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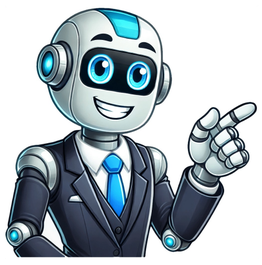

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The license may not give you all of the permissions necessary for your intended use. For example, other rights such as publicity, privacy, or moral rights may limit how you use the material. Dysarthria is a speech disorder caused by a lack of muscle control that happens when the parts of the brain that control speaking are damaged. It may also be caused by problems that do not involve the brain, like a condition affecting the muscles and nerves in the mouth or throat.The condition is mainly characterized by slurred speech. It may also cause atypical speech rhythm and voice changes, depending on the type of dysarthria.Dysarthria itself is not a medical emergency. But sudden dysarthria can be caused by a stroke or brain trauma, and these require urgent medical attention.In general, dysarthria cannot be cured or reversed. However, it’s possible to improve your ability to speak and communicate using certain therapies.Read on to learn about the symptoms, types, and treatment of dysarthria.The type of dysarthria depends on the part of the brain affected. These types include:Flaccid dysarthria is caused by lower motor neuron damage. This involves the cranial and spinal nerves. Cranial nerves connect your brain to other areas of your head and neck. Spinal nerves connect your spinal cord to other parts of the body.In spastic dysarthria, the upper motor neurons on one or both sides of the brain are damaged. This involves areas that control movement.Unilateral upper motor neuron (UUMN) dysarthria is considered a milder form of spastic dysarthria. It’s also one of the most common types of dysarthria.Often, it’s caused by a stroke. It involves damage to the upper motor neurons, which control movement.In ataxic dysarthria, there’s damage to the connections between the cerebellum and other parts of the brain. Hypokinetic dysarthria is caused by an issue with the basal ganglia control circuit, a type of pathway in the brain. The basal ganglia is the part of the brain that controls motor function.This type is often associated with Parkinson’s disease, which causes slow movement and rigidity.This type of dysarthria mainly causes unpredictable speech production.Mixed dysarthria occurs when there are two or more types of dysarthria present. One example is spastic-flaccid dysarthria, which is seen in amyotrophic lateral sclerosis (ALS).Mixed dysarthria is the most common type of dysarthria. The exact features depend on the dysarthrias involved.The symptoms of dysarthria depend on the type. They can also vary in severity.In general, dysarthria causes:slurred speechslow or rapid speechirregular rhythm of speechoverly soft or loud speechharsh or breathy voicedifficulty controlling your tongue or lipsincreased nasal resonance (excess noise coming out of the nose)monotone volume or loudnessdifficulty swallowing (dysphagia)drooling (due to dysphagia)choppy speech made of short phrasesDysarthria is caused by brain damage. This can occur at birth, like in cerebral palsy.In other cases, brain damage may be due to injury or illness. Examples include:Both children and adults can develop dysarthria. However, you may be more likely to develop the condition if you:have a high risk of strokehave a degenerative brain diseasehave a neuromuscular diseaseDrinking excessive amounts of alcohol and using illegal drugs can also cause temporary dysarthria while intoxicated. Diagnosing dysarthria requires several tests. A healthcare professional will use several methods to diagnose dysarthria, including:Medical history. A doctor will examine your medical history to determine the cause. This will also help rule out other causes.Physical examination. A physical exam lets your doctor look for signs of injury or brain trauma. It can help test sensation, movement, and vision. It can also distinguish between causes like a stroke or infection.Blood and urine tests. Urinalysis and blood tests allow your doctor to check for signs of infection.Imaging tests. An imaging test, such as an MRI, can help diagnose neurological conditions.Genetic tests. If your doctor suspects a gene mutation, they’ll order a genetic test.Speech tests. A speech and language therapist might ask you to make sounds, speak, read words, or count numbers. They’ll examine your speech and mouth.Generally, dysarthria treatment is just one part of a bigger management plan. That’s because it’s usually caused by an underlying condition.Dysarthria is treated with speech and language therapy. The goal is to improve your ability to speak and communicate.This type of therapy is provided by a speech-language therapist or pathologist (SLP). Therapy may involve:exercises for improving strength and function of affected musclesstrategies for speaking slowlystrategies to learn how to properly over-articulate wordsstrategies to learn how to use artificial voice softwareexercises for learning how to control speech volumeIf you notice any changes in your speech, contact a speech-language therapist or pathologist. This is especially important if you’re at risk for dysarthria.You should contact a primary care doctor or speech-language professional if you have:slurred speechdifficulty moving your tongue, lips, or jawdifficulty raising your voiceunexplained changes in your voicedifficulty swallowingdifficulty pronouncing certain soundsDysarthria can make it difficult to communicate with other people. This can have a negative effect on psychological wellness and social relationships.In most cases, dysarthria cannot be cured. The exception is dysarthria with a temporary cause, like Bell’s palsy or medication.However, if you have dysarthria, it’s possible to improve your quality of life and ability to communicate. This requires:regular speech-language therapyroutine checkups with a healthcare professionalmanagement of underlying conditionssupport from family and friendsThe success of treatment also depends on many factors, including:your underlying conditionlocation and severity of brain damageyour overall health statusIt’s possible for people with dysarthria to have fulfilling, quality conversations with other people. The following strategies can help:If you have dysarthria, try these techniques:Inhale deeply before talking.Speak slowly. If needed, say one word at a time.Face the person you’re speaking with.Speak in short sentences.Repeat yourself if you need to.Limit or avoid background noise by turning off the television or radio.If you’re able, carry a pen and paper and write down words.If you do not have dysarthria, here’s what you can do to better communicate with those who do:Look at the person when they’re speaking.Limit or avoid background noise.Give them time to respond. Avoid rushing them.Avoid finishing their sentences or correcting words.Ask “yes or no” questions to confirm that you’ve heard correctly. For example, you can ask, “Did you ask if I got the mail?”Be patient and kind.Dysarthria is a speech disorder caused by brain damage. It can make it difficult to move your facial and mouth muscles, resulting in slurred speech.There are many causes of dysarthria, including strokes, traumatic brain injuries, degenerative brain diseases, and medication. Strokes and traumatic brain injuries require immediate medical attention.Dysarthria treatment involves speech-language therapy. This involves working with a professional speech-language pathologist, who can show you how to improve your ability to communicate. Dysarthria is a condition in which the part of your brain that controls your lips, tongue, vocal cords, and diaphragm doesn't work well. It's hard for you to move those muscles the right way.This condition comes in two forms:Developmental dysarthria happens from damage to a growing baby's brain in the womb or at birth. Cerebral palsy is one possible cause. Developmental dysarthria affects children.Acquired dysarthria happens from damage to the brain later in life. A stroke, Parkinson's disease, or a brain tumor is the possible cause. This type affects adults.People with dysarthria can think and understand language. But they have trouble talking because of weakness in the muscles that control speech.Some people with dysarthria have only minor speech problems. Others have so much trouble getting their words out that other people may not be able to understand them very well. A speech and language therapist can help improve speaking skills. Children with developmental dysarthria may benefit from speech-language therapy. (Photo credit: Andreaobzerova/Dreamstime) The six types of dysarthria are divided by causes or symptoms. They include:Spastic dysarthria is caused by damage to nerve cells in the central nervous system that affect movement. It makes the voice sound harsh.Hypokinetic dysarthria happens from damage to a part of the brain called the basal ganglia that controls movement. Speech is slow and never changes pitch.Hyperkinetic dysarthria is also from damage to the basal ganglia. In this case, speech is fast and changes a lot.Ataxic dysarthria happens from damage to the cerebellum, a part of the brain that helps muscles move. It can cause problems in the way you pronounce words.Flaccid dysarthria affects the lower motor neurons that send signals to your muscles to move. Your speech may sound nasal.Mixed dysarthria is the most common type. It's a mixture of other types, such as spastic plus flaccid.Damage to the parts of the brain that control speech causes dysarthria. Any of these conditions can cause this type of damage:Amyotrophic lateral sclerosis (ALS) or Lou Gehrig's diseaseBrain tumorsCerebral palsyDementiaGuillain-Barre syndromeHuntington's diseaseLyme diseaseMultiple sclerosis (MS)Muscular dystrophyMyasthenia gravisParkinson's diseaseSide effects of certain medicines, such as epilepsy drugsStrokeTraumatic brain injuryWilson's disease Prevalence of dysarthriaThe likelihood of getting dysarthria depends on the cause. This condition affects:30% of people with ALS25%-50% of people with MS70%-100% of those with Parkinson's disease8%-60% of people who have had a stroke10%-65% of those with traumatic brain injuryDepending on the cause, dysarthria can make your speech:FlatHave an uneven rhythmHigher- or lower-pitched than usualJerkyMonotoneMumbledNasal or whinyRaspySlow or fastSlurredSoft like a whisperStrainedBecause dysarthria can make it harder to move your lips, tongue, and jaw, it can be harder for you to chew and swallow. Trouble swallowing can cause you to drool.If you suddenly have a hard time speaking, you might be having a stroke. Call 911 right away. But if it's been happening for a while, see a speech-language pathologist (SLP). They'll ask about any diseases you have that could affect your speech. They'll also want to check the strength of the muscles in your lips, tongue, and jaw as you talk. They might ask you to:Stick out your tongueMake different soundsRead a few sentencesCount numbersSingBlow out a candleTests for dysarthriaYou might need some tests, including:Imaging tests like MRI or CT scansBlood or urine testsBrain and nerve tests like electroencephalogram or electromyographySpinal tap to check for infectionSwallowing study to check for problems when you swallowTreatment will depend on the cause of your dysarthria, the type, and your symptoms. Your speech might get better after you treat the cause.If you still have dysarthria, you might see a SLP who will teach you:Exercises to strengthen the muscles of your mouth and jawWays to speak more clearly, such as talking more slowly or pausing to catch your breathHow to control your breath to make your voice louderHow to use devices like an amplifier to improve the sound of your voiceYour therapist also will give you tips to help you communicate, such as:Carry a notebook or smartphone with you. If someone doesn't understand you, write or type what you want to say.Make sure you have the other person's attention.Speak slowly.Talk face-to-face if you can. The other person will be able to understand you better if they can see your mouth move.Try not to talk in noisy places, like at a restaurant or party. Before you speak, turn down music or the TV or go outside.Use facial expressions or hand gestures to get your point across.Use short phrases and words that are easier for you to say.Your therapist will work with your family to help them understand you better. They may suggest that your loved ones:Ask if they don't understand somethingGive you time to finish what you have to sayLook at you when they talk with youRepeat the part they understood so you don't have to say the whole thing againTry not to finish your sentences for youTalk to you as they would with anyone elseContinue to involve you in conversationDysarthria can affect many parts of your life. When you have trouble speaking clearly, you may be less able to communicate with loved ones. This can affect your relationshipswith family and friends.It's common for people with dysarthria to feel alone and depressed. That's why it's so important to get treatment from a speech-language therapist and see a mental health professional if you feel alone or sad.Dysarthria is a problem with parts of your nervous system that affects speech. It comes in several types that each affect speech in different ways. In speech therapy, you can learn exercises and tips to help you communicate more easily.What is the main cause of dysarthria?Damage to the brain from a condition like Parkinson's disease, a stroke, an injury, or MS can cause dysarthria.How do people with dysarthria speak? How speech changes depends on the type of dysarthria. The voice might sound breathy, nasal, slurred, fast, slow, out of rhythm, very loud, or very quiet.What is an example of dysarthria speech?Someone with dysarthria may speak slowly, haltingly, and at the same pitch (monotone). The main sign of dysarthria is that you have trouble speaking so that others understand you. You may have difficulty moving your lips, tongue or jaw in ways that produce clear speech.Dysarthria symptoms include:Slurred speech or mumbling when you talk.Speaking too quickly or more slowly than intended.Speaking quieter or louder than intended.Sounding hoarse, harsh, strained, breathy, nasal, robotic or monotone.Speaking in short, choppy bursts with several pauses, instead of in complete sentences.The lack of muscle control may also make swallowing difficult (dysphagia).What causes dysarthria?Dysarthria occurs when there’s damage to the parts of your nervous system that control the muscles that help you speak. This includes muscles in your face, throat and muscles that help you breathe. Injuries, illnesses and neuromuscular conditions (diseases that affect the nerves controlling your muscles) can all cause dysarthria.Common causes include:Amyotrophic lateral sclerosis (ALS or Lou Gehrig’s disease).Brain tumors.Cerebral palsy.Dementia.Huntington’s disease.Lyme disease.Multiple sclerosis (MS).Muscular dystrophy.Myasthenia gravis.Parkinson’s disease.Stroke.Traumatic brain injury.Trauma to your face or mouth.Trauma to your head, neck, tongue or voice box.Dysarthria-like symptoms are sometimes a side effect of certain medications, such as sedatives and antiseizure drugs.What are the complications of dysarthria?Speech problems can cause difficulties in social situations. Struggling to communicate and be understood can cause strain at work, school and in your relationships in general. The stress can lead to mental health issues, like depression.Getting treatments that can help you communicate and maintain meaningful connections with others is important. At DoveMed, our utmost priority is your well-being. We are an online medical resource dedicated to providing you with accurate and up-to-date information on a wide range of medical topics. But we're more than just an information hub - we genuinely care about your health journey. That's why we offer a variety of products tailored for both healthcare consumers and professionals, because we believe in empowering everyone involved in the care process.Our mission is to create a user-friendly healthcare technology portal that helps you make better decisions about your overall health and well-being. We understand that navigating the complexities of healthcare can be overwhelming, so we strive to be a reliable and compassionate companion on your path to wellness.As an impartial and trusted online resource, we connect healthcare seekers, physicians, and hospitals in a marketplace that promotes a higher quality, easy-to-use healthcare experience. You can trust that our content is unbiased and impartial, as it is trusted by physicians, researchers, and university professors around the globe. Importantly, we are not influenced or owned by any pharmaceutical, medical, or media companies. At DoveMed, we are a group of passionate individuals who deeply care about improving health and wellness for people everywhere. Your well-being is at the heart of everything we do. Dysarthria is a neuromotor disorder that results from abnormalities in speed, strength, accuracy, range, tone, or duration required for speech control. Decreased speech intelligibility characterizes the disorder. The content of the spoken language remains intact, so the patient can write and comprehend spoken and written language. Dysarthria is a motor speech disorder seen with many neurological causes. This activity reviews the main subtypes, evaluation, management of dysarthria, and the role of the interprofessional team in evaluating and improving patient care. Objectives: Identify the different subtypes of dysarthria.Determine the etiology of dysarthria in common neurological disorders.Implement a comprehensive initial history, physical, and speech evaluation for patients with dysarthria.Apply best practices for the interprofessional team to achieve the overall goals of holistic individualized treatment to facilitate communication, decrease isolation, and improve patient outcomes. Access free multiple choice questions on this topic. Dysarthria is a neuromotor disorder that results from abnormalities in speed, strength, accuracy, range, tone, or duration required for speech control.[1] Decreased speech intelligibility characterizes the disorder. The content of the spoken language remains intact, so the patient can write and comprehend spoken and written language. Anarthria is the severe form in which there is a complete loss of motor speech production.[2]Speech is a complex neuromuscular phenomenon achieved through the smooth coordination of 5 subsystems: respiration, phonation, resonance, articulation, and prosody.[3] Muscular dysfunction affecting any of these subsystems causes impairments in audibility, naturalness, intelligibility, and communication efficiency. Dysarthria profoundly affects the patient and their families, as communication is integrally related to expressing personality and social relationships. Since there is overlap in the functioning of the muscles, feeding and swallowing difficulty in patients with dysarthria is common.Various neurological disorders can cause dysarthria. Dysarthria can arise from disorders at various locations of the neuroaxis, including the cerebral cortex, basal ganglia, cerebellum, cranial nerve nuclei, or peripheral nerves, and from a primary motor disorder of the tongue, larynx, and pharynx. Mayo Clinic Classification (commonly used - groups dysarthria based on the location) [4] Etiopathological Causes Infections: Creutzfeldt–Jakob disease, acquired immune deficiency disease.Vascular disorder: Ischemic and hemorrhagic strokes, arterio-venous malformations.Neoplasm: Primary and metastatic brain tumors.Demyelinating: Multiple sclerosis, Guillain–Barre disease.Degenerative: PD, progressive supra nuclear palsy, corticobasal degeneration, multiple system atrophy, Huntington disease (HD), ataxia telangiectasia.Trauma: TBI, chronic traumatic encephalopathy, cerebral palsy.Toxic: Heavy metal poisoning (Minamata disease due to methylmercury poisoning can cause dysarthria), alcohol, drugsGenetic: Sensory ataxic neuropathy, dysarthria, and ophthalmoparesis (SANDO) due to a mutation in the gene encoding the mitochondrial DNA polymerase gamma enzyme (POLG1)[5][6]In addition to the neurological causes, nonneurological causes, such as cleft lip or palate and laryngeal tumors, also cause difficulty with articulation. However, the condition is not termed dysarthria if it stems from nonneurological causes.The exact incidence of dysarthria is not known, and incidence varies based on the underlying cause. About 90% of patients with PD develop dysarthria during the illness. In ALS patients, dysarthria may predate limb weakness by about 3 to 5 years; dysarthria affects about 70% of patients with limb weakness.[7][8] In one study evaluating stroke patients, 28% had both aphasia and dysarthria, and 24% had dysarthria only. In a study of children with neuromuscular diseases, the prevalence of dysarthria was 31.5%.[9] It is estimated that 10 to 60% of patients with TBI have dysarthria.[10]The motor control of speech occurs at multiple levels. The cranial nerve nuclei receive cortical supply through the corticobulbar tract. All other cranial nerves are innervated bilaterally except for the lower face, which receives contralateral innervation. The facial nerve terminates in 5 branches; the branches that contribute to the muscles of speech are the buccal, mandibular, and, to an extent, cervical. The glossopharyngeal nerve (IX), through the stylopharyngeal nerve, innervates the stylopharyngeus muscle and, through the pharyngeal branches, innervates the muscles of the pharynx.[11]Through the pharyngeal branches, the vagus nerve innervates the pharyngeal muscles, which elevate the palate and cause pharyngeal constriction. The glossopharyngeal nerve provides a sensory supply to the stylopharyngeus, which elevates the pharynx during speech. The cricothyroid muscle supplied by the vagus’ superior laryngeal branch is the vocal cords’ chief tensor. The recurrent laryngeal nerve separates the vocal cords and opens the glottis through the posterior cricoarytenoids, closes the glottis through lateral cricoarytenoids, and relaxes the vocal cords through the vocalis.Hypoglossal nerve nuclei originating in the medulla provide motor branches to the tongue, supplying the intrinsic and extrinsic muscles (except the palatoglossus). Suprahyoid muscles: These influence tongue movements by altering the position of the hyoid bone.C1 fibers supply the geniohyoid muscle.The trigeminal nerve supplies the mylohyoid muscle and the anterior belly of the digastric muscle.The facial nerve supplies the stylohyoid muscle and posterior belly of the digastric muscle.In the neuromuscular junction, acetylcholine produced in the presynaptic nerve terminal binds to receptors, ultimately creating an endplate potential strong enough to propagate action potential over the surface of the skeletal muscle membrane, resulting in muscle contraction. In myasthenia gravis, various autoantibodies interrupt these processes resulting in dysarthria and other symptoms.[12]Multiple neurological conditions cause dysarthria, so the natural course and clinical features can differ. The presentation can be acute in patients with acute ischemic stroke, whereas it can be delayed in neurodegenerative diseases like ALS.Based on the Mayo classification, there are salient features of dysarthria[13] described below: Flaccid: Speech is slow, with hypernasality and breathy vocal quality. One of the most common examples in clinical practice is idiopathic peripheral facial paralysis, in which the patient presents with facial paralysis and drooling. Another common cause is Guillain–Barre syndrome. Spastic: Speech is harsh, with low pitch and constant errors. Speech evaluation shows hypernasality, reduced intelligibility, palatal elevation, and slow speech rate. Patients have signs of pseudobulbar palsy with dysphagia, hyperactive jaw jerk, and pseudobulbar affect. Patients with dysarthria-clumsy hand syndrome are noted to have facial weakness, dysarthria, and extremity dysmetria.[14] Hypokinetic dysarthria: This is seen in PD due to the loss of dopaminergic neurons. Speech is monotone and poorly articulated and tends to be quiet. Delays in speech initiation mixed with rushing of words can be seen. Other characteristic signs, such as masked facial features, resting tremors, cogwheeling, and festinating gait, can be observed at the examination. Hyperkinetic dysarthria: This is seen with basal ganglia lesions and associated hyperkinetic movement disorders, such as HD. Speech is harsh, with variation in loudness and rate of speech. There are occasional stoppages while speaking. Ataxic dysarthria: This is commonly seen with disorders of the cerebellum or its connections. Speech has a “scanning” quality or irregular rhythm with the explosion of syllables. Prosody is impaired, with each syllable being pronounced slowly, and there is a pause after every syllable. There is decreased motor coordination manifested by axial and appendicular ataxia depending on the part of the cerebellum affected. Mixed dysarthria: Two or more central nervous system components are affected in this type. This can be seen with ALS and multiple sclerosis. Speech is slow, prosody is disrupted, voice is strained, and there is marked hypernasality.A thorough history and a detailed physical examination are crucial in evaluating patients presenting with dysarthria. A comprehensive initial speech evaluation is comprised of (1) history, (2) oral motor/speech mechanism exam, (3) screening of subsystems (respiration, phonation, articulation, resonance, and prosody), (4) perceptual assessment, and (5) intelligibility evaluation.The water glass manometer test provides a gross assessment of pressure-generating capabilities for speech production. The patient must blow into a water-filled drinking glass with the straw secured at a certain depth inside the glass. If the patient can maintain a stream of bubbles for 5 seconds, breath support is adequate for most speech purposes. To be valid, the patient must maintain velopharyngeal closure and a tight lip seal around the straw.[15]Perpetual assessment of speech helps observe the function of all speech subsets. This assessment provides insight into deficits and serves as a comparison tool. Passages such as "my grandfather" and "caterpillar passage" help assess perceptual speech.[16][17] These passages help evaluate the speech repertoire, examine the subsystems of speech, contemporary vocabulary, and simple syntax, and assess polysyllabic word form. The Caterpillar Passage "Do you like amusement parks? Well, I sure do. To amuse myself, I went twice last spring. My most MEMORABLE moment was riding on the Caterpillar, which is a gigantic roller coaster high above the ground. When I saw how high the Caterpillar rose into the bright blue sky, I knew it was for me. After waiting in line for thirty minutes, I made it to the front, where the man measured my height to see if I was tall enough. I gave the man my coins, asked for change, and jumped on the cart. Tick, tick, tick, the Caterpillar climbed slowly up the tracks. It went SO high I could see the parking lot. Boy, was I SCARED! I thought to myself, "There's no turning back now." People were so scared they screamed as we zoomed fast and faster along the tracks. As quickly as it started, the Caterpillar came to a stop. Unfortunately, it was time to pack the car and drive home. That night I dreamt of the wild ride on the Caterpillar. Taking a trip to the amusement park and riding on the Caterpillar was my MOST memorable moment ever!" Speech Intelligibility Evaluation Assessment of intelligibility in dysarthric speakers (AIDS), sentence intelligibility test (SIT), and word intelligibility test are used to assess speech intelligibility. AIDS is the most commonly used and comprises word and sentence tasks. The patient reads or imitates 50 unsystematically chosen words from 12 phonetically similar words for each word. In the sentence task, the patient reads or imitates two sentences each for 220 words. The sentences are chosen from a collection of 100 sentences of each length. The judge derives an intelligibility score based on the percentage of words transcribed accurately.SIT is an improved Windows version of the sentence portion of AIDS. It examines the intelligibility of words and sentences and estimates efficiency by examining the rate of intelligible words per minute in sentences.The onset and progression of dysarthria and associated neurological complaints, such as tremors, dysphagia, and gait instability, can provide clues for the diagnosis. A medication list review should include potential overdoses and exposure to toxins, such as alcohol and cocaine. Having the patient count from 1 to 100 can bring out respiratory muscle fatigue in myasthenia gravis. Counting numbers without interruption (1–30) is another bedside tool to assess respiratory status.[18] Sustaining an "ah" sound is a functional bedside test to assess laryngeal function.Imaging techniques, such as computed tomography (CT) of the head and magnetic resonance imaging (MRI) of the brain, are helpful initial tools in evaluation. In patients suspected of neuromuscular junction disorders, electromyography (EMG) and nerve conduction studies (NCS) are indicated. CBC (complete blood count), basic metabolic profile (BMP), and urine drug screening are indicated based on history and pretest probability. If GBS is suspected, evaluation of pulmonary function (vital capacity and negative inspiratory force) is indicated.[18] Speech Assessment Tools Frenchay Dysarthria Assessment is one of the most commonly used commercially available tools for dysarthria assessment. It was initially devised in 1980 and revised in 2008. It incorporates a series of tasks used to identify the dysarthria subtype. Speech pathologists rate the patient's speech employing a 5-point scoring system on the following (a) reflexes, (b) respiration, (c) lips, (d)palate, (e) laryngeal, (f) tongue, and (g) intelligibility, (h) influencing factors.[19]For subjective assessment, self-report questionnaires such as Living with Neurologically Based Speech Difficulties (Living with Dysarthria - LwD) may be used. The severity of dysarthria may not always correspond to the extent of perceived communicative difficulties.[20] The overall goals of speech and language treatment are to facilitate the recovery of communication, to assist patients in developing strategies to compensate for communication disorders, and to counsel and educate people in the patient's environment on assistive communication supports to facilitate communication, decrease isolation, and meet the patient's wants and needs.When developing the plan, it is essential to consider dysarthria's cause, severity, and underlying co-morbidities. Speech-language pathologists and physicians work together to formulate an individualized approach for the patient. Recent studies indicate that speech rehabilitation significantly improves speech in adults with stroke-related dysarthria and that interventions such as Lee Silverman Voice Treatment are effective for hypokinetic dysarthria in individuals with PD.[21][22]Broadly, types of therapy could be grouped as follows:Therapy targeting the speech-production subsystemsCommunication strategiesEnvironmental adaptationsAugmentative and alternative communication (AAC)Medical/surgical interventions. Targeting the Speech-Production Subsystems Speech pathologists can target the five individual subcomponents that produce speech.Lee Silverman Voice Treatment and Pitch Limiting Voice Treatment target phonation; the former is a program that improves loudness and intelligibility and has been widely studied in PD, while the latter increases vocal loudness without increasing pitch.[23] [24] Articulation can be improved by increasing loudness, pausing, exaggerating articulation, and altering pitch variation. Respiratory muscle strength training supports breathing by altering posture to target respiration. Communication Strategies Providing feedback, clarifying, and encouraging are practical approaches for the partner. For the patient, setting up the conversation by gaining the partner's attention, slowing and repeating the phrases, and using nonverbal gestures, such as eye contact and facial expressions, are helpful strategies.Speech supplementation, such as alphabet, syntactic, and topic, are helpful strategies. In alphabet supplementation, the speaker uses an alphabet board to identify the first letter of the spoken word. In topic supplementation, a phrase or cue word is uttered before speaking. Information about the grammar or word class is provided with each spoken word in the syntactic supplementation.Behavioral communication intervention techniques such as biofeedback are shown to improve intelligibility. In stroke patients, biofeedback techniques increased the volume, decreased the speed, and improved the intelligibility.[25][26] Environmental Adaptations Setting up optimal environmental conditions to increase understandability includes ensuring a quiet conversation background, intimate seating, and face-to-face interaction. Augmentative and Alternative Communication (AAC) AAC may include low-tech aids, such as picture boards or pen and paper, or high-tech aids, such as smartphones, voice synthesizers, digital records, and speech-generating devices.[27] Computer-based interventions offer an exciting step toward dysarthria management. Some examples are:A mobile application for PD patients. It includes an assessment of the speech in addition to various other aspects of disease management[28]Feedback and individual practice using computers were as effective as traditional therapy in patients with stable dysarthria[29]Improvement in articulation and intelligibility was assessed in Virtual articulation therapy[30]These small studies hold good promise for further expansion of computer-based interventions. Medical/Surgical Interventions Medical therapy should target the underlying neurological cause. In dysarthria arising from PD, therapy should focus on repleting dopaminergic therapy. The effects of PD drugs on dysarthria are variable. Subthalamic nucleus stimulation has some efficacy among surgical treatments, but speech intelligibility worsens, as with most surgical interventions in PD.[31] Improving spasticity in ALS with baclofen, tizanidine, and botulinum toxin type A has been tried.[8]Laryngoplasty is an option if hoarseness is associated with recurrent laryngeal nerve palsy and does not improve with conservative management. Palatal lift improves resonance by surgically lifting the weak palate. Since the 2019 COVID pandemic, telehealth has become more relevant than ever. Telerehab (TR) is less expensive and equally effective in improving functional stroke outcomes, including speech, compared to traditional rehab.[32] In another review of speech therapy administered via teletherapy in patients with PD, the patient reported overall increased satisfaction due to increased convenience and accessibility. Further research is needed, however, as the studies lacked double blinding, and there was heterogeneity in the protocol.[33]The differential diagnoses for dysarthria include aphasia, apraxia of speech, and aphemia.Apraxia, in general, is a dysfunction of a learned motor task. Patients need help initiating speech and transitioning between sounds; they speak through trial and error, and their errors are inconsistent. When patients are asked to repeat a phrase exactly, especially a polysyllabic word (eg, television), different errors are noted in each attempt. Isolated apraxia of speech is rare; it is usually seen with aphasia. Imaging might show lesions in the dominant insula and Broca’s area.[34]Aphasia is a language impairment. Depending on the location, language comprehension or production may be impaired. Patients also have difficulty writing and reading.[35]Aphemia is a motor speech disorder resulting in near muteness. Patients have normal comprehension, reading, and writing.Dysarthria is described as chronic if persistent for greater than 5 years. Dysarthia is considered stable in patients with nonprogressive etiologies.Recovery also appears to be dependent on the etiology. One study evaluating dysarthria following stroke showed recovery in about half of the patients.[36] No estimates of the long-term prognosis of various diseases are available. However, from various anecdotal reports, it is evident that dysarthria is progressive in most neurodegenerative diseases.Functional Communication Measures (FCMs) refer to rating scales used to define an individual’s functional abilities. They are seven-point rating scales, ranging from least functional (Level 1) to most functional (Level 7). They help measure a patient’s functional communication and swallowing abilities throughout speech-language pathology intervention.Speech difficulty can have a significant impact on the patient’s psychosocial life. Patients report stigmatization, changes in self-identity, and social and emotional disturbances due to post-stroke dysarthria. In children, behavioral problems and lack of access to education can lead to decreased future employment opportunities. Tools such as the Dysarthria Impact Profile (DIP) are available to assess the psychosocial impact of dysarthria.[37] Given the possibility of far-reaching effects, timely intervention should be the goal.Dysarthria Impact Profile is used to assess the psychosocial impact of dysarthria.[38] Patients report how their condition hinders them in multiple circumstances, such as talking to people they do not know and ordering a meal in a restaurant. The tool is used for outcome measurement and for planning interventions. Communicative Participation Item Bank (CPIB) is a self-reported tool designed for adults with various communication disorders; this tool has clinical and research applications.[39] Patients report how their condition hinders them in multiple circumstances, such as talking to people they do not know and ordering a meal in a restaurant.ConsultationsSpeech and language pathologistsPhysiatrist (physical medicine and rehabilitation)When the patient or family first notices dysarthria, they should immediately bring it to the attention of an appropriate medical practitioner. Acute onset might be a symptom of stroke; hence, rapid evaluation in the hospital is warranted. If symptoms are progressive, patients are typically assessed by a primary care clinician and referred to specialists. Patient and caregiver strategies help during rehabilitation.[40] Paying attention to the speaker, speaking in a quiet area with good lighting, repeating phrases that are not understood, and clarifying unclear statements by asking yes-or-no questions are some valuable strategies for caregivers. Patients should begin with one word or phrase before proceeding to complete sentences. Speaking slowly with frequent pauses helps ensure understanding. Frequently ensuring listeners understand and using pictures and writing are also helpful strategies. When tired and frustrated, dysarthria worsens. When necessary, using alternative methods of communication is warranted. Educating the listener about dysarthria improves recognition of the condition and their attitude toward the patients.[41]The International Classification of Functioning, disability, and Health (ICF) is a classification system of health and health-related conditions developed by the World Health Organization (WHO) and published in 2001. It is a framework that addresses functioning and disability related to a health condition within the context of the individual’s activities and participation in everyday life.The table below maps a patient with ataxic dysarthria due to a cerebellar stroke:Activities and Participation Environmental and Personal FactorsDysarthria is among the most common neurological complaints and can arise from many primary neurological and nonneurological conditions. Collecting detailed history, including onset, progression, associated neurological symptoms, and collateral history from family and friends, is essential.If dysarthria is a presenting symptom, extensive workup may be required to diagnose the underlying cause. Nurses are often the first to recognize speech difficulties in an inpatient who develops dysarthria and should inform the clinician and make recommendations for interventions. An interprofessional team, including a neurologist, physiatrist, nurses, and speech–language pathologist, must make the diagnosis and formulate a treatment plan. Social workers may assist in locating support groups and local resources for patients and families.Conventional speech therapy and high-tech AAC devices can assist with functional communication when natural speech is not understandable. The Academy of Neurologic Communication Disorders and Sciences (ANCDS) and the American Speech–Language–Hearing Association (ASHA) published four practice guidelines between 2001–2004 to support the treatment of dysarthria. Various societies, such as the ANCDS, the National Parkinson’s Foundation, the Multiple Sclerosis Society, and the ALS Association, have practical guidelines for managing patients with dysarthria.The Speech–Language Pathology Medical Review Guidelines published by ASHA focus on specific components of the speech production process, such as improving muscle strength and control, reducing consonant imprecision, and improving respiration for producing an adequate voice. [Level 5] ASHA has an evidence maps section highlighting the most recent evidence-based research in dysarthria. Emerging evidence suggests TR improves costs and patient satisfaction compared to traditional in-person therapy. The study evaluated post-stroke patients’ quality of life and motor, speech, and cognitive function.[32] [Level 1]The prognosis of dysarthria depends on the cause. Proper consultation with specialists and education of family members and friends is required to optimize patient treatment and allow patients to regain their most significant level of independence. The treatment regimen is highly individualized and requires an extensive interprofessional team. Hence, prompt consultation with interprofessional specialists is recommended to improve outcomes.Review Questions1.Pennington L, Parker NK, Kelly H, Miller N. Speech therapy for children with dysarthria acquired before three years of age. Cochrane Database Syst Rev. 2016 Jul 18;7(7):CD006937. [PMC free article: PMC6457859] [PubMed: 27428115]2.Im YJ, Choi J, Kim YH, Chang WH. Transient Anarthria in a Patient With Non-Dominant Hemispheric Lesion: A Case Report. Brain Neurorehabil. 2022 Mar;15(1):e8. [PMC free article: PMC9833467] [PubMed: 36743848]3.PEACHER WG. The etiology and differential diagnosis of dysarthria. J Speech Disord. 1950 Sep;15(3):252-65. [PubMed: 14774879]4.Darley FL, Aronson AE, Brown JR. Differential diagnostic patterns of dysarthria. J Speech Hear Res. 1969 Jun;12(2):246-69. [PubMed: 5808852]5.Schröter-Morasch H, Ziegler W. Rehabilitation of impaired speech function (dysarthria, dysglossia). GMS Curr Top Otorhinolaryngol Head Neck Surg. 2005;4:Doc15. [PMC free article: PMC3201013] [PubMed: 22073063]6.Gáti I, Danielsson O, Jonasson J, Landtblom AM. Sensory ataxic neuropathy with dysarthria/dysphagia and ophthalmoplegia (SANDO). Two case reports. Acta Myol. 2011 Dec;30(3):188-90. [PMC free article: PMC3298093] [PubMed: 22616202]7.Tjaden K. Speech and Swallowing in Parkinson's Disease. Top Geriatr Rehabil. 2008;24(2):115-126. [PMC free article: PMC2784698] [PubMed: 19946386]8.Tomik B, Guiloff RJ. Dysarthria in amyotrophic lateral sclerosis: A review. Amyotroph Lateral Scler. 2010;11(1-2):4-15. [PubMed: 20184513]9.Kooi-van Es M, Erasmus CE, de Swart BJM, Voet NBM, van der Wees PJ, de Groot IJM, van den Engel-Hoek L., studygroup Dutch pediatric rehabilitation centers. Dysphagia and Dysarthria in Children with Neuromuscular Diseases, a Prevalence Study. J Neuromuscul Dis. 2020;7(3):287-295. [PMC free article: PMC7369072] [PubMed: 32176651]10.Mitchell C, Bowen A, Tyson S, Butterfint Z, Conroy P. Interventions for dysarthria due to stroke and other adult-acquired, non-progressive brain injury. Cochrane Database Syst Rev. 2017 Jan 25;1(1):CD002088. [PMC free article: PMC6464736] [PubMed: 28121021]11.Thomas K, Minutello K, Das JM. StatPearls [Internet]. StatPearls Publishing; Treasure Island (FL): Nov 7, 2022. Neuroanatomy, Cranial Nerve 9 (Glossopharyngeal) [PubMed: 30969699]12.Gilhus NE, Tzartos S, Evoli A, Palace J, Burns TM, Verschuuren JJGM. Myasthenia gravis. Nat Rev Dis Primers. 2019 May 02;5(1):30. [PubMed: 31048702]13.Enderby P. Disorders of communication: dysarthria. Handb Clin Neurol. 2013;110:273-81. [PubMed: 23312647]14.Venkataraman P, Tadi P, Lui F. StatPearls [Internet]. StatPearls Publishing; Treasure Island (FL): Jan 7, 2024. Lacunar Syndromes (Archived) [PubMed: 30480945]15.Morris HL. The oral manometer as a diagnostic tool in clinical speech pathology. J Speech Hear Disord. 1966 Nov;31(4):362-9. [PubMed: 5923004]16.Reilly J, Fisher JL. Sherlock Holmes and the strange case of the missing attribution: a historical note on "The Grandfather Passage". J Speech Lang Hear Res. 2012 Feb;55(1):84-8. [PubMed: 22354714]17.Patel R, Connaghan K, Franco D, Edsall E, Forgit D,