrated improvements on a number of language function outcomes. Usage data demonstrated patients used the system fairly intensively outside of the formal sessions with a mean daily usage of 2.04 hours/day (range was 0.14-6.47).

Mortley, J (2004) evaluated speech language therapy delivered remotely to 7 chronic aphasic patients who had difficulties in word retrieval. After receiving a home visit to plan initial therapy and load software/loan computer equipment with the first set of therapy exercises, all treatment was carried out remotely. Patients completed exercises and sent these to the therapist via the Internet, who set further exercises for completion. The therapist phoned each patient after looking at the completed exercises to discuss the patients' progress. This cycle continued for 3 months, after which time a face-to-face assessment was completed, followed by 3 further months of therapy. The average usage of the computer system was 2 hours 45 minutes per week; which is comparable to the RCSLT recommendation for patients with aphasia. In addition, the patients' ability to retrieve object and action names significantly improved and although patients were given the opportunity to request face-to-face time with the therapist if they wanted to, no one did. In terms of acceptability, the patients found this remote delivery of therapy a very positive experience. Wade, J (2003) et al interviewed 6 of the 7 patients who took part in the Mortley (2004) study to examine their experience of delivery of therapy in more detail. The patients' experience of remote-based therapy seemed entirely positive. Partners valued the fact that the software could be used without them being present. Partner involvement during use of the computer varied with one partner being present all the time, one not at all and 4 in between. Despite the lack of face-to-face contact, all participants perceived the role of the therapist as crucial. This was especially valued when exercises were difficult. Participants listed a number of effects of therapy including increased ability on therapy tasks, positive effects on conversation and phone/computer skills. In addition, self-esteem and confidence improved and participants felt "more a sense of themselves". Participants expressed anxiety about cessation of therapy, with two believing they needed constant practice to stop deterioration. One feature of remote treatment valued above all else was the participants' control over timing and duration of practice.

A small Spanish study (Adrian, 2011) evaluated whether Computer Assisted Anomia Rehabilitation Programme (CARP-2) was active for 15 participants with aphasia. Patients attended 15 weeks of computer-assisted therapy facilitated by a speech and language therapist. All of the study participants (mild to moderate anomia) demonstrated improvement in their naming skills. This study indicates that CARP-2 is active for treating anomia in patients with aphasia. Further larger studies will be needed to demonstrate the efficacy of CARP-2.

This therapy saved a lot of therapist time, 2 hours therapist time per month was provided in the intervention as compared with around 12 hours for others. However, it is important to remember this computer based therapy was tailor-made for each patient and there was still regular contact with the therapist. In addition, all 7 patients were motivated to take part in the study and over half had previous experience with computers. Nevertheless, it demonstrates that this type of therapy can be both accepted positively by patients and lead to significant language gains

Mumby and Whitworth (2012) evaluated the experiences of a cohort of post-stroke people with aphasia participating in Communication Hub for Aphasia in Tyneside (CHANT). The study lasted for 12 months and 20 of the 39 participants completed all outcome measures when the study ended. CHANT was led by a speech and language therapist (SLT) and a communication support coordinator. CHANT was developed with the involvement of people with aphasia and they continued to be involved in a planning group. CHANT was developed to support people with aphasia and their caregivers. Support was provided through a structured programme of real-life goal setting individually or in groups, provision of information and help to access other services. The evaluation utilised quantitative and qualitative methods to consider the experiences and outcomes for the participants. Significant gains were in quality of life particularly in relation to communication and psychosocial adjustment to stroke. Real-life goals were set for each participant during the intervention and 82% were fully or partially achieved. The findings from this study could be beneficially explored in a larger study.

Best (2008) investigated impairment-based therapy for anomia in 8 people with aphasia. This novel study considered the impact of the therapy on participant's, at least one year post stroke, rating of their activity instead of the standard impairment-based and functional measures of outcome. After 2 baseline assessment participants received two phases of therapy, each phase lasted for 8 weeks. Spoken and written cues to help with word finding were utilised in the first phase and the later phase encouraged participants to use targeted words in connected speech and conversation with their conversation partner. Participants were also assessed 8 weeks after the end of the second therapy phase. The activity ratings of the participants' improved significantly along with their word finding in picture naming. Additionally, the 8 participants all rated their participants in activities needing conversation as higher at the end than start of the intervention. The findings from this small study suggest that impairment-based therapy for aphasia can increase participation in activities for people with aphasia.

Best (2011) investigated changes in conversation for patients with aphasia following therapy in anomia. The therapy consisted of cueing to improve retrieval of nouns. Retrieval of nouns was then assessed in picture naming and in conversation between the patient and a regular

conversational partner. The patients as a group significantly improved their scores on the picture naming task after the therapy compared to baseline assessment. The study concluded that although further research would be required to assess the effectiveness of the therapy the findings are promising. However, results from the conversation analysis was variable. There were no significant changes in the conversational variables assessed following the therapy for the group although some individuals did experience changes. Improvements were around changes in noun retrieval in conversation and the number of nouns produced in the 5 minutes of conversation analysed. These promising findings suggest that the improvement in picture naming following therapy can possibly lead to changes in retrieval of noun in conversation.

Snell (2010) examined the optimum number of words provided in naming therapy for people with aphasia. Additionally, the study attempted to discover if severity of aphasia should determine the size of the set of words to be learnt. Initially, a meta-analysis of 21 studies was conducted. There was large variation, 5 to 120 words, in the number of treated words in the 21 studies with very different learning outcomes not linked to number of treated items. Additionally, in the current literature more items were given to patients with severe aphasia, this did not reflect clinical practice. The results of the meta-analysis were unable to conclusively answer the two study questions resulting in a cross-over case-series study to address them. Thirteen people with anomia were investigated in the study and therapy with a small set of words (20) was compared with therapy with a larger set of words (60). All study participants received both therapies in a randomly determined order. Participant's scores improved on standards naming tests immediately and 5 weeks after the therapy for both sets. Twelve of the 13 participants learned a greater number of words when treated with the larger set. Anomia severity did not correlate with set size although it did with learning performance. Findings from this study indicate that larger therapy sets could potentially be used in therapy for people with aphasia. However, current therapy generally uses less words and the time taken to develop the sets and train them would need to be considered in determining feasibility.

Alternative and augmentative communication

Alternative and augmentative communication (AAC) devices are used in individuals in aphasia and two studies investigated their effectiveness and usability. A further study considers the impact of using images relevant to the individual with aphasia.

Van de Sandt-Koenderman, M (2005) developed and evaluated a portable communication aid (PCAD) for aphasics to support communication in everyday life. The study showed that a select group of patients with chronic aphasia were able to acquire the necessary skills to operate the PCAD. TouchSpeak software runs off a portable device. The software consists of an empty vocabulary that can be filled with items that are personally relevant for each individual. The therapist and client chose relevant vocabulary using pictures, drawings, photos and text. This vocabulary can be used to create messages which are displayed by the device, with or without speech output. Twenty-two aphasic patients with relatively good auditory comprehension and limited verbal expression took part in the study. All had a specific communicative need and a supportive partner. Each individual underwent training

with a therapist to find out about their own specific communicative needs and set goals to achieve; to enable individual configuration of their device; to chose their vocabulary and learn how to operate the device within role play. Following training, all 22 participants could operate the device in the therapy sessions. Five patients were unsuccessful in using the device in real-life situations and 17 reported use of PCAD for at least one of their preset goals. Surprisingly, unsuccessful clients were younger than successful clients.

Van de Sandt-Koenderman, M (2007) undertook a further study investigating the efficacy of the TouchSpeak system in improving outcomes. Thirty-four individuals with severe aphasia were given 12 hours vocabulary training over 10 weeks. The training focused on using the vocabulary of the device in specific day-to-day situations and included role play sessions and time to practice at home. Following training, around half of the participants could navigate the complete set of 176 buttons on the device. The average number of buttons created by participants was 159 (range 32-382). The patients' communicative ability was assessed in everyday situations pre and post training and was found to have improved significantly following training. User satisfaction was high with 70% of patients, 74% partners and 68% therapists rating TouchSpeak as good, very good or excellent. Seventeen participants decided to purchase their own device with TouchSpeak installed. At the 3-year follow-up, 12 of theses 17 participants were interviewed. Two still used TouchSpeak, one had never used the system, one given up within a few weeks, 8 had used the device for more than 6 months post training but didn't use it anymore. Reasons for non-use were that communicative ability had improved; there were technical problems or the patient had a preference for other communicative strategies.

AAC devices seem to require careful selection of appropriate patients, especially for long-term use, but have potential to improve communicative effectiveness.

Delivery and Format of Therapy

The delivery of therapy was looked at in one study in which an intervention delivered to a group was examined. The remaining studies looked at the efficacy of different types of aphasia therapy.

Elman, R (1999) examined the effects of treatment delivered in a group format for individuals with chronic aphasia. Twenty-eight aphasic individuals were assigned to an immediate or deferred treatment group. The immediate treatment group received 5 hours of group communication weekly for four months in the form of 2 and a half hour sessions on 2 days. Participants were split into groups of 7 according to severity of aphasia to enable matching with similar patients. In total, participants received 32 sessions. The group communication treatment focused on improving the participants' ability to convey a message using whatever strategy most useful, initiating conversation and increasing awareness of personal goals. The treatment mainly involved discussion around current activities and events in participants' lives or current news stories. Patients also participated in social games like Blackjack. The deferred treatment group first received 3 hours or more per week of social group activities of their choice, for example, art groups or support groups before receiving the group communication treatment intervention. Linguistic and communicative measures were taken

at entry, 2 and 4 months of treatment and after 4-5 weeks of no treatment. The immediate treatment group scored much higher than the deferred treatment group on all measurements, with no decline in the follow-up period. The deferred group showed similar gains once they had received the group treatment intervention.

Worrall, L (2000) designed and evaluated a functional communication therapy programme called Speaking Out. Twenty aphasics, 12 months post-stroke, who had difficulty in daily communication took part in the study. The Speaking Out programme consisted of 10 scripted modules covering topics such as managing finances, starting a conversation and using the telephone. For each module, they began with a trigger to raise awareness about the topic. Finally towards the end, participants and volunteers planned some actions that could be undertaken on the topic. The participants were split into Group A and Group B. Groups received either the Speaking Out programme first or took part in recreational activities (such as cards, crafts and gardening) for 1-2 hours per week over 10 weeks. At the end of this period, participants were assessed using a set of measures that were also administered at the beginning of the study. Each group then received 10 weeks of the programme they had not been exposed to. This was followed by another assessment. Pre and post receiving the Speaking Out programme, both groups improved on the Western Aphasia Battery (ability to point to correct objects). In terms of significant improvements in conversation, Group B did show improvement following Speaking Out but Group A did not. Both groups showed change on quality of life measures (patients and spouses). However following the recreational activities, some of these improvements were also seen- indicating a possible placebo effect.

Barthel, G (2008) investigated the therapy effects of two types of intensive speech language therapy for aphasic individuals. Twelve patients were assigned to receive Model Orientated Aphasia Therapy (MOAT). MOAT is similar to CIAT in that it includes everyday therapy, shaping (increasing the level of difficulty of exercises gradually) and involvement of relatives. However, it contrasts to CIAT by using an individual setting offering patients a specific therapy based on their symptoms and disturbed level of language production. The approach is linguistic and focuses on language production. Data from the Meinzer (2005) study was used to compare the outcomes for patients receiving CIAT and CIATplus compared with MOAT. All patients received 30 hours of their designated therapy mode within 2 weeks in sessions lasting 3 hours per day. Language functions were assessed prior to treatment, after treatment and 6 months after and showed no differences between the CIATplus and MOAT modes of therapy. However, written language and perception of amount and quality of everyday speech (by patients and their partners) improved more for MOAT and CIATplus participants than those receiving CIAT.

Fillingham, J (2005) conducted a series of studies examining Errorful vs. Errorless therapy, culminating in a final study in 2005. Errorless therapy attempts to control errors made during therapy whereas errorful therapy does not attempt to control errors. In previous studies no difference in outcomes had been found between errorful and errorless therapy. The study was repeated a third time with slight modifications to the therapies administered. Seven patients who had word finding difficulties as a result of aphasia took part in the investigation. Errorful therapy consisted of providing a picture with the first phoneme and grapheme and asking the patient to name the picture. This process was repeated three times. During errorless therapy, patients were given a picture with its written and spoken name. The

participant repeated and/or read the name three times. Each therapy session included 3 cycles of the items/pictures, which lasted around 25-40 minutes. Ten sessions of each therapy were given twice a week for 5 weeks. As found in the previous studies, errorless and errorful therapy produced equivalent results immediately post-therapy and follow-up. Non-language cognitive skills, for example problem solving skills and monitoring ability could predict therapy outcome.

Conroy, (2009) . further evaluated the effect of errorless and errorful therapy on verb and noun naming in 9 people with aphasia. The participants received therapy in their own homes with both therapies provided in each of the sessions. Participants had therapy twice weekly for 5 weeks and a total of 10 sessions. Overall, verb and noun naming improved form both therapies. There were greater gains in noun naming for the 3 participants with most severe aphasia. Gains for noun and verb naming was comparable for the other 6 participants. Similar to the Fillingham(2005) study errorless therapy was found to be as effective as errorful therapy in this small study.

Aftonomous, L (1999) evaluated the outcomes for aphasic patients receiving community-based treatment programmes, to see if these were comparable with effects reported in research. Patients with a wide range of types and severity of aphasia, who were mostly 6 months post stroke, followed 2 identical treatment programmes in California and Kansas. A detailed patient care algorithm was used to determine the clinical pathway for each patient and technology that provides access to an extensive toolbox of specially designed, interactive multimedia materials for patient use. Therapists were formally trained in how to administer this treatment programme and an online database provided easy access to patient details, their diagnostic assessment and their responses to treatment. The focus on treatment was to improve patients' functional communication outside of the clinic. Patients received individual 1 hour sessions with a speech language therapist, with the overall mean number of sessions being 41.7 (range 10-132). The wide variability in number of session demonstrates the variety of types and severity of aphasia. Where appropriate, patients were set exercises to complete at home. Post-treatment, all patients with different types of aphasia had significantly improved in terms of language impairment and functional communication. Whilst this study has not been undertaken in experimental conditions and the effect /improvement could be due to other external factors than the treatment programme, it demonstrated, in a real-life setting, that treatment was associated with improvement.

A qualitative study (Worrall, L. et al 2010) bought together information from three projects on life-coaching approaches for people with aphasia. Life coaching can provide patients with information and support about their stroke and aphasia, help with setting goals. The data supported and extended the assumptions of the life-coaching approach which encourages long-term support for people with aphasia and their families . The goals of participants changed over time as they learn to live aphasia. These authors argue and have qualitative data that supports that aphasia is a family concern and treatment should involve or consider the whole family. The found that finally, aphasia was fitted more successfully into participant's lives.

A pilot RCT (Conklyn, 2012) investigated the effect of an early intervention modified melodic intonation therapy (MMIT) for stroke patients with nonfluent aphasia. Patients were randomised to MMIT or a control session, both delivered by a trained music therapist.

Sessions were for 10-15 minutes and study participants could receive up to 5. The short length of hospital stay for the patients meant that most actually only attended 2 sessions significantly limiting the amount of data that could be collected. Study participants were assessed before the treatment and after each session on tests for repetition and responsiveness adapted from these subsections of the Western Aphasia Battery. Patients in the MMIT group made significant improvements to their test scores following 1 session of MMIT and the changes in test scores were significantly more than changes in the control group. The findings from the pilot study are promising and demonstrate the feasibility of MMIT warranting further research with a larger sample size and long-term follow-up.

Barwood (2012) investigated the impact of transcranial magnetic stimulation and specifically (rTMS) in 12 patient with aphasia. Patients received the active rTMS or placebo stimulation for ten 20 minute session over 2 weeks. The participants in control and intervention groups had no significant differences on N400 measures at baseline or 1 week after therapy. At 2 months, 8 months and 12 months the rTMS group had significantly better N400 scores. A key limitation of the study is that the sample population was not matched at baseline for aphasia type or severity. The results are preliminary and would need investigating in a larger sample.

Kelly (2009) investigated whether people with aphasia, following stroke, could learn new words. The study sample consisted of 12 people under 65 with a range of severities of aphasia. Over 4 consecutive days the study participants were taught 20 words in sessions lasting 30 minutes to 1 hour. All of the participants managed to learn some of the words. Testing of 10 of the participants 3 to 5 days after the end of the therapy found that they retained some of the new words indicating that there were been retained in their long-term memory. The results from this study demonstrate that people with aphasia can potentially learn new words and therapy to teach lost language could actually teach these words as new. Individuals demonstrated different learning styles when learning the words demonstrating the importance of individually tailored therapy.

A further small interventional study (Caute, A. 2013) compared the impact on communication skills of 15 hours of gesture and naming therapy with 15 hours of strategic therapy. The 14 study participants had severe aphasia. 2 novel measures were used to assess the impact of the intervention on the participant's communication skills. The message task required participants to convey a message to their conversation partner and the narrative task consisted of participants watching a silent video and then attempting to convey the narrative of the video to their conversation partner. Communication skills improved on both tasks after the treatment with participants that had the additional therapy making further gains on the message task. The study findings are promising and a larger study with more robust methodology could be beneficial.

Ferguson (2012) evaluated the relative effectiveness of intention and pantomime gesture therapy on 4 people with aphasia. 2 of the patients had severe aphasia and 2 had mild to moderate aphasia. The 2 people with severe aphasia improved gesture with pantomime gesture therapy and the other 2 people improved their verb production with intention and pantomime gesture therapy. These initial findings from albeit a small study are promising for pantomime gesture therapy and it warrants further investigation.

Marshall (2012) investigated whether people with severe aphasia could learn gestures from gesture therapy and compared this with their learning of words through naming therapy. The therapy consisted of twice weekly session lasting 1 hour for up to 15 sessions. Each session consisted of equal amounts of gesture and naming therapy with the order of the treatment alternating between sessions. Overall, 11 participants improved more on naming than gestures. However, 3 participants improved more on gestures and made little progress on naming. The study found that naming therapy was generally more beneficial but that some individuals with aphasia benefited more from gesture therapy. A further large study could usefully identify the types of participants that benefit most from gesture therapy enabling therapist to use gesture or naming therapy as appropriate.

Bilingual aphasia

Three studies investigated therapy for patients with bilingual aphasia, one review and 2 case series studies. The review is discussed in "**Synthesising pre-existing studies"**.

A case series (Croft, S. et al 2011) investigating the effect of naming therapy in post stroke patients bilingual in English and Bengali. All participants received two periods of naming therapy one in English and the second in Bengali. The therapy was performed by a speech and language therapist and bilingual co-workers. A picture-naming task was used to measure the effects of the naming therapy: twice pre-therapy, once immediately after the therapy and the final measurement was recorded 4 weeks after the end of the therapy. The results of this study suggest that naming therapy can benefit some bilingual people with aphasia and that both languages benefited. Although the findings are promising, the small sample size means that the study needs replicating with more participants.

Kiran (2010) investigated the effects of semantic feature analysis treatment in one language, in 4 women with bilingual aphasia, on naming tests in treated language and untreated language for evidence of cross-language generalisation. Two of the women spoke Spanish and English and 2 spoke French and English. The semantic feature analysis treatment consisted of training aimed at improving naming of nouns in English following by training to improve naming of nouns in French or Spanish. All participant with achieved some improvement to in their naming of items in the trained language to varying degrees. Three of the participants achieved with-language generalisation to semantically similar words but only 1 participant (French-English speaker) achieved cross-language generalisation. Repetition of the study with a larger sample would make it possible to determine if improvements and generalisation are different depending on severity or type of aphasia or other differences.

Summary

- Speech language therapy is effective for people with aphasia.
- There are features of therapy that may make treatment more successful, for example timing, intensity and involvement of family and friends.

- More intensive therapy of longer duration results in greater gains for aphasic individuals. There seems to be little difference between different types of aphasia therapy but this has not been the focus of much research.
- Family and volunteer involvement is successful and results in better outcomes for individuals with aphasia.
- Laypersons can be effectively trained to deliver some aphasia therapies.
- Novel computer-based therapies are effective, are acceptable to patients and can reduce therapist time.
- AAC devices, gesture and pantomime can be successfully used with aphasic patients; some patients may be more suited to use of AAC devices.

Most of the studies included in this synopsis included aphasic individuals who were motivated and willing to take part. In conclusion research would indicate that attending to aphasia is beneficial and improvement in communication can be made many years after onset.

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