

# Speech Problems of Hemiplegics

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ONE of the most significant disabilities in terms of the number of patients seen is hemiplegia, usually the result of brain damage following thrombosis, embolism, hemorrhage, or trauma. Some idea of the magnitude of the problems may be gleaned from the fact that vascular lesions affecting the central nervous system ("stroke") is listed as the third major cause of death in the United States, ranking behind only heart disease and cancer. The majority of patients sustaining a stroke of apoplexy do not die from the initial insult. Instead, they improve to a greater or lesser degree and often live a number of years despite their residual disabilities. No definitive statistics are available on the number of hemiplegics in the United States, but estimates have been as high as 1,500,000.

One aspect of hemiplegia which is far too frequently overlooked is the communication disabilities resulting from brain injury among a high percentage of hemiplegic patients, especially those whose hemiplegia is on the dominant side. Conventionally, it is assumed nothing is to be done for such patients, whereas in fact these disabilities are frequently remediable. These communication problems may be of two kinds, aphasia or dysarthria.

## Aphasia

Aphasia is a language disability which affects one or more aspects of language: speaking, reading, writing, or understanding. Aphasia may also involve difficulty in calculation or in using gestures. The possible predominant symptoms of the four types of aphasia are shown in the chart.

Patients who have hemiplegia with accompanying communication difficulties are classified, after testing and evaluation, on the basis of these symptoms. It must be remembered that "aphasia" can apply only to cases in which there is known brain injury.

Among aphasic patients the range from mild to severe difficulty is wide. Therefore, the term "predominantly expressive type aphasia" may be applied to an individual who has only occasional difficulty in finding an appropriate word and may be slowed down in his ability to write words, as well as to an individual who is totally unable to express his thoughts in written or spoken words. In the first example the patient described might still be capable of adequate on-the-job performance despite his language disability. The patient in the second example probably will not be able to work and will be forced to lead a sheltered life at home or in an institution.

It is essential that the aphasic patient's functional language ability be assessed at the time of evaluation. The language demands of daily life, for example, telephoning and reading street signs, form the basis for this functional evaluation and for future therapy. Obviously, it is considerably more important for the aphasic patient to be able to say his name, to sign a check, and to ask for a drink of water than it is for him to be able to recite the apha-

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bet, spell a given list of words, and diagram sentences from their grammatical components.

At evaluation, the patient's ability to meet the language demands of daily life are classified, from highest to lowest, according to four functional levels: vocational adequacy in language, home adequacy in language, rehabilitation center adequacy, and institutional adequacy in communication.

Patients at the first language level may qualify for vocational placement, although not necessarily in their former vocation.

Patients on the second level can function at home. They are able to make their daily wants known and have sufficient receptive ability to manage the telephone, to read, to understand signs, and so on.

Patients with rehabilitation center adequacy are considered able to follow a rehabilitation program. Their comprehension is adequate to

permit attendance in group and individual classes. They can use the elevator without assistance and can follow the nurse's and the therapist's instructions.

Patients who have only institutional adequacy in communication are unable to perform any of the higher level activities.

The principal factors which affect the patient's progress during language rehabilitation are motivation and "need" for speech, extent of damage and severity of symptoms, ability to learn new material, and attitudes of the patient's family toward his language problem. In addition, the patient's personality before the onset of aphasia seems to have an effect on his language recovery. In some patients who were very withdrawn premorbidly, the effect of an aphasic condition appears to be minimal; their "need" for language is limited. On the other hand, persons who were greatly depend-

## Possible Predominant Symptoms of Four Types of Aphasia

	Expressive symptoms	Receptive symptoms
<b>predominantly EXPRESSIVE</b>	Mild to severe difficulty in <i>using gestures with or in place of speech</i> <i>naming objects</i> <i>speaking phrases and sentences</i> <i>carrying on a conversation</i> <i>putting thoughts into writing</i>	Any receptive deficiencies may exist but will not be as marked as expressive deficiencies
<b>predominantly RECEPTIVE</b>	Any expressive deficiencies may exist but will not be as marked as receptive deficiencies	Mild to severe difficulty in <i>recognizing people</i> <i>recognizing objects</i> <i>understanding speech</i> <i>understanding written language</i>
<b>EXPRESSIVE-RECEPTIVE (mixed)</b>	All predominant expressive symptoms	All predominant receptive symptoms
<b>GLOBAL</b>	No apparent ability to express oneself by gesture, speech, or writing	No apparent understanding of spoken or written language

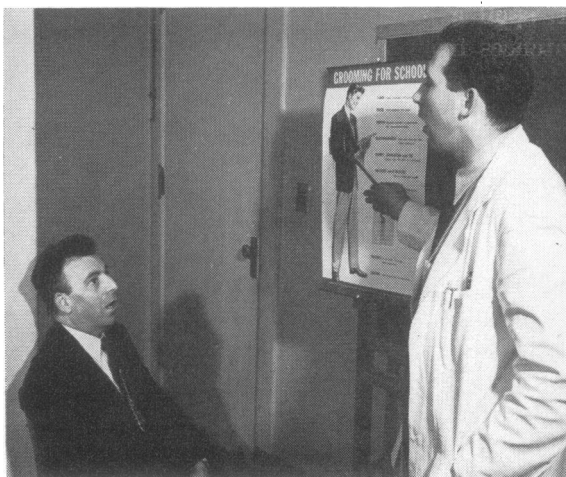
ent on language skills premorbidly for their social and intellectual welfare are more likely to feel a greater need for language.

Our experience shows that, with few exceptions, all aphasic patients who have had the benefit of language retraining will make some measure of progress. It can be anticipated that some patients will graduate from one functional language level to another during the course of treatment. In a smaller number, we can expect almost complete return of language function.

Functional language recovery is the primary goal of a language rehabilitation program. Patients who learn language which they can use only under certain clinical circumstances or which they can produce only as automatic responses to specific stimuli are not considered to be making progress. It is the improved ability to use language appropriately when there is a demand for it, without assistance, under average circumstances, that constitutes progress.

Most aphasic patients who are admitted to a language rehabilitation unit are just beginning to use nouns. Therefore, a large number of the techniques devised for use in aphasia retraining are based on learning at the "naming level." Every sensory avenue is utilized to teach the patient language. His hearing and vision are employed. On the naming level the patient is familiarized with the language symbols through seeing the live objects which the noun represents and seeing the word which applies to the object, hearing the word repeated by the therapist, copying the word, matching the word with the appropriate object, and writing the word from dictation.

The proper selection of the vocabulary to be taught to the aphasic patient is essential to a sound retraining program. This is especially true when the patient will be able to learn only a limited vocabulary. If the vocabulary is not functional and realistic, much valuable therapeutic time will be wasted. A basic word list of 100 functional nouns has been designed, and copies are available from the Speech and Hearing Therapy Department, Institute of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center, New York, N. Y.



**A hemiplegic patient with aphasia receives speech therapy from a speech therapist.**

The physical factors conducive to successful aphasia rehabilitation should be borne in mind when the retraining program is initiated. Sessions should be short and frequent rather than long and infrequent. A quiet, undistracting setting is advisable. The atmosphere for therapy should be permissive, and each session should end on a successful note for the patient.

It is the goal of therapy that the patient's production of each word be as close to normal as possible. However, little or no attention is given to pronunciation; it is more important for the aphasic patient to be fluent than to be perfect in his pronunciation. When a patient has learned a majority of the nouns in the 100-word vocabulary, he is taught verbs in combination with these nouns; for example, pencil-write, spoon-eat. The order of teaching words, according to their difficulty, is nouns, verbs, adjectives, conjunctions, pronouns, articles, and prepositions. In general, the "picturability" of a word and its familiarity to the patient determine its difficulty. Therefore, the names of objects are easiest to teach the aphasic patient. On levels above the noun-verb level, teaching materials designed for teaching English to foreign students are useful.

Contemporary thinking in the field of aphasia rehabilitation seems to indicate that there is a great correlation between language stimulation through listening and language learning. Ear training through repetitive listening can be accomplished by the therapist's

frequent repetition of words and by the use of a machine which repeats words from specially designed tape-recorded cards. Generally all types of auditory training should precede actual speech training and should be used as a supplement to formal speech training.

In any given case of aphasia, it is difficult to ascertain how much therapy will be necessary for the patient to reach his maximum level of language proficiency. Retraining the aphasic patient is a slow process, which usually takes many months. Experience tells us that a trial period of therapy is indicated for all aphasic patients in order to determine whether or not treatment will be of benefit. In many cases, once therapy has been initiated, the aphasic patient can follow a home program under the supervision of a trained therapist or in conjunction with a speech therapy program (1).

### **Dysarthria**

Dysarthria is a speech disability based on motor dysfunction of the speech musculature. Dysarthria may affect the production of certain speech sounds, the rate of speech, voice quality, phonation, rhythm, articulation, or any other aspect of speech dependent on motor ability. Some dysarthric patients may be so severely deficient in their speaking ability that they are "mute" or unintelligible. In mild cases of dysarthria the patient has only a slight difficulty in speaking distinctly.

The principal goal of therapy for the dysarthric patient is to increase the intelligibility of speech. To accomplish this the following techniques may be used: imitating and practicing specific sounds before the mirror; repetitive ex-

ercises to improve voice quality, resonance, phonation, or articulation; using the tape recorder for critical self-analysis of speed; performing certain physical exercises to increase the accuracy of tongue, lip, and jaw movements. These therapeutic techniques can be of increased benefit to the patient if they are supplemented by home practice.

The potential for the functional recovery of speech skills in the dysarthric patient is usually rather good. Compensatory movements which are nearly normal can often be taught to the dysarthric patient. Many dysarthric patients are able to return to their former vocations following a period of speech therapy.

The differential diagnosis between dysarthria and aphasia is especially important since treatment and functional potential in these two disabilities differ. It is recommended that all hemiplegic patients who exhibit difficulty in communication be evaluated by a professional speech therapist. With this evaluation as a baseline, formal speech therapy techniques and plans for a home program can be more efficiently devised for the patient's recovery. The large numbers of hemiplegic patients with difficulty in communication who have recovered functionally should encourage professional workers in allied fields to refer patients to speech therapists for evaluation and treatment whenever possible.

### **REFERENCE**

- (1) Institute of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center: *Aphasia rehabilitation: Manual and workbook*. A practical manual of directions for the untrained therapist. New York, N. Y., 1955, 75 pp.

### **AUTHORS' CORRECTION**

In the article Contributions of Premarital and Prenatal Bloodtesting in Syphilis Control by Harold J. Magnuson et al., published in the February 1957 issue of *Public Health Reports* (vol. 72, pp. 135-141), a recalculation of the confidence limits on figures 1, 2, and 3 does not substantiate the statistical significance previously reported. However, conclusions based on other evidence of significance remain unchanged, and these indicate that rates of infant mortality due to syphilis have decreased with the passage of premarital and prenatal laws.