

## How is neurogenic stuttering diagnosed?

Before getting treatment, it is important that someone suspected of neurogenic stuttering be diagnosed accurately. It is advisable to consult with a speech-language pathologist who specializes in stuttering to make the diagnosis. The SLP will want to seek input from the physicians involved in the clients' care. The evaluation will include consideration of the fluency problem and the individuals' case history, current medical status, and the presence of other communication impairments. The diagnosis should determine whether the disfluency is neurogenic in origin and whether any other communication impairments are affecting fluency.

## How is neurogenic stuttering treated?

Because many conditions can cause neurogenic stuttering and affect the frequency with which it co-exists with other communication impairments, there is no single treatment approach that is effective in alleviating its symptoms. Treatment is often carried out by a speech-language pathologist working in conjunction with the clients' physicians. Some therapy techniques that help reduce the symptoms of developmental stuttering may also be effective with neurogenic stuttering. These include:

- Slowing speech rate (saying fewer words on each breath by increasing the duration of the sounds and words).
- Emphasizing a gentle onset of the start of each phrase (starting from a relaxed posture of the speech muscles, beginning with adequate respiratory support, a slow and easy initiation of the exhalation and gentle onset of the first sound).
- Emphasizing a smooth flow of speech production and use of relaxed posture, both in terms of general body posture and for specific speech production muscles.
- Identifying the disruptions in the speech patterns and instructing the client in the use of more appropriate patterns.

In addition, if the person is expressing anxiety or concern about his fluency, therapy may include education about the disorder and counseling to change attitudes and perceptions. The use of different or additional techniques and approaches may be indicated based on the presence of other communication and cognitive disorders and the nature of the individual's underlying neurological condition. If other communication disorders are also present, additional therapy directed at alleviating their effects may enhance fluency as well. Physicians, nurses, occupational, physical, and respiratory therapists may also be able to provide assistance in dealing with medical conditions and symptoms which have an impact on speech fluency.

Having an understanding of the disorder can help families and caregivers structure communication situations to best help the client. This can have a significant impact on reducing their concerns and improving communication. Strategies may include simplifying one's speech, allowing more time for response,



modeling slow, easy speaking patterns, and, in general, reducing communication demands and expectations. It is important to recognize that the recovery process from the underlying neurological injury or disease will often have a significant impact on fluency. Also keep in mind that because recovery from neurological injury or disease may be slow, patience will be needed.

## How can I get help for neurogenic stuttering?

The Stuttering Foundation of America can supply you with the names of speech-language pathologists who specialize in stuttering. Call toll-free 800-992-9392 or visit [www.StutteringHelp.org](http://www.StutteringHelp.org).

## Where Can I Learn More About Neurogenic Stuttering?

Brady, J. P. (1998). Drug-induced stuttering: A review of the literature. *Journal of Clinical Psychopharmacology*, 18, 50-54. (A clinically-oriented article dealing with drug-induced stuttering.)

De Nil, L.F., Jokel, R., & Rochon, E. (2007). Etiology, symptomatology, and treatment of neurogenic stuttering. In E.G. Conture & R.F. Curlee (Eds.). *Stuttering and related disorders of fluency* (3rd ed.). (pp. 326-343). New York: Thieme Medical Publishers.

Duffy, J. R. (2005). *Motor Speech Disorders*. (2nd ed.) St. Louis, MO: Elsevier Mosby. (A book that provides information about apraxia of speech and dysarthria, as well as some coverage of neurogenic stuttering.)

Grant, A. C., Biousse, V., Cook, A. A., & Newman, N. J. (1999). Stroke associated stuttering. *Archives of Neurology*, 56(5), 624-627. (A clinically oriented article dealing with stuttering symptoms associated with strokes.)

Market, K. E., Montague, J. C., Buffalo, J. C., & Drummond, S. S. (1990). Acquired stuttering: Descriptive data and treatment outcome. *Journal of Fluency Disorders*, 15, 21-33. (A clinically-oriented article dealing with treatment of neurogenic stuttering.)

Stewart, T., Rowley, D. (1996). Acquired stammering in Great Britain. *European Journal of Disorders of Communication*, 31(1), 1-9. (A clinically oriented article dealing with treatment of neurogenic stuttering.)

Theys, C., van Wieringen, A., & De Nil, L.F. (2008). A clinician survey of speech and non-speech characteristics of neurogenic stuttering. *Journal of Fluency Disorders*, 33, 1-23. (A research article containing a review of recent literature on neurogenic stuttering and a summary of key characteristics and treatment procedures.)

Van Borsel, J., & Tallieu, C. (2001). Neurogenic stuttering versus developmental stuttering: An observer judgment study. *Journal of Communication Disorders*, 34, 385-395. (A research study demonstrating some of the challenges of differentiating different types of stuttering disorders.)

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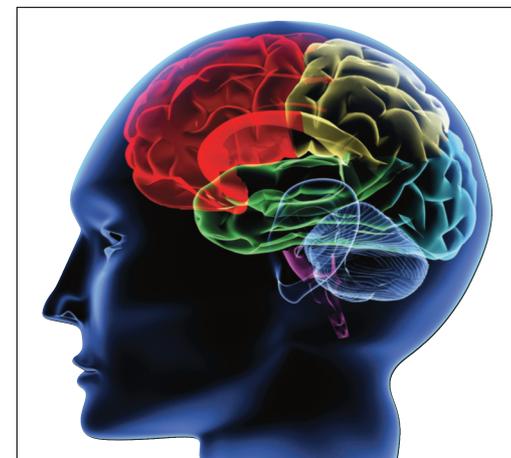


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# Neurogenic Stuttering

## Some Guidelines



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# Neurogenic Stuttering

## What is neurogenic stuttering?

Neurogenic stuttering is a type of fluency disorder in which a person has difficulty in producing speech in a normal, smooth fashion. Individuals with fluency disorders may have speech that sounds fragmented or halting, with frequent interruptions and difficulty producing words without effort or struggle. Neurogenic stuttering typically appears following some sort of injury or disease to the central nervous system i.e. the brain and spinal cord, including cortex, subcortex, cerebellar, and even the neural pathway regions. These injuries or diseases include:

- Cerebrovascular accident (stroke), with or without aphasia
- Head trauma
- Ischemic attacks (temporary obstruction of blood flow in the brain)
- Tumors, cysts, and other neoplasms
- Degenerative diseases, such as Parkinson's disease or multiple sclerosis
- Other diseases, such as meningitis, Guillain-Barré Syndrome, and AIDS
- Drug-related causes such as side-effects of some medications

In the majority of cases, the injury or disease that caused the stuttering can be identified. In a small number of cases, however, the individual may only show evidence of some form of speech disruption without any clear evidence of neurological damage.

## Who is at risk for neurogenic stuttering?

Generally individuals experiencing neurogenic stuttering have had a history of normal speech production prior to the injury or disease. In a few cases, neurogenic stuttering may occur in individuals who experienced developmental stuttering in childhood but had apparently recovered. Neurogenic stuttering can occur at any age; however, it appears more often in adulthood, and the highest incidence is in the geriatric population. This profile is quite different from developmental stuttering which is not typically seen as a result of brain damage and which most commonly appears in early childhood in children between 2 and 5 years of age.

## What are the primary symptoms of neurogenic stuttering?

Because it results from a very diverse set of diseases and disorders, the symptoms of neurogenic stuttering may vary widely between different individuals. Neurogenic stuttering might be considered as a possible diagnosis if one or more of the following symptoms are observed:

- Excessive levels of normal disfluencies or interruptions in the forward flow of speech, such as interjections and revisions;

- Other types of disfluencies, such as repetitions of phrases, words, and parts of words (sounds or syllables, prolongations of sounds), etc;
- Hesitations and pauses in unexpected or inappropriate locations in an utterance;
- Cessation of speech during the production of a word without finishing the word;
- Intrusive or extraneous additional sounds during speech production;
- Rapid bursts of speech which may be unintelligible;
- Extraneous movements of lips, jaw, or tongue while attempting to speak, including posturing.

Many individuals may appear to be unaware of or at least unconcerned about the disruptions in their speech. Others may show awareness, and possibly express anxiety and even depression about the difficulty they encounter in speaking. This may be accompanied by other behaviors, which may include:

- Secondary or associated behaviors, such as obvious tension and struggle in speech production; movements of head or limbs while speaking; reduced eye contact;
- Postponement or delay in attempting to say a word or avoidance of words or speaking situations.

These behaviors may arise out of the speaker's attempts to overcome or force his way through the disfluency, or from attempts to hide or disguise the fact that he is having difficulty producing normal sounding speech.

## How does neurogenic stuttering differ from other types of fluency disorders?

The symptoms of neurogenic stuttering can be similar to those seen in other fluency disorders. Some communication disorders such as dysarthria, apraxia of speech, palilalia, and aphasia may impair the speaker's ability to produce smooth and flowing speech production. These problems result from the same types of neurological injury or disease as neurogenic stuttering, and the disorders often co-exist. A diagnosis of neurogenic stuttering might be considered when the disfluency pattern includes the symptoms described above.

Occasionally, some individuals may experience psychogenic disfluency. This disorder results in a disfluent speaking pattern but no medical factors or history of developmental stuttering are present. Its appearance may be linked to emotional stress or trauma that the individual has recently experienced. The disorder whose symptoms most resemble those of neurogenic stuttering is developmental stuttering. Developmental stuttering may persist into adulthood. In some cases, its symptoms may be noticeably worsened following injury, disease, or trauma, possibly making diagnosis between the two disorders more difficult. Similarly, an individual who had recovered from developmental stuttering in childhood may experience a re-emergence of stuttering

following neurological injury or disease. In the vast majority of cases, however, the sudden appearance of disfluent speech in an adult should be considered abnormal. Developmental stuttering should only be considered as a possible cause when there is a prior history of childhood stuttering. Apart from the obvious difference in age of onset, differentiating between the two disorders is often difficult.

Some of the patterns that set the two apart include:

- Neurogenic stuttering may occur at any point in the production of a word, rather than primarily at the beginning, as is common with developmental stuttering.
- Neurogenic stuttering often occurs on any type or class of word anywhere in a sentence rather than being linked to content words such as nouns, verbs, adjectives and adverbs.
- Neurogenic stuttering may occur in any type of vocal behavior, including singing and repeating well-learned passages, such as the pledge of allegiance. The disfluencies may occur with equal frequency in any type of a speaking situation.
- Neurogenic stuttering is often not alleviated by the same conditions that significantly lessen developmental stuttering. These include choral reading, singing, adaptation (repeated oral reading of the same passage) or speaking while under auditory masking or delayed auditory feedback.

The aforementioned patterns, however, are not universal for all individuals experiencing neurogenic stuttering, and patterns may vary widely across individuals depending on the nature of the neurologic injury or disease.

## Can other types of communication problems accompany neurogenic stuttering?

It is not uncommon for individuals with neurogenic stuttering to experience several other types of communication impairments. These might include:

- Aphasia—complete or partial impairment in language comprehension, formulation, and use
- Dysarthria—errors in the production of the speech sounds, such as slurring of sounds and words that affect the intelligibility of the individuals speech
- Apraxia of speech—irregularities in the timing and inaccuracies in the movement of the muscles used in speech production
- Palilalia—speech disorder in which a word, phrase, or sentence may be repeated several times, generally with increasing rapidity and decreasing distinctness
- Anomia—difficulty in finding the appropriate word to use
- Confusion—uncertainty as to their own identity and that of others, their location, current time period, etc.

