

Motor Speech Disorders

Producing speech is a complex process that takes (1) planning and coordination in the brain and (2) the precise coordination of muscles in the face, lips, tongue, and throat, as well as those for breathing.

Motor speech disorders occur when the **brain and/or nerves** cannot control the muscles needed to make speech. People with these conditions have a hard time planning the sounds, putting the sounds together in order, making them the same way over and over, and/or moving the body parts needed to make the sounds. As long as they do not also have language difficulties, they know what they want to say, but simply cannot produce the speech to say it.

Motor speech disorders in individuals with 22q11.2 differences include **dysarthria**, **childhood apraxia of speech**, and **speech motor delay**.

Motor speech disorders and 22q differences

Motor speech disorders are often seen in 22q11.2 deletion syndrome (22q11.2DS), with prevalence estimates from 32-86%. We currently do not know how common the disorders are among patients with 22q11.2 duplication syndrome (22q11.2DupS).

Dysarthria

- A condition in which the muscles needed for speech or breathing are weak, paralyzed, or poorly-coordinated.
- Leads to slurred or slow speech that can be difficult to understand
- Caused by injury to the brain and/or nerves that control the muscles used in speech
- Some symptoms include speech that is:
 - Slurred / mumbled
 - Soft as a whisper, or too loud
 - Too fast or too slow
 - Hoarse / harsh / strained / breathy / nasal
 - Robotic / Monotone / Choppy
- Diagnosed by:
 - A speech-language pathologist (SLP) – evaluates the speech and the movement of the mouth, lips, and tongue.
 - A neurologist (brain specialist) – can search for the cause using imaging, and other tests
- Treatment and management:
 - Speech therapy to improve muscle movements and speech clarity
 - In severe cases, use of alternative communication methods may be helpful, usually on a temporary basis, and always in conjunction with speech.

Childhood Apraxia of Speech (CAS)

- Also called verbal apraxia, verbal dyspraxia, or developmental apraxia
- A condition in which the brain has difficulty planning and coordinating speech movements. e.g. The child cannot intentionally move the lips or the tongue the right way for speech, even though the muscles are not impaired for other functions, such as eating.
- Possible causes may include stroke, infections, brain injuries, or neurodevelopmental disorders
- Symptoms include some or all of the following:
 - Saying the same word differently every time
 - Sound distortion (especially vowels)
 - Not being able to imitate simple words
 - Trouble / gaps between one sound and the next
 - Abnormal speech rhythm and stress patterns
 - Groping – Struggling to put the mouth in the correct position to form a speech sound.
- Diagnosed by a speech-language pathologist (SLP), who must evaluate both the speech and language abilities to arrive at the diagnosis.
- Treatment and management:
 - Speech therapy to improve muscle movements and speech clarity
 - In severe cases, use of alternative communication methods may be helpful, usually on a temporary basis, and always in conjunction with speech.

Children can have mixed features of dysarthria and childhood apraxia of speech at the same time.

Motor Speech Disorders (continued)

Speech Motor Delay (SMD)

- Previously called “motor speech disorder – not otherwise specified (MSD-NOS)”
- SMD is a recently proposed diagnostic category (but it is not widely used at this time)
- Includes delays in the precision and stability of speech, and prosody (speech rhythm) that do not meet the criteria for childhood dysarthria or childhood apraxia of speech
- Usually found in children with
 - No known cause for their speech delay
 - General delays in motor development
 - Sensory and motor delays that affect speech
- Features:
 - Does not include the laryngeal quality deficits seen in dysarthria
 - Includes many of the precision and stability problems in speech and rhythm seen in childhood apraxia of speech
- Treatment is individualized and based on possible cause

Tips for Easier Communication

The American Speech-Language-Hearing Association (ASHA) offers [Tips For Talking With Someone Who Has Dysarthria](#). For example:

Talker (person with a motor speech disorder)

- Say a topic/summary word before giving details
 - Say “dinner”, then say what you want to eat
- Face the listener
- Get the listener’s attention before starting to talk
- Pause to let the listener think about what you said
- Add gestures/pointing to help others understand

Listener

- Watch the talker when he/she talks
- If you have trouble understanding, don’t pretend that you understand.
- Repeat the part that you understand so the talker does not have to start from the beginning.
- Ask yes/no questions
- Ask the talker to gesture or point

References / Resources

Clinical practice recommendations / Medical research reports

- [Updated clinical practice recommendations for managing children with 22q11.2 deletion syndrome](#) – 2023
- [Updated clinical practice recommendations for managing adults with 22q11.2 deletion syndrome](#) – 2023
- [Speech-Language Disorders in 22q11.2 Deletion Syndrome: Best Practices for Diagnosis and Management](#) – 2019
- [Extensions to the Speech Disorders Classification System \(SDCS\)](#) – 2010

Websites of medical institutions and societies

- Dysarthria – [Mayo Clinic](#) | [Cleveland Clinic](#) | [American Speech-Language-Hearing Association \(ASHA\)](#)
- Childhood Apraxia of Speech – [Mayo Clinic](#) | [American Speech-Language-Hearing Association \(ASHA\)](#) | [Children’s Hospital of Philadelphia \(CHOP\)](#)