CONDITION

Apraxia

Learn how apraxia affects planned movement or speech, what can cause it, how clinicians diagnose it, and how rehabilitation may help.

WHAT IT IS
Neurological problem affecting planned purposeful movement

BODY SYSTEM
Nervous system

MAIN SYMPTOMS
Difficulty with purposeful movements, incorrect object use, trouble copying gestures, slow or effortful speech

WHAT CAUSES IT
Brain damage or disease, sometimes unknown

HOW IT IS DIAGNOSED
Medical history and movement or speech examination

MAIN TREATMENT
Rehabilitation therapy and communication support

CAN IT BE CURED?
Sometimes - some improve greatly after injury

IS IT AN EMERGENCY?
Sometimes - sudden movement or speech problems

LONG-TERM OUTLOOK
Recovery varies from great improvement to lasting symptoms

Overview

Apraxia is a neurological problem that makes it difficult to perform learned, purposeful movements. A person may understand what they want to do and have enough strength to do it, but the brain has trouble planning or organizing the movement.

Apraxia can affect different actions. Limb apraxia may interfere with waving, using tools, dressing, or copying hand positions. Apraxia of speech affects the planning of mouth and tongue movements needed for speech. Other forms can affect facial movements, walking, or tasks that involve arranging objects in space.

Apraxia is not the same as muscle weakness. It is also different from poor coordination caused by a balance disorder. However, these problems can occur at the same time, especially after a

stroke or brain injury.

Acquired apraxia begins after damage or disease affects the brain. Childhood apraxia of speech is a motor speech disorder that appears during development. It is not simply an acquired condition occurring in a child, and its causes and assessment differ from those of adult-onset apraxia.

Apraxia matters because it can affect communication, independence, safety, school, work, and relationships. Its effects range from mild difficulty with a few tasks to major problems with daily activities. Rehabilitation and practical strategies may improve function or help a person work around ongoing difficulties.

Symptoms

Symptoms depend on the part of the movement system involved. Performance may vary from one attempt to another. A person might complete an action automatically but struggle when asked to do the same action on command.

Possible signs of limb or movement apraxia include:

Acquired apraxia of speech can make speech slow or effortful. A person may search for the correct mouth position, repeat sounds, or make inconsistent sound errors. Longer or less familiar words may be harder. Speech rhythm and stress can also sound unusual.

Apraxia of speech is different from dysarthria , in which weak or poorly controlled speech muscles make speech slurred or unclear. It is also different from aphasia , which affects the ability to understand or use language. A person can have more than one of these conditions.

Children with childhood apraxia of speech may have difficulty putting speech sounds and syllables in the correct sequence. Common features include inconsistent errors, disrupted movement between sounds, and unusual stress or rhythm. Late talking alone does not establish this diagnosis.

Because apraxia often occurs with other neurological problems, additional symptoms may include weakness, memory changes, language difficulty, vision problems, or changes in judgment. These are not part of apraxia itself, but they can affect daily function and treatment.

- Using an object incorrectly, such as holding a toothbrush in the wrong position
- Having trouble showing how to use a familiar tool when the tool is not present
- Struggling to copy gestures or hand positions
- Performing the steps of a task in the wrong order

- Difficulty dressing even when strength and sensation are adequate
- Trouble starting or organizing walking that is not fully explained by weakness

Causes and risk factors

Acquired apraxia results from changes in brain areas and networks involved in planning learned movement. Possible causes include:

Progressive apraxia may occur with conditions such as corticobasal syndrome, Alzheimer disease, or other forms of dementia. Apraxia of speech can sometimes be an early feature of a progressive neurological disorder.

Risk factors for acquired apraxia are generally the risk factors for its underlying cause. For example, factors that raise stroke risk can also raise the chance of stroke-related apraxia. Apraxia itself is not caused by a lack of effort or motivation.

The cause of childhood apraxia of speech is often unclear. In some children, it occurs with a genetic condition, metabolic disorder, brain injury, or broader developmental condition. It may also occur without another identified diagnosis. Parenting style and speaking to a child in more than one language do not cause it.

- Stroke or bleeding in the brain
- Traumatic brain injury
- Brain tumors or brain surgery
- Brain infection or inflammation
- Reduced oxygen reaching the brain
- Neurological diseases that gradually affect brain cells

Diagnosis

There is no single blood test or scan that confirms apraxia. Diagnosis is based on the medical history, the pattern of symptoms, and an examination of movement or speech.

A clinician may ask when the problem began, whether it started suddenly, and how it has changed. Sudden onset suggests a different group of causes than symptoms that develop slowly. Information from family members can be useful because they may notice changes during familiar tasks.

The neurological examination checks strength, sensation, reflexes, coordination, balance,

vision, language, memory, and the ability to understand directions. This helps distinguish apraxia from weakness, tremor, loss of sensation, poor coordination, visual-spatial problems, or difficulty understanding the task.

For possible limb apraxia, the person may be asked to imitate gestures, pretend to use a tool, use a real object, or complete a sequence of actions. Clinicians look at the types of errors rather than relying only on whether the task was completed.

A speech-language pathologist evaluates suspected apraxia of speech. The assessment may include:

A child's evaluation also considers hearing, language development, learning, and speech production across different settings. Childhood apraxia of speech should not be diagnosed from one symptom, such as delayed speech, alone.

Brain imaging, such as MRI or CT, may help identify a stroke, injury, tumor, or another cause. It does not always show why a person has apraxia. Other tests may be ordered when symptoms suggest seizures, infection, a genetic condition, or a progressive neurological disease.

- Repeating sounds, words, and sentences of different lengths
- Comparing repeated attempts at the same word
- Examining speech rhythm, stress, and sound transitions
- Checking the strength and movement of the lips, jaw, and tongue
- Assessing language, voice, and swallowing when appropriate

Treatment and management

Treatment depends on the type of apraxia, its cause, and the activities most affected. The goals may include restoring skills, learning a task in a new way, improving communication, and making daily activities safer.

Treating the underlying condition is important. For example, urgent stroke treatment focuses on restoring blood flow or controlling bleeding when appropriate. Treatment for infection, inflammation, seizures, or a tumor is directed at that condition. There is no medicine that directly corrects every form of apraxia.

Occupational therapy can help with limb apraxia and daily activities. Therapy may involve repeated practice of meaningful tasks, breaking an activity into smaller steps, and using visual or spoken cues. Placing objects in a consistent location or labeling drawers may reduce errors. Adaptive equipment may help with dressing, cooking, or personal care.

Physical therapy may be involved when walking, balance, or safe movement is affected. A therapist can also determine whether weakness, stiffness, or poor coordination is contributing to the difficulty.

Speech-language therapy is the main treatment for apraxia of speech. Treatment may use structured practice of speech movements, sound sequences, rhythm, and rate. The approach is matched to the person's age, communication needs, and other speech or language problems.

Children with childhood apraxia of speech usually need individualized motor-based speech therapy. Practice focuses on planning accurate speech movements rather than simply strengthening the mouth. Treatment frequency and methods should be chosen by the child's speech-language pathologist based on a full assessment.

Communication support can be used while speech is improving or when speech remains difficult. Options include writing, gestures, picture boards, communication applications, and speech-generating devices. These tools are known as augmentative and alternative communication , or AAC. Using AAC does not prevent speech development.

Family members and caregivers can help by allowing extra response time, reducing background noise, and confirming important information without repeatedly correcting every error. Home practice should follow the treating therapist's plan so that cues remain consistent.

Recovery varies. Some people improve greatly, especially as the brain heals after an injury. Others have lasting symptoms or need continued support because the underlying condition is progressive.

Complications

Apraxia can limit independence with dressing, cooking, work, school, driving, or medication routines. Incorrect tool use or difficulty organizing movement may increase the risk of falls, burns, or other injuries.

Communication problems can lead to frustration, social withdrawal, or reduced participation in health decisions. These effects do not mean that the person has lost intelligence or has nothing to say.

Apraxia may occur with swallowing problems, but the two are not the same. Coughing during meals, choking, a wet-sounding voice after swallowing, or unexplained weight loss should be discussed with a clinician. A separate swallowing assessment may be needed.

Follow up

Routine follow-up may involve a neurologist, rehabilitation physician, primary care clinician, occupational therapist, physical therapist, or speech-language pathologist. Visits may review progress, safety, communication needs, and whether treatment goals should change.

Arrange a medical review if symptoms are gradually worsening, new daily tasks become difficult, falls increase, or therapy is no longer meeting the person's needs. Progressive changes may require further neurological assessment.

Call emergency services for sudden trouble speaking or performing familiar movements, especially with facial drooping, arm weakness, numbness, severe imbalance, vision loss, confusion, or a sudden severe headache. These can be signs of a stroke. It is not possible to safely determine at home whether sudden speech difficulty is apraxia, aphasia, or another problem.

New movement or speech problems after a serious head injury, or symptoms accompanied by a seizure or loss of consciousness, also require urgent evaluation.

Sources

- National Institute of Neurological Disorders and Stroke. "Apraxia." National Institutes of Health. Accessed March 8, 2025.
- American Speech-Language-Hearing Association. "Acquired Apraxia of Speech." ASHA Practice Portal. Accessed March 8, 2025.
- American Speech-Language-Hearing Association. "Childhood Apraxia of Speech." ASHA Practice Portal. Accessed March 8, 2025.
- Dovern A, Fink GR, Weiss PH. "Diagnosis and Treatment of Upper Limb Apraxia." Journal of Neurology, Neurosurgery & Psychiatry . 2012;83(10):969-976. doi:10.1136/jnnp-2012-302975.
- Ballard KJ, Wambaugh JL, Duffy JR, et al. "Treatment for Acquired Apraxia of Speech: A Systematic Review of Intervention Research Between 2004 and 2012." American Journal of Speech-Language Pathology . 2015;24(2):316-337. doi:10.1044/2015_AJSLP-14-0118.
- Winstein CJ, Stein J, Arena R, et al. "Guidelines for Adult Stroke Rehabilitation and Recovery." Stroke . 2016;47(6):e98-e169. doi:10.1161/STR.0000000000000098.