

Speech and Language Disorders across the Lifespan: Assessment, Risk Factors and Evidence-Based Intervention

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Abstract

Speech and language abilities are fundamental to learning, social participation, emotional expression, education and employment. Communication disorders may occur during childhood because of developmental, sensory, neurological, structural or environmental factors, or may be acquired during adulthood following stroke, traumatic brain injury, neurological disease or laryngeal pathology. An evidence-informed narrative review was undertaken using scientific and clinical information from PubMed-indexed reviews, the National Institute on Deafness and Other Communication Disorders (NIDCD), World Health Organization (WHO), American Speech-Language-Hearing Association (ASHA), and the Cochrane Library. Early identification is critical because communication problems may reflect hearing loss, developmental language disorder, speech sound disorder, autism spectrum disorder, intellectual disability, neurological injury, structural abnormalities or other conditions. Speech-language therapy shows evidence of benefit for several childhood language and speech disorders and for acquired aphasia following stroke. Communication disorders are heterogeneous and require individualized assessment. Early identification, appropriate referral, evidence-based speech-language intervention, family involvement and interdisciplinary rehabilitation are central to improving functional communication and participation.

Keywords: Speech disorder; language disorder; developmental language disorder; speech-language therapy; aphasia; stuttering; speech sound disorder; communication disorders; early intervention.

Introduction

Human communication depends on the coordinated development and functioning of hearing, cognition, language processing, motor control, respiration, phonation and articulation. **Speech** refers primarily to the motor production of sounds and words, whereas **language** is the symbolic system used to understand and express ideas through spoken, written, signed or other modalities. Consequently, a person may have impaired speech with relatively preserved language, impaired language with relatively clear speech, or difficulties affecting both domains.

The first years of life represent an especially important period for speech and language acquisition. NIDCD notes that the first three years constitute an intensive period of brain maturation for communication development and that children generally progress through an identifiable sequence of listening, vocalisation, gestures, words and increasingly complex sentences. Development varies

between children; therefore, milestones should be viewed as **screening indicators rather than rigid diagnostic cut-offs**.

Communication disorders are clinically important because their consequences extend beyond speech itself. Persistent language difficulties may interfere with literacy, classroom learning, peer relationships and participation. In adults, acquired communication disorders can affect independence, family relationships, employment and quality of life.

Assessing a Child's Speech and Language Development

Parents and teachers are frequently the first people to notice a communication difficulty. Concern is appropriate when a child's communication appears substantially different from that of similarly aged children, when speech is difficult to understand, when language development is limited, or when previously acquired communication skills are lost.

Table 1. Selected developmental communication indicators

Approximate age	Expected communication behaviours
Birth–3 months	Reacts to sound; different cries for needs; coos and makes pleasure sounds; smiles socially
4–6 months	Laughs; attends to sound-producing objects; produces varied vocalisations and early babbling
7–12 months	Turns toward sounds; understands some familiar words; uses gestures; imitates sounds; begins using meaningful words
1–2 years	Follows simple commands; identifies familiar pictures/body parts; regularly acquires words; begins combining words
2–3 years	Uses short phrases or sentences; names objects; asks for things; answers simple questions; speech becomes increasingly understandable
3–4 years	Uses sentences of four or more words; answers who/what/where/why questions; relates experiences
4–5 years	Tells connected stories; understands most everyday communication; uses increasingly mature grammar and most speech sounds

Adapted conceptually from NIDCD developmental communication milestones.

Clinical evaluation should be considered when a young child has very limited meaningful communication, fails to progress through expected communication stages, does not understand age-appropriate instructions, has persistently unclear speech, demonstrates unusual voice quality, shows persistent stuttering with struggle or avoidance, or experiences **regression or loss of previously acquired skills**. A hearing assessment is especially important because hearing loss can interfere with speech and language acquisition.

A child's behaviour must also be interpreted carefully. Difficulty following commands, apparently irrelevant answers, reduced classroom participation or frustration may sometimes result from difficulty understanding or expressing language rather than deliberate non-compliance. NIDCD similarly notes that language difficulties may sometimes be misinterpreted as behavioural problems.

Speech and Language Disorders in Children

1. Developmental Language Delay and Developmental Language Disorder

Children with language difficulties may show delayed first words, limited vocabulary, reduced sentence length, grammatical errors, difficulty following directions, poor narrative organisation or problems learning language-dependent academic skills. **Developmental Language Disorder (DLD)** refers to persistent difficulties acquiring and using language that significantly affect everyday communication or learning.

NIDCD estimates DLD at approximately **7%, or about 1 in 14 children**. Difficulties may persist into school years and affect vocabulary, grammar, discourse, reading and writing. Importantly, multilingual exposure itself does not cause DLD; a true developmental language disorder affects the child's language-learning ability across the languages used.

2. Speech Sound Disorders

Speech sound disorders involve difficulty accurately producing or organising the sounds of a language. A child may substitute one sound for another, omit sounds, distort sounds or use immature phonological patterns beyond the expected developmental period. NIDCD estimates speech sound disorders, including articulation and phonological disorders, in approximately **8–9% of young children**. Possible causes or associated conditions include phonological learning difficulties, childhood apraxia of speech, hearing loss, cleft lip and palate, neurological impairment and motor speech disorders.

3. Fluency Disorders

Stuttering or stammering is characterised by involuntary repetitions, prolongations and/or blocks that interrupt speech flow. Some children between approximately two and six years show temporary developmental disfluency while language is rapidly developing. However, persistent stuttering may involve tension, avoidance or negative emotional reactions and warrants professional assessment. Approximately **5–10% of children stutter for some period during childhood**, while many subsequently recover. NIDCD reports that around three-quarters of affected children recover, whereas a smaller proportion develop persistent stuttering.

Communication Disorders in Adults

Communication disorders acquired during adulthood are frequently associated with stroke, traumatic brain injury, progressive neurological disease, head and neck pathology or other neurological conditions.

Aphasia is an acquired disorder of language caused by damage to language-related areas of the brain, most commonly after stroke. Aphasia can impair speaking, understanding, reading and writing while not necessarily affecting intelligence. NIDCD reports that roughly one-third of stroke survivors may experience aphasia, while a systematic review found a median aphasia frequency of approximately **30% in acute mixed-stroke populations**.

Dysarthria, in contrast, is primarily a motor speech disorder. Neurological damage may alter the strength, speed, range, coordination or accuracy of movements required for respiration, phonation, resonance and articulation. Speech may therefore become slow, weak, slurred or difficult to understand. Dysarthria may occur with swallowing problems and can coexist with aphasia or apraxia of speech.

Table 2. Clinical differentiation of common communication disorders

Disorder	Primary difficulty	Common manifestations	Typical professional assessment
Developmental Language Disorder	Language acquisition/process	Vocabulary, grammar, comprehension, narrative difficulties	SLP + hearing evaluation
Speech Sound Disorder	Speech-sound production/phonology	Substitutions, omissions, distortions, reduced intelligibility	SLP/Audiologist as indicated
Stuttering	Fluency	Repetitions, prolongations, blocks, tension	SLP
Voice disorder	Phonation/voice quality	Hoarseness, breathiness, abnormal pitch	ENT + SLP
Aphasia	Acquired language impairment	Difficulty speaking, understanding, reading and/or writing	Neurology/medical team + SLP
Dysarthria	Motor execution of speech	Slurred, slow, weak or imprecise speech	Medical/neurological evaluation + SLP
Apraxia of speech	Motor planning/programming	Inconsistent errors and difficulty sequencing speech movements	SLP + neurological assessment

Risk Factors for Communication Disorders

Communication difficulty often reflects interactions among biological, sensory, developmental and environmental influences. Risk factors do not themselves establish a diagnosis; rather, they identify individuals who may require closer surveillance.

Table 3. Important risk factors and possible communication effects

Risk factor	Potential pathway to communication difficulty
Genetic/family history of hearing, speech or language disorder	Increased susceptibility to hearing or developmental communication disorders
Congenital infections, including rubella and CMV	May damage the auditory system and affect language development
Prematurity/low birth weight	Associated with neonatal complications and developmental vulnerability
Cleft lip/palate or craniofacial anomalies	Speech, resonance, feeding and middle-ear/hearing difficulties
Neurological injury or disease	Aphasia, dysarthria, apraxia, cognitive-communication problems
Autism/developmental disabilities	May affect social communication, language acquisition and functional communication

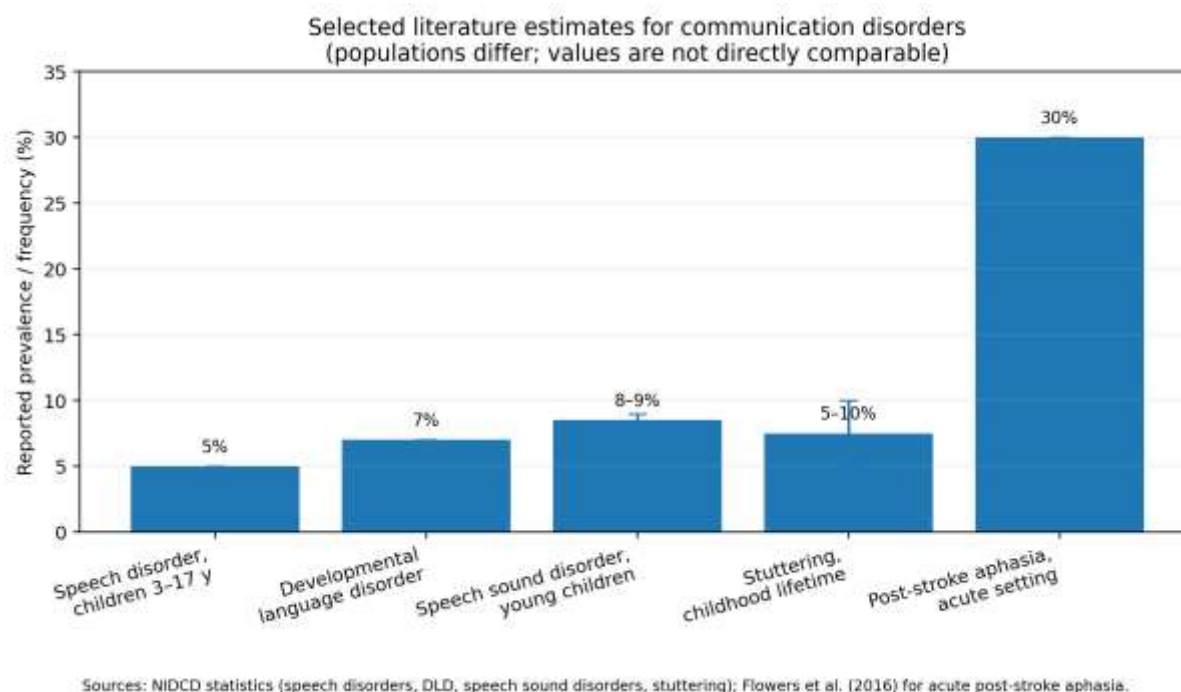
WHO identifies genetic factors, congenital infections such as rubella and cytomegalovirus, birth asphyxia, severe neonatal jaundice, low birth weight, meningitis, chronic ear disease, noise exposure and ototoxic medicines among important causes or risk factors for hearing loss. Because auditory access is important for spoken-language development, early hearing identification and management form an important component of communication-disorder prevention and intervention.

Speech-Language Therapy and Evidence-Based Intervention

Speech-language therapy is not a single standardized programme. Appropriate management depends on diagnosis, severity, developmental or neurological status, communication environment and the person's functional goals. Assessment may include case history, hearing status, oral-peripheral examination, speech-sound production, receptive and expressive language, fluency, voice, cognitive-communication abilities, literacy and functional participation. For adults with aphasia after stroke, speech-language therapy is directed toward restoring language abilities where possible, developing compensatory communication strategies, improving participation and supporting communication partners. Family participation is especially important. Parents and caregivers can help generalise communication strategies from therapy into everyday environments. Therapy therefore should not be considered an “instant cure”; rehabilitation often requires repeated practice, outcome monitoring and modification of goals according to progress.

Epidemiological Perspective

Figure 1. Selected published estimates of communication disorders/frequencies



The above figures demonstrate that communication disorders are not uncommon; however, the percentages **must not be interpreted as directly comparable prevalence rates**, because the underlying populations, age groups, diagnostic criteria and observation periods differ.

Conclusion

Speech and language disorders encompass a broad spectrum of developmental and acquired conditions affecting speech-sound production, language, fluency, voice and functional communication. In children, delayed communication, reduced comprehension, persistently unclear speech, abnormal voice, significant stuttering or developmental regression should prompt appropriate assessment. Hearing evaluation is particularly important because unidentified hearing impairment may substantially affect language development. Scientific evidence supports speech-language intervention for a range of developmental and acquired disorders, but successful therapy depends on correct diagnosis, individualized goals, adequate dosage, functional practice and involvement of family and other professionals.

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