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Evaluation and Management of Language and Speech Disorders in Preschool Children

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Objectives After completing this article, readers should be able to:

1. Describe key milestones in the development of language and speech.
2. List indications for further evaluation of language and speech delays.
3. Differentiate global delays, autism, and specific language impairment.
4. Generate a differential diagnosis for language and speech delay.
5. Evaluate management options for a child who has hearing loss.
6. Justify referral to early intervention for children who have global delays.
7. Discuss treatment of language impairments in autism.
8. Evaluate the effectiveness of language and speech therapy for language and speech disorders.

Introduction

Language is the expression of human communication through which ideas, information, emotions, and beliefs can be shared. Typically developing children master the fundamentals of language and speech in the toddler-preschool era. Language and speech skills serve a pivotal role in learning and social relationships. Delays in the early development of language and speech skills, which are prevalent in the population, may affect several domains of function. Management and treatment can improve language and speech skills substantially and reduce the functional impact of persistent disorders. Therefore, identifying children who have language and speech delays in the toddler-preschool period should be a priority for the pediatric clinician. This article reviews the normal process of language development up to school age, discusses the use of screening measures and parent report inventories to verify parental reports of delays, provides a differential diagnosis of language and speech delay, and suggests an approach to the child who has language or speech problems in the absence of history or physical findings suggestive of a specific medical condition associated with language and speech disorders. In addition, the review discusses general management of language and speech disorders and provides updates about management of some of the underlying causes of speech and language delay.

Definitions

Language is the use of systematic, arbitrary, and socially agreed upon signals (words and sentences) to convey meaning within a group or community. Receptive language refers to the ability to understand and expressive language to produce this symbolic communication. Speech is a manifestation of language that uses decodable vocal sounds as the medium of exchange. Speech is created by a series of complex and coordinated movements of the respiratory, laryngeal, velopharyngeal, and oral systems. Natural sign languages are an alternative method to convey meaning. Sign languages have underlying organization comparable with that of spoken language, but use a distinctive vocabulary and grammar based on movements of the hands, body, and face. Children learn sign language at comparable ages as they learn spoken language. There is no definitive evidence about whether teaching sign language to hearing children confers any advantages or disadvantages to the children.

Developmental language disorders are persistent and significant limitations on the ability to learn the language of the community. Characteristics of language disorders

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include limited understanding or production of vocabulary, misuse of words and their meanings, difficulty expressing or following ideas, immature grammatical patterns, difficulty following directions, or altered patterns of conversation. Speech disorders are persistent delays and deficits in the development of speech skills and voice quality. Speech disorders include problems in the production of speech sounds; disruptions in the flow or rhythm of speech; problems with voice pitch, volume, or quality; and poor intelligibility. Phonologic disorders (previously called articulation disorders) are common speech-sound disorders in childhood, in which the child is significantly less skilled than peers in articulating, sequencing, or organizing the sounds of the language. The errors compromise the ability of strangers to interpret the child's speech, but are relatively consistent. Another speech-sound disorder is verbal apraxia or developmental verbal dyspraxia. This disorder is associated with difficulty in planning, programming, and producing speech sounds. Children who have this disorder usually make highly inconsistent errors that severely compromise intelligibility. Differentiation among speech disorders requires the expertise of a speech-language pathologist.

Children often present initially in the toddler-preschool period with a developmental delay in language or speech. When delays persist and affect communicative function, they become classified as disorders. The pediatric clinician frequently is called on to verify delays in the development of language and speech and to decide which affected children warrant further evaluation and management.

Epidemiology

Language and speech disorders are features of many genetic and chromosomal disorders. For example, children who have Down syndrome typically show verbal skills below those expected on the basis of cognitive functioning. Children who have fragile X and Klinefelter syndromes may present with delayed language skills with or without characteristic physical features. Toddlers and preschoolers who have William syndrome are delayed at early stages of language development, although they ultimately exhibit communication and social skills in advance of other aspects of their cognitive functioning.

Language and speech disorders also are features of neurologic diseases. Children who have severe cerebral palsy may have problems with language or the produc-

tion and coordination of speech sounds. Seizure disorders involving the left hemisphere, such as Landau-Kleffner syndrome, may interfere with the development and use of language. Boys who have Duchenne muscular dystrophy may show early language and speech delay prior to or along with early signs of weakness.

In school-age children who have no obvious genetic or neurologic condition, the prevalence of language disorders is approximately 2% to 3%; the prevalence of speech disorders is between 3% and 6%. Some children have both disorders. Speech and language disorders are more common in boys than girls and more common among children who have a family history of language, speech, or reading disorders in a first-degree relative than among children who have a negative family history. The prevalence of language and speech delays in the preschool period is considerably higher, at about 15%, again with considerable overlap. Children of low socioeconomic

Speech and language disorders are more common in boys than girls and among children who have a family history of language, speech, or reading disorders.

standing are more likely to show delays in language and, in some studies, speech development than are children of upper and middle socioeconomic standing.

Clinical Aspects

Normal Language Development

Table 1 summarizes language milestones from birth to school age. From the neonatal period, children show interest in human voices and faces in preference to other stimuli, preferences that forge the building blocks of communicative development. By about 2 to 3 months of age, an infant begins to use his or her voice to make melodic vowel sounds called cooing. Shortly thereafter, they begin to enter into reciprocal vocal exchanges with their caregivers. By about 6 months of age, the child adds consonants to vowels, creating syllables known as babble. Also at about 6 months of age, children show emerging abilities to understand elements of the sound stream, responding appropriately to their name and to the word "no." By 8 to 10 months of age, children can use verbal cues for practiced routines, such as "wave bye-bye." Expressive communication at that age includes ma-ma or

Table 1. Normal Milestones in the Development of Language and Speech

Age	Receptive Skills	Expressive Skills
Birth	Turns to source of sound Shows preference for voices Shows interest in faces	Cries
2 to 4 months		Coos Takes turns cooing
6 months	Responds to name	Babbles
9 months	Understands verbal routines (wave bye-bye)	Points Says ma-ma, da-da
12 months	Follows a verbal command	Uses jargon Says first words
15 months	Points to body parts by name	Learns words slowly
18 to 24 months	Understands sentences	Learns words quickly Uses two-word phrases
24 to 36 months	Answers questions Follows two-step commands	Phrases 50% intelligible Builds three- (or more) word sentences Asks "what" questions
36 to 48 months	Understands much of what is said	Asks "why" questions Sentences 75% intelligible Masters the early acquired speech sounds: m, b, y, n, w, d, p, and h
48 to 60 months	Understands much of what is said, commensurate with cognitive level	Creates well-formed sentences Tells stories 100% intelligible
6 years		Pronounces most speech sounds correctly; may have difficulty with sh, th as in think, s, z, th as in the, l, r, and the s in treasure
7 years		Pronounces speech sounds correctly, including consonant blends such as sp, tr, bl

da-da, first used nonspecifically and then for the parent. Children begin to communicate nonverbally by pointing.

At around the first birthday, babble becomes increasingly complex jargon, sounding like adult language in terms of the variety of speech sounds and the intonation patterns. Simultaneously, children begin to understand and use real words. Throughout the second year, they are capable of understanding far more than they can produce. They initially learn vocabulary slowly, at a rate of approximately two to three words per week. The early words are simple in structure, often repetitions of a consonant and a vowel, such as wa-wa for water. The early words may be used too broadly, such as applying the label dog to all animals, or too narrowly, such as applying the word dog only to the family pet.

Sometime usually between 18 and 24 months of age, when the child's vocabulary reaches 30 to 60 words, the pace of language learning quickens dramatically. Children learn, on average, three to four words per day and begin combining words into two-word phrases. As sentence length increases, the child masters language-

specific grammatical elements, including pronouns, question words, articles, and verb tense markings. At age 3 years, comprehension is extremely good; sentences are three or more words in length; children begin asking questions, first "what" and then "why"; and they engage in short conversations. By 4 to 5 years of age, the child is able to construct complex sentences, participate in meaningful conversation, and tell short stories. After that point, progress in language development is less obvious to the untrained listener. By school age, individual differences in language abilities are revealed in formal testing or laboratory studies.

Normal Speech Development

Speech development progresses in tandem with language (Table 1). The first eight consonant sounds that develop are: m, b, y, n, w, d, p, and h. At age 2 years, a child who is developing typically can create speech that is intelligible to an unfamiliar adult at least 50% of the time and at age 3 years, at least 75% of the time. Children may continue to have difficulty with pronouncing some sounds until about 7 years of age. The last eight conso-

Table 2. Indications for Referral for Delays and Disorders of Language and Speech

Age	Finding
Birth and at any age	Lack of response to sound Lack of interest in interaction with people
4 months	Lack of any drive to communicate
6 to 9 months	Loss of the early ability to coo or babble Poor sound localization or lack of responsiveness
12 months	No verbal routines Failure to use ma-ma or da-da Loss of previous language or social milestones
15 to 18 months	No single words Poor understanding of language
24 months	Vocabulary less than 50 words No two-word phrases Less than 50% of speech intelligible to strangers
36 months	Rote memorization of words or phrases Frequent immediate or delayed repetition of others' speech Flat or stilted intonation More than 75% of speech unintelligible to strangers
48 months	Inability to participate in conversation Stuttering of initial sounds or parts of words
6 to 7 years	Immature or inaccurate speech sound production

nants typically acquired are sh, th as in the word “think,” s, z, th as in the word “the,” l, r, and the zh sound usually spelled as s, as in the word “treasure.” Consonant blends such as sp, tr, and bl also may not emerge until early school age. Nonetheless, 100% of speech should be intelligible by about age 4 years.

Fluency—the flow of output—also undergoes developmental change. At around age 3 to 4 years, many children experience a period in which the fluency of their output is poor. Developmental dysfluency is characterized by repetition of whole words and syllables rather than individual sounds, seems to arise from poor coordination of thoughts and words, and typically resolves by age 4 years. Stuttering is a long-term speech problem characterized by disruptions in fluency that create difficulties with communication. Stuttering consists of repetitions of parts of words, prolongations of sounds, and complete blocks. Children who stutter may show evidence of tension and struggle as they attempt to form words.

Detection of Language Delay

Toddlers rarely cooperate with a health care professional to allow direct assessment of early language and speech in a short office visit. The Early Language Milestone, second edition, and the Clinical Adaptive Test/Clinical Linguistic and Auditory Milestone Scale are brief screen-

ing measures that are appropriate for use in the pediatric office. General developmental screening tests provide a pass-fail score and do not offer information specifically about language and speech.

Many pediatric practices assess development with history rather than with screening. Therefore, it is imperative that clinicians recognize early signs of disorder and delay. Table 2 describes abnormal findings on history (or developmental observation) at various ages that should prompt further evaluation of a child’s language or speech. In addition, a delay of 25% or greater by 16 to 24 months of age is considered significant. For example, a 24-month-old child who functions as a typical 18-month-old can be considered to have a clinically significant language delay.

Parental concerns about language or speech can be corroborated through the use of parent report inventories, such as the Language Development Survey or the MacArthur Communicative Development Inventories-Short Form. These measures, obtained when children are 18 months to 2 years old, have good concurrent validity and predictive validity. Clinicians should not wait until children are 3 years of age or older to evaluate delayed language or speech.

Causes of Language Delay

Significant language delay (>25%) should not be disregarded because the child is a boy, second- or third-born in a family, or a member of a bilingual household. Studies show that boys function on average only 1 to 2 months behind girls in vocabulary and grammar development. Birth order effects in language development are not consistent across studies. Toddlers from bilingual households may show minor delays at the initial phases of language production and early mixing of the two language systems within a phrase or exchange. Their progress at differentiating languages occurs more quickly when the languages are associated with clear environmental contexts (language #1 at home, language #2 at school) than when they are mixed within the context (the parent uses language #1 70% of the time and language #2 30% of the time). Children may develop uneven skills in

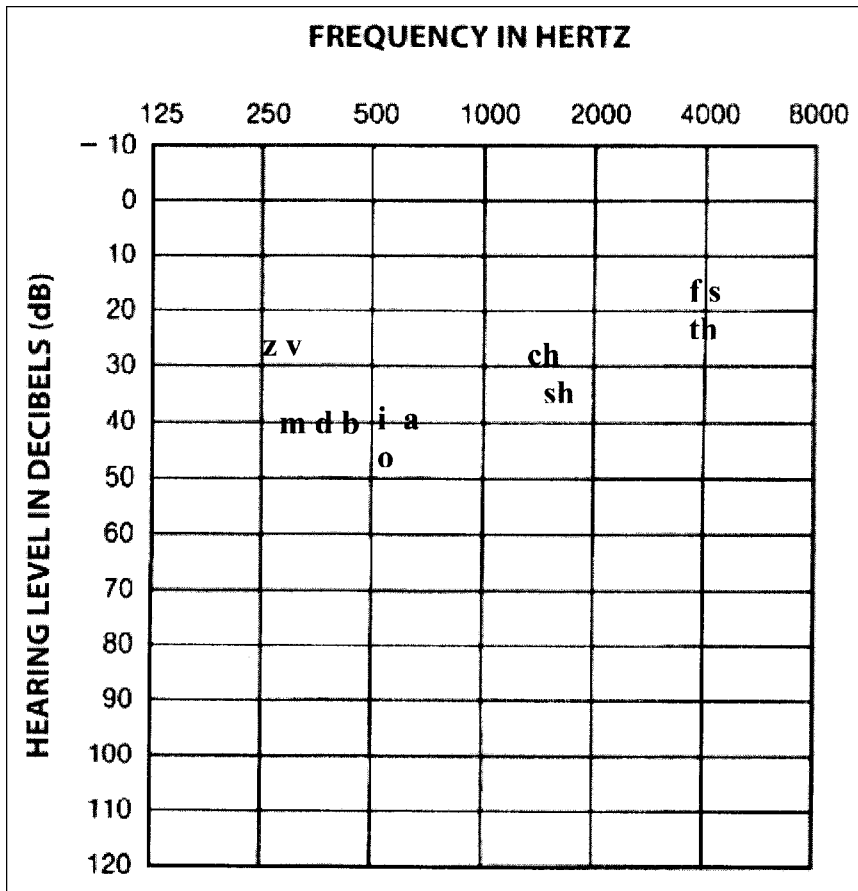


Figure 1. Audiogram with placement of common speech sounds at their average frequency and energy level. Adapted from Northern and Downs, 1984.

the two languages as a function of the amount and quality of exposure to each language.

Significant delays in language development can result from either biologic or environmental causes. The differential diagnosis of language delays in children who have no specific findings on history, physical examination, or neurologic examination includes hearing loss, global developmental delay, autism, specific language impairment, and psychosocial deprivation. Hearing loss may be suspected based on the pattern of the child's understanding and production. Speech sounds at the greatest risk for poor reception and production in the context of moderate sensorineural hearing loss are s, th, and f, which are high-frequency sounds that have low energy (Fig. 1). Global developmental delay may be suspected on the basis of other delays in cognitive or motor skills. If such developmental findings persist into school age, the child may meet diagnostic criteria for mental retardation.

Autistic disorder should be suspected when language

not only is delayed but also is deviant, that is, different in terms of vocabulary, grammar, or communicative pattern from the language of younger children. In autism, qualitative impairments in communication are accompanied by qualitative impairments in social interaction, such as a lack of eye-to-eye gaze and reciprocity, and by restrictive, repetitive, and stereotyped patterns of behaviors, interests, or activities. Some children who have autism develop language and speech skills, but these higher functioning children show characteristic impairments in the ability to initiate or sustain conversation, a reliance on stereotyped or repetitive language rather than truly novel constructions, and flat or stilted intonation patterns. Longitudinal follow-up of preschool-age children who have autistic features and do not meet diagnostic criteria for autism at that age often finds that they meet diagnostic criteria at school age, although some children improve over time.

Specific language impairment may be suspected when language skills are lower than other cognitive

abilities. Specific language impairment may affect only expressive language or both receptive and expressive language. Characteristics of the language include delays or errors in the use of elements of the grammar that are infrequent or unaccented in speech, such as accurate understanding or production of the plural (-s) or past-tense (-ed). In some children, social aspects of communication are affected, making differentiation of these semantic-pragmatic language impairments from autism challenging.

Language delays also can result from a poor linguistic environment. Children who have suffered child abuse or severe deprivation typically have delayed language and speech. Under less extreme conditions, the size of children's vocabulary and the maturity of their grammatic skills are associated with the quality and quantity of parental input. The slow language development of children from low socioeconomic groups has been attributed to the relatively impoverished linguistic environment of

children raised in poverty. Programs that encourage reading to infants and toddlers may improve language skills in children by increasing the amount and diversity of language in their environment.

Evaluation of the Child Who Has Language and Speech Delays

Children presenting with language delay should receive a full audiologic assessment, using the assessment techniques that are appropriate for the child's age. Universal newborn hearing screening detects most children who have moderate, severe, or profound sensorineural hearing loss in the newborn period because of the high sensitivity of the tests. However, the tests reliably miss children who have mild-to-moderate, progressive, or acquired hearing loss. Therefore, children who have language or speech delay should be reassessed for hearing acuity.

Children who have normal hearing and indications of impairments of cognitive or social skills should receive a comprehensive developmental assessment. Early intervention services for children from birth to 3 years of age can provide an assessment of the child's level of functioning in each developmental domain. Advantages of referral to early intervention for diagnostic purposes are that the services are provided at no charge to the family, and intervention can begin promptly if delays are discovered. These evaluations typically provide a description of levels of functioning in developmental domains but do not offer an overriding or unifying diagnosis, such as cerebral palsy or autism. Psychologists and medical specialists, such as developmental-behavioral pediatricians or neurologists, provide the diagnostic formulation but may not, particularly in the current fiscal climate, describe developmental levels in all domains. Concurrent referral to early intervention services and medical subspecialists is sensible. The quality of the home environment can be assessed in several ways, as appropriate to the nature and degree of the concern. A careful interview may reveal poor parent-child interactions or a low level of stimulation in the home. Screening tests for the home environment are available and often need to be validated by a direct home assessment. If clinicians have serious concerns about the quality of the home environment, options available include a referral to child protective services, a mental health assessment of parents, or a professional home assessment.

Children who otherwise seem to be progressing normally may be referred to a speech-language pathologist for verification of the degree and nature of language or speech delay as well as recommendations for the frequency and type of treatment. The treatment of stuttering falls to the speech-language pathologist, as does differentiation of developmental dysfluency and stuttering in difficult cases. Children who have language or speech delays in addition to other developmental delays or specific genetic or neurologic conditions also may benefit from the speech-language pathologist's evaluation. Early intervention programs typically include a speech-language pathologist on the interdisciplinary evaluation team.

Management

General Management Strategies

Speech and language disorders should be conceptualized as chronic special health care needs for the purposes of designing a management plan. Chronic concerns are managed best in the context of a meaningful, long-term relationship between a proactive, prepared primary care team and an informed, active family. A family-centered,

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community-based "medical home" assumes responsibility for coordinating services, facilitating communication among practitioners and family members, providing information and direction, and offering emotional and instrumental support. The child and family need access to community-based therapeutic services within both the medical and the educational systems.

Evaluation of the child's functional capacities is an important component of chronic care for a developmental disorder and should be used to set treatment goals, counsel families, and monitor progress. In this regard, the World Health Organization has created the *International Classification of Functioning, Disability and Health* (see Suggested Reading). This diagnostic manual provides a useful conceptualization about the bidirectional relationships among impairments, functional activities, social participation, and environmental factors. The lists of functional activities and social participation

Table 3. Functional Activities and Social Participation at Risk in Children Who Have Language and Speech Disorders

Domain	Specific Examples
Learning and applying knowledge	Purposeful sensory experiences: listening Learning to read Learning to write
General tasks and demands	Undertaking a single task Undertaking multiple tasks Carrying out daily routines Handling stress and psychological demands
Communication	Communication—receiving Communication—producing Conversation and the use of communication devices and techniques
Interpersonal interactions and relationships	Basic interpersonal interactions (respect, tolerance, criticism, social cues) Complex interpersonal interactions (forming and terminating relationships, regulating behavior within interactions, interacting within social rules)
Community, social, and civic life	Recreation and leisure Religion and spirituality

Data from the World Health Organization, *International Classification of Functioning, Disability, and Health*.

provide a schema for the comprehensive assessment of relevant domains that might be affected by the developmental disorder. Table 3 lists activities and participation that may prove exceptional challenges to children who have speech and language disorders, such as the ability to learn and apply knowledge. The management plan should address the functional needs in these and related domains as they evolve over time.

Hearing Loss

The management of hearing loss depends on both the degree of loss and the preferences of families. Auditory amplification is the mainstay of management for moderate-to-profound hearing loss. Referral to an audiologist is necessary to prescribe and fit hearing aids properly. An important decision for the family of a child who has hearing loss is the mode of communication the child will use. This decision must be considered on an individual basis. Aural-oral education trains the child in the conventional language of the community, but some children who are hearing impaired are very slow at learning lip-reading and speech. Sign language may allow for meaningful communication at young ages. However, the success of sign language depends on the adequacy of the language environment. Parents and siblings of children

who are learning sign language also should learn sign language and ideally serve as language models rather than coequal communication partners.

Cochlear implantation is a relatively new treatment for children who have bilateral severe-to-profound sensorineural hearing loss and fail to show improvement with standard hearing aids. Cochlear implantation allows for restoration of the perception of sound signals, although the nature of the perception differs from normal hearing. Cochlear implantation is most successful when achieved early in life, possibly in the first year. Important issues for the primary health care team include providing information to families who are considering the procedure, assisting in the selection of appropriate candidates, emphasizing the importance of postprocedure auditory habilitation and language and speech services,

monitoring progress, and counseling families. The success of cochlear implantation is highly variable, even among children who receive the transplants at young ages and adhere to treatment. For children whose language and speech fail to develop adequately after a reasonable trial, with or without cochlear implantation, consideration of alternative or augmentative methods is appropriate to meet functional needs for communication and interpersonal interactions.

The most common cause of mild-to-moderate hearing loss in children is chronic otitis media with effusion. For many years, the prevailing dogma was that chronic otitis media with effusion was a cause of significant language and speech delay. Therefore, the recommendation was to insert tympanostomy tubes for bilateral effusions persisting 3 to 4 months. Recently, a large, careful, randomized clinical trial of tympanostomy tube insertion has tested the hypothesis that compared with watchful waiting, early placement of tympanostomy tubes after persistent otitis media with effusion would lead to better outcomes in terms of speech, language, cognition, and psychosocial development. The study participants were healthy children who had no risk factors for developmental delay except socioeconomic status and history of otitis media. This study did not find an advantage for the early

Table 4. Resources for Early Intervention Services and Appropriate Referrals

Task	Rationale	Web Sites
Identifying the appropriate state agency that provides early intervention	States choose a lead agency for providing early intervention; the agency varies across states	http://www.nectas.unc.edu/partc/ptclead.asp
Identifying specific individuals who have leadership roles	A federal interagency coordinating council maintains information on coordinators and specific contacts within each state	http://www.fed-icc.org/links-resources/state.html
Eligibility criteria for early intervention on a state basis	Each state defines eligibility for early intervention within the broad federal guidelines provided in IDEA, Part C.	http://www.nectas.unc.edu/pubs/pdfs/nnotes11.pdf

tympanostomy group in any of the outcome variables (Paradise, 2001). Children who have tympanostomy tube insertion are more likely to develop abnormal tympanic membrane findings such as tympanosclerosis than are children managed medically. Therefore, in otherwise healthy children who have no other risk factors for developmental compromise, watchful waiting for chronic otitis media with effusion appears to be a reasonable tactic. However, for children who have other developmental risk factors, the treatment should be individualized.

Global Delays

Management of language delay in the context of global developmental delays should prompt a referral to early intervention services. Studies of the effectiveness of early intervention in many different populations of children show consistent benefits to the children and families (Guralnick, 1997). Improvements in communication and social skills are particularly notable. Eligibility for early intervention services as well as the nature and intensity of service are determined at the state level and vary widely across the country. Table 4 provides Internet links to find early intervention services in a state or community.

Autism

The apparent increase in the prevalence of autism has prompted further research on the effectiveness of various treatments. Research has demonstrated that children who are autistic can make substantial strides with early intervention. The initial demonstration used a highly structured behavioral technique in which teachers and

parents systematically and repeatedly reinforced modest approximations to target goals (Lovaas, 1987). This technique may work because children who have autism have particular difficulties in abstracting the consistent features from the environment and generalizing knowledge or skills to new situations. Success with such treatment is associated with the age of initiation and program intensity. The amount of therapy required to see benefits has not been established and may become a contentious issue in writing an individualized educational plan.

An increasing number of early intervention programs for children who have autism place them in settings that include typically developing peers. A major goal of such programs is the development of social and communicative skills in the context of naturally occurring social interactions. Studies of this technique generally show positive impacts on social behavior, although greater effects were seen in the ability to make requests than in features such as maintaining eye contact or expressing positive affect. Generalization to new situations also remains an issue for these programs.

For children who fail to develop verbal language early, the goal becomes accomplishing communication through an alternative method. One method is to substitute pictures for spoken words. The child initially learns how to use the pictures to obtain needs and wants and eventually how to use the pictures for a wider range of communication intents.

Medication management of autism has been shown to reduce the behavioral problems associated with the disorder. Medication typically does not result in a noticeable advance in language skills. However, medical management may reduce the behavioral problems that

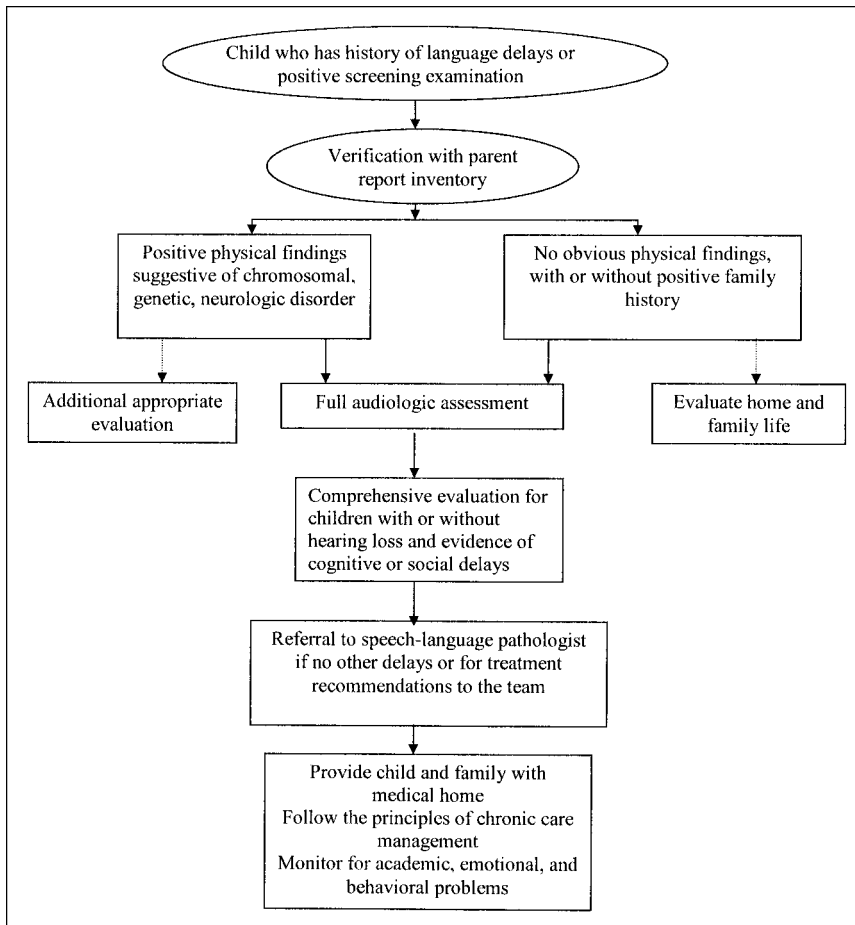


Figure 2. Steps in the evaluation and management of children who have delayed language or speech development.

interfere with communication, thereby allowing the child to use his or her skills more consistently or effectively.

Specific Language Impairment and Speech Disorders

Speech-language pathologists treat the wide range of language and speech disorders. In general, therapy is effective for improving specific skills and communication. For toddlers who have delayed development, some treatments focus on the nature of adult input to the child, capitalizing on the importance of environmental input in stimulating language development. Other approaches treat children in group settings or classrooms. These children generally benefit from participation with children who are developing typically and who provide good models for communication.

Intervention for children who have speech-sound dis-

orders varies on the basis of the disorder. The objective of the treatment is to help the child learn to produce sounds correctly. Interventions may focus on expanding the child’s inventory of speech sounds and establishing situations in which the new abilities can be practiced. Children often need cues on how to shape the mouth or where to place the tongue. Practice frequently builds from isolated sounds to words to sentences.

Treatment of stuttering in young children is challenging. Environmental approaches, such as coaching parents to reduce time pressures that contribute to a child’s dysfluency, rarely eliminate the problem. Behavioral approaches of rewarding fluent speech may be effective in the short term, but long-term outcomes are less favorable. Current treatments usually combine a range of techniques aimed at both diminishing the severity of individual stuttering events and reducing the negative cognitive and affective responses to stuttering. In addition, medications may play a role in the treatment of stuttering. Risperidone has been shown to be superior to placebo in reducing stuttering. Paroxetine and sertraline may be useful to reduce the anxiety associated with stuttering, but have substantial associated risks.

Prognosis

Language and speech delays and disorders, treated early and appropriately, generally improve over time. The final prognosis is a function of the nature and severity of the underlying disorder. However, some children whose isolated language and speech delays at ages 3 or 4 years apparently resolved show difficulties in reading. Reading is a language-based skill that requires the child to appreciate the subtle differences among speech sounds and link them to written symbols. Children who have reading disorders are likely to have difficulties manipulating speech sounds, such as subtracting a syllable or sound from a word (eg, subtract the “sky” from “skyscraper” or the “b” from “birthday”). It remains unclear whether

early language and speech therapy can prevent or reduce subsequent reading problems.

Children who have language problems affecting grammar, meaning, and conversational skills, but not isolated phonologic disorders, have a high prevalence of mental health disorders over time. In addition, children presenting with psychiatric disorders may have undiagnosed problems of communication that warrant comprehensive evaluation. Thus, the long-term management of children who have language and speech delays should include close monitoring of academic, emotional, and behavioral functioning.

Conclusion

Language and speech disorders are prevalent in the school-age population, and early delays are even more prevalent in toddlers and preschoolers. The pediatric clinician plays a central role in the detection, evaluation, and management of children who have these delays and disorders (Fig. 2). Initial and ongoing assessment of language and speech use specific screening tests or a comprehensive history. Parent report inventories can be used to validate parental concerns. Children who have genetic, chromosomal, or neurologic disorders require evaluation and treatment appropriate to the underlying condition. For children who have no obvious underlying disorder, prediction of who will progress rapidly from those who will develop disorders is inaccurate. At a minimum, the evaluation of children who have significant delays in language or speech should include a full audiologic assessment, a comprehensive interdisciplinary developmental assessment for children who have additional cognitive or social problems, or a speech-language evaluation for children who have no other issues. The management of language and speech disorders should follow the principles of chronic care management. Children who have language and speech disorders are at risk for the development of academic and psychiatric disorders and, therefore, require regular long-term follow-up.

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PIR Quiz

Quiz also available online at www.pedsinreview.org.

9. What degree of language delay is considered clinically significant in an 18-month-old child?
 - A. 5%.
 - B. 10%.
 - C. 15%.
 - D. 20%.
 - E. 25%.

10. The *most* common cause of mild-to-moderate hearing loss in children is:
 - A. Chronic otitis media with effusion.
 - B. Drug exposure.
 - C. Genetics.
 - D. Meningitis.
 - E. Prenatal infection.

11. A 3^{1/2}-year-old boy is interested in communicating with others, asks "questions," and can follow two-part instructions. Approximately 50% of his language is understood by strangers. The *best* description of his speech/language ability is:
 - A. Developmental dysfluency.
 - B. Expressive language delay.
 - C. Normal development for age.
 - D. Phonologic disorder.
 - E. Receptive language delay.

12. Established reasons for a child to demonstrate clinically significant delays in language development include being:
 - A. A middle child.
 - B. Male.
 - C. Raised in a bilingual home.
 - D. Raised in a poor linguistic environment.
 - E. Taught sign language.

13. A 7-month-old child makes a variety of sounds that include both consonants and vowels. This ability is *best* described as:
 - A. Babbling.
 - B. Cooing.
 - C. Jargonizing.
 - D. Reciprocating.
 - E. Talking.

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Evaluation and Management of Language and Speech Disorders in Preschool Children

Heidi M. Feldman

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