

## Apraxia of Speech

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### What is apraxia of speech?

**Apraxia** of speech, also known as verbal apraxia or dyspraxia, is a speech disorder in which a person has trouble saying what he or she wants to say correctly and consistently. It is not due to weakness or paralysis of the speech muscles (the muscles of the face, tongue, and lips). The severity of apraxia of speech can range from mild to severe.

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### What are the types and causes of apraxia?

There are two main types of speech apraxia: acquired apraxia of speech and developmental apraxia of speech. Acquired apraxia of speech can affect a person at any age, although it most typically occurs in adults. It is caused by damage to the parts of the brain that are involved in speaking, and involves the loss or impairment of existing speech abilities. The disorder may result from a stroke, head injury, tumor, or other illness affecting the brain. Acquired apraxia of speech may occur together with muscle weakness affecting speech production (**dysarthria**) or language difficulties caused by damage to the nervous system (**aphasia**).

Developmental apraxia of speech (DAS) occurs in children and is present from birth. It appears to affect more boys than girls. This speech disorder goes by several other names, including developmental verbal apraxia, developmental verbal dyspraxia, articulatory apraxia, and childhood apraxia of speech. DAS is different from what is known as a developmental delay of speech, in which a child follows the "typical" path of speech development but does so more slowly than normal.

The cause or causes of DAS are not yet known. Some scientists believe that DAS is a disorder related to a child's overall language development. Others believe it is a neurological disorder that affects the brain's ability to send the proper signals to move the muscles involved in speech. However, brain imaging and other studies have not found evidence of specific brain lesions or differences in brain structure in children with DAS. Children with DAS often have family members who have a history of communication disorders or learning disabilities. This observation and recent research findings suggest that genetic factors may play a role in the disorder.

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### What are the symptoms?

People with either form of apraxia of speech may have a number of different speech characteristics, or symptoms. One of the most notable symptoms is difficulty putting sounds and syllables together in the correct order to form words. Longer or more complex words are usually harder to say than shorter or simpler words. People with apraxia of speech also tend to make inconsistent mistakes when speaking. For example, they may say a difficult word correctly but then have trouble repeating it, or they may be able to say a particular sound one day and have trouble with the same sound the next day. People with apraxia of speech often appear to be groping for the right sound or word, and may try saying a word several times before they say it correctly. Another common characteristic of apraxia of speech is the incorrect use of "prosody" — that is, the varying rhythms, stresses, and inflections of speech that are used to help express meaning.

Children with developmental apraxia of speech generally can understand language much better than they are able to use language to express themselves. Some children with the disorder may also have other problems. These can include other speech problems, such as dysarthria; language problems such as poor vocabulary, incorrect grammar, and difficulty in clearly organizing spoken information; problems with reading, writing, spelling, or math; coordination or "motor-skill" problems; and chewing and swallowing difficulties.

The severity of both acquired and developmental apraxia of speech varies from person to person. Apraxia can be so mild that a person has trouble with very few speech sounds or only has occasional problems pronouncing words with many syllables. In the most severe cases, a person may not be able to communicate effectively with speech, and may need the help of alternative or additional communication methods.

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### How is it diagnosed?

Professionals known as **speech-language pathologists** play a key role in diagnosing and treating apraxia of speech. There is no single factor or test that can be used to diagnose apraxia. In addition, speech-language experts do not agree about which specific symptoms are part of developmental apraxia. The person making the diagnosis generally looks for the presence of some, or many, of a group of symptoms, including those described above. Ruling out other contributing factors, such as muscle weakness or language-comprehension problems, can also help with the diagnosis.

To diagnose developmental apraxia of speech, parents and professionals may need to observe a child's speech over a period of time. In formal testing for both acquired and developmental apraxia, the speech-language pathologist may ask the person to perform speech tasks such as repeating a particular word several times or repeating a list of words of increasing length (for example, *love, loving, lovingly*). For acquired apraxia of speech, a speech-language pathologist may also examine a person's ability to converse, read, write, and perform non-speech movements. Brain-imaging tests such as magnetic resonance imaging (MRI) may also be used to help distinguish acquired apraxia of speech from other communication disorders in people who have experienced brain damage.

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### How is it treated?

In some cases, people with acquired apraxia of speech recover some or all of their speech abilities on their own. This is called spontaneous recovery. Children with developmental apraxia of speech will not outgrow the problem on their own. Speech-language therapy is often helpful for these children and for people with acquired apraxia who do not spontaneously recover all of their speech abilities.

Speech-language pathologists use different approaches to treat apraxia of speech, and no single approach has been proven to be the most effective. Therapy is tailored to the individual and is designed to treat other speech or language problems that may occur together with apraxia. Each person responds differently to therapy, and some people will make more progress than others. People with apraxia of speech usually need frequent and intensive one-on-one therapy. Support and encouragement from family members and friends are also important.

In severe cases, people with acquired or developmental apraxia of speech may need to use other ways to express themselves. These might include formal or informal sign language, a language notebook with pictures or written words that the person can show to other people, or an electronic communication device such as a portable computer that writes and produces speech.

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### What research is being done?

Researchers are searching for the causes of developmental apraxia of speech, including the possible role of abnormalities in the brain or other parts of the nervous system. They are also looking for genetic factors that may play a role in DAS. Other research on DAS is aimed at identifying more specific criteria and new techniques that can be used to diagnose the disorder and distinguish it from other communication disorders. Research on acquired apraxia of speech includes studies to pinpoint the specific areas of the brain that are involved in the disorder. In addition, researchers are studying the effectiveness of various treatment approaches for acquired and developmental apraxia of speech.

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### Where can I find more information?

NIDCD maintains a directory of organizations that can answer questions and provide printed or electronic information on apraxia of speech. Please see the list of organizations at [www.nidcd.nih.gov/directory](http://www.nidcd.nih.gov/directory).

Use the following keywords to help you search for organizations that are relevant to apraxia of speech:

- [Apraxia](#)
- [Speech-language pathologists](#)

For more information, additional addresses and phone numbers, or a printed list of organizations, contact:

**NIDCD Information Clearinghouse**  
1 Communication Avenue  
Bethesda, MD 20892-3456  
Toll-free Voice: (800) 241-1044  
Toll-free TTY: (800) 241-1055  
Fax: (301) 770-8977  
E-mail: [nidcdinfo@nidcd.nih.gov](mailto:nidcdinfo@nidcd.nih.gov)

#### PubMed Database

Internet: [www.ncbi.nlm.nih.gov/entrez/query.fcgi](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi)

PubMed is a database developed by the National Library of Medicine in conjunction with publishers of biomedical literature. It can be used as a search tool for accessing literature citations and linking to full-text journals at Web sites of participating publishers. Search the database using the search term "speech apraxia" for medical journal articles.

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For more information, contact the [NIDCD Information Clearinghouse](#).

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