

Acquired neurological communication disorders: definitions and rehabilitation hints

Acquired neurological communication disorders are language and communication difficulties/disorders due to an acquired brain disorder.

An acquired brain disorder (ABD) is defined as a disruption in brain functioning that:

- is not congenital or caused by birth trauma;
- presents a severe and life-long disabling condition which significantly impairs a person's ability to function in society;
- is attributable trauma to the brain such as:
 - intra cranial surgery or cerebrovascular disruption such as a stroke
 - Traumatic Brain Injury (TBI) following a motor vehicle incident or fall
 - anoxic or hypoxic injury to the brain such as cardiopulmonary arrest or carbon monoxide poisoning
 - brain tumour
 - infectious diseases such as encephalitis or meningitis
 - toxic exposure
 - or other neurological disorders such as Multiple Sclerosis (MS), Parkinson's Disease (PD), Amyotrophic Lateral Sclerosis (ALS), Huntington's Disease (HD), or other that predominantly affect the central nervous system (such as dementia)
- is manifested by significant decline in cognitive functioning including changes in neuropsychological functions (such as language, memory, attention, executive functions, etc.), deterioration in personality, impulse control, judgment; modulation of mood or awareness of deficits.

The signs and symptoms vary depending on the cause and site of damage to the brain. The severity is also highly variable.

The main / prevalent acquired neurological communication disorders include the followings.

Aphasia

Aphasia is a communication disorder due to the damage (usually following stroke) to the portion of the brain that allow us to use language to communicate, usually in the left side of the brain. Aphasia can include a loss of the ability to either comprehend or express thoughts using language or both. These language impairments involve the loss of skills in the recall of

words or the formulation of sentences to express or to comprehend, speech, printed word, or even sign language. In the most severe cases (global aphasia) the person is unable to understand single words and is unable to communicate by talking, writing, drawing or gesture. People with aphasia are likely to find many everyday activities like talking, reading or watching the TV difficult and frustrating. Conversational partners' help to communicate in an effective and efficient manner is frequently necessary and helpful in supporting communication for persons with aphasia.

Dysarthria

Dysarthria is a speech disorder resulting from weakness, slowness or poor coordination of speech production. Dysarthria may involve some or all of the basic speech processes such as the accuracy of pronunciation, the control of breathing, the pitch, loudness and quality of the voice, and oral versus nasal projection of the voice. A person with dysarthria has no difficulties with understanding language or with thinking of the right words to say. The muscles of the mouth, face and respiratory system may become weak as a result of damage to the brain or progressive neurological diseases (like MS, PD or ALS).

The nature and severity of dysarthria may lead to a number of symptoms including:

- Slurred speech (sounding as if drunk)
- Speaking softly or barely able to whisper
- Slow rate of speech
- Limited tongue, lip, and jaw movement
- Breathiness
- Drooling or poor control of saliva

The person's speech may be totally incomprehensible as a result of the damage to the brain.

Apraxia of speech

Apraxia is an acquired motor disorder that compromises the ability to plan or complete single actions or sequencing tasks such as making a cup of tea or getting dressed, although the person still can generally explain how to perform them (ideomotor or ideational apraxia), the ability to draw simple configuration (constructional apraxia) or the ability to carry out voluntarily face movement (orofacial apraxia).

Apraxia of speech (or verbal dyspraxia/apraxia) is a peculiar motor speech disorder that impairs the ability to plan and coordinate movements to sequence the sounds in syllables and words. It's a loss of the ability to make the voice, lips, and tongue work together in the coordinated way that is necessary for talking. Oral and/or verbal dyspraxia are most often accompanied by some degree of language impairment.

The nature and severity of the dyspraxia may lead to problems with:

- Imitating speech sounds.
- Imitating non-speech movements such as sticking out your tongue.
- Trying to produce sounds (in severe cases this can be an inability to produce sound at all).

Cognitive-communication disorders

Cognitive-communication disorders are global disorders that affect both communication abilities and cognition, usually as a consequence of a spread cerebral damage, like TBI, or as a consequence of a stroke that involve the right side of the brain. They are characterized by noticeable general cognitive functions impairments such as attention, concentration and memory deficits and also difficulties in planning, abstraction and problem solving tasks (or others), that can have a great impact in the persons' abilities of daily living and that can influence rehabilitation assessment and treatment.

In some cases the language difficulties can be subtle, as individuals can have preserved (or minimally impaired) phonology, semantics and syntax, but pragmatic aspects can be largely impaired, interfering with everyday communication activities. Even if they "can talk,, individuals with cognitive-communication disorder often can have difficulties in:

- Concentrating on a conversation
- Respecting personal boundaries/social etiquette
- Sticking to the subject
- Using appropriate topics
- Providing reasoned arguments
- Drawing appropriate conclusions for information
- Understanding humour, sarcasm and figurative language e.g. "Pull your socks up".

This can have an impact on

- General conversation skills
- Understanding what is said
- Reading books, magazines and emails
- Expressing thoughts, feelings and ideas
- Understanding and engaging in humour
- Understanding bills and official documents
- Engaging with social media.

As a consequence, there may be serious difficulties maintaining relationships or holding down a job.

Dementia.

Dementia is an umbrella term that refers to several diseases characterised by a collection of symptoms which include a progressive decline in cognitive functions (such as orientation to time, place and persons, memory, attention, executive functions, visuospatial skills and reasoning), in linguistic functions and in behavioural functions. Observed cognitive changes typically increase with the progression of the disease causing functional deficits in the competencies of everyday life. Both the ability to perform basic and instrumental activities of daily living and the ability to communicate effectively are progressively affected. Decline that interfere with independent living, affects not only the individual, but also family members and other caregivers, increasing patient frustration and caregiver distress.

The main type of dementia include Alzheimer's Disease and Vascular Dementia.

Although language is generally thought to be preserved until late stage of disease, communication (and in particular functional communication, that is the ability to communicate effectively and independently in a certain natural environment) is shown to be impaired from the first stage of dementia and to decline following the course of the disease.

Communication difficulties include those described for cognitive-communication disorders.

Particular importance should be given to

- reduced information content that results in the typical "empty speech" of persons with dementia
- difficulties with referential communication
- repetition of topic

- reduced amount of speech
- difficulties with understanding what is said
- difficulties with reading, writing and maths.

Therapy for people with progressive neurological disorders.

Speech-language therapists (SLT) work with individuals who, because of their cognitive-communicative-linguistic or oral-motor/feeding/swallowing disabilities, present or are likely to present problems of integration and adaptation in their family, professional or social surroundings.

Treatment approaches following acquired neurological disorders aimed to reach the patients' best autonomy and quality of life possible, increasing their participation in their own everyday life activities.

The role of SLT professionals includes prevention, assessment, rehabilitation treatment, counselling and follow-up.

As specified previously, acquired neurological communication disorders can include a great variety of specific pathological conditions. These suggestions are therefore really general and absolutely not intended to be specific for a single condition or patient: they aim only to give a general framework of what should be considered during a rehabilitation programme.

In particular:

- ✓ *Assessment* should aim to collect informations at least about
 - functioning of the main cognitive areas
 - language function (within all its specific areas of fonology, semantic, syntax and text comprehension and production)
 - pragmatic and communication aspects including verbal, paraverbal and non verbal abilities and functional communication abilities
 - main conversational partners abilities in supporting conversation
 - quality of life.

Assessment should use standardized protocols and tests every time it is appropriate, in relation to disease's stages (acute or initial vs chronic or terminal phase) and patients' clinical conditions.

✓ *Rehabilitation treatment* should focus on guaranteeing the best possible re-engagement in real life situations with the best communication and linguistic abilities possible; in particular,

- to improve communication abilities
 - stimulating all pragmatic areas (non verbal, paraverbal, verbal)
 - stimulating the use of all alternative ways to communicate (speaking, writing, gesturing or drawing)
 - stimulating functional communication
- to improve speech and language functions with specific exercises
 - stimulating speech exercises for lips, tongue, palate, jaw, etc.
 - stimulating speech articulation programmes and focus on the rate of speech
 - conducting voice programmes for breathing, breath control, volume, pitch, syllable stress and vocal tone
 - stimulating words, sentences, texts comprehension and production
- to improve cognitive functions related to language and communication
- to consider Augmentative Alternative Communication low and high tech programmes to improve communicative possibilities, that is to consider and teach all the possible compensatory strategies that can allow people with communication difficulties to express themselves more effectively (included communication notebooks or portable electronic devices)
- to train conversational partners in Supported Conversation (or similar) techniques to help persons with communicative disease reach a better communication of their thoughts, wishes, aims or whatever they want to communicate

Rehabilitation programmes should be carefully focused on the patient and his/her family's specific clinical and communication needs; so, it can comprehend some or all of the possibilities listed above.

✓ *Follow-up* should be aimed at monitoring communicative abilities and cognitive and linguistic functions over time, in order to

- estimate rehabilitation outcomes by re-assessment of specific functions, activities and participation and quality of life
- propose, if and when needed, rehabilitation treatments
- propose, if and when needed, changes in compensatory strategies programmes
- propose, if and when needed, caregiver support activities

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