Screening for Speech and Language Delay in Preschool Children: Recommendation Statement

U.S. Preventive Services Task Force

The USPSTF concludes that the evidence is insufficient to recommend for or against routine use of brief, formal screening instruments in primary care to detect speech and language delay in children up to 5 years of age. **I recommendation.**

Speech and language delay affects 5% to 8% of preschool children, often persists into the school years, and may be associated with lowered school performance and psychosocial problems. The USPSTF found insufficient evidence that brief, formal screening instruments that are suitable for use in primary care for assessing speech and language development can accurately identify children who would benefit from further evaluation and intervention. Fair evidence suggests that interventions can improve the results of short-term assessments of speech and language skills; however, no studies have assessed long-term outcomes. Furthermore, no studies have assessed any additional benefits that may be gained by treating children identified through brief, formal screening who would not be identified by addressing clinical or parental concerns. No studies have addressed the potential harms of screening or interventions for speech and language delays, such as labeling, parental anxiety, or unnecessary evaluation and intervention. Thus, the USPSTF could not determine the balance of benefits and harms of using brief, formal screening instruments to screen for speech and language delay in the primary care setting.

Clinical Considerations

- It is the responsibility of primary care clinicians to seek and address parents' concerns and children's obvious speech and language delays despite the lack of evidence to support screening with brief formal instruments. Speech and language development is considered a useful early indicator of a child's overall development and cognitive ability, and clinical and parental concerns are important modes of identifying children with speech and language delay. Early identification of children with developmental delay (lateness in achieving milestones) or developmental disabilities,(chronic conditions that result from mental or physical impairments), such as marked hearing deficits, may lead to intervention and family assistance at a young age when chances for improvement may be best.

- Specific groups of children who already have been identified as at higher than average risk for speech and language delay, including children with other medical problems such as hearing deficits or cranio-facial abnormalities, are not considered in this recommendation. The results of studies of other risk factors are inconsistent, so the USPSTF was unable to develop a list of specific risk factors to guide primary care providers in selective screening. The most consistently reported risk factors, however, include a family history of speech and language

delay, male gender, and perinatal factors, such as prematurity and low birth-weight. Other risk factors reported less consistently include levels of parental education, specific childhood illnesses, birth order, and larger family size.

Discussion

Speech and language development in children is a dynamic process. Speech refers to the mechanics of oral communication; language encompasses the understanding, processing, and production of communication .[1] Speech problems may include stuttering or dysfluency, articulation disorders, or unusual voice quality. Several types of speech and language delay and disorders have been described, although the terms used to describe them vary.[1] Expressive language delay may exist without receptive language delay, but they often co-occur in children. Some children also have disordered language. These language problems can involve difficulty with grammar (syntax), words or vocabulary (semantics), the rules and system for speech sound production (phonology), units of word meaning (morphology), and the use of language particularly in social contexts (pragmatics). Language and speech problems can exist either together or separately.

Reported prevalence rates for speech and language delay vary widely. For preschool children 2 to 4.5 years of age, studies that evaluated combined speech and language delay have reported prevalence rates of 5% to 8%, and studies of language delay alone reported prevalence rates of 2.3% to 19 %. Untreated speech and language delay in children younger than 5 years of age has shown variable persistence rates, with most studies reporting 40% to 60%.[2] Certain congenital conditions such as hearing deficits or cranio-facial abnormalities are commonly associated with speech and language delays. Other risk factors that may be associated with speech and language delay include prematurity, family history, male gender, socioeconomic factors, and other developmental delays. However, studies of risk factors have inconsistent results.

Children $\leq$ 5 years of age whose speech and language delays are untreated may exhibit diminished reading skills in grade school, poor verbal and spelling skills, behavior problems, and impaired psychosocial adjustment. In turn, these problems may lead to overall academic underachievement and a lower IQ that may persist into young adulthood.[2] How persistent these problems are is unknown.

The USPSTF evaluated the evidence published between 1966 and 2004 to determine the benefits and potential harms of using brief, formal screening instruments for speech and language delay during routine primary care visits. The USPSTF focused on studies of children $\leq$ 5 years of age and not diagnosed with conditions associated with speech and language delay. They also limited the evidence review to techniques that take $\leq$ 10 minutes to complete that could be administered in a primary care setting by nonspecialists. The USPSTF found no studies that addressed the overarching question of whether screening for speech and language delay with brief, formal instruments results in improved speech, language, and other non-speech-and-language outcomes. The USPSTF then reviewed the literature for other chains of evidence linking such screening (e.g., the

accuracy of screening tests, efficacy of treatments, and harms) to improved health outcomes.

Brief, formal screening instruments, which take ≤ 10 minutes to administer, could offer a reasonable and standardized approach to screening for speech and language delay in primary care settings. However, screening with such a tool must be followed with a more thorough diagnostic evaluation before implementing an appropriate intervention.

Research on the test characteristics of brief, formal screening instruments has a number of limitations. Some of the research is not generally accessible and is available only in manuals that must be purchased. Most studies lack an accepted gold standard of accuracy for the screening instrument or referral criteria; therefore, various reference standards (e.g., clinical judgment, other instruments) have been used to estimate sensitivities and specificities of brief, formal instruments. Despite an extensive literature evaluating a wide variety of instruments, the optimal method of testing has not been established. Most studies have provided insufficient information on variations in accuracy of testing results depending on the child's age, the setting used for the screening, or the administrator of the tests. Few studies compared the performance of ≥ 2 tests, compared a single screening technique across different populations of children, or measured long-term outcomes (e.g. >6 months); many studies have evaluated screening instruments that were designed for diagnostic assessment rather than screening.

Studies of good or fair quality that evaluated brief, formal screening instruments have shown that such instruments vary widely in their ability to accurately identify children with speech and language delay. Ten fair- or good-quality studies conducted in children < 2 years of age indicated that the instruments studied demonstrate sensitivity ranging from 22% to 97% and specificity ranging from 66% to 97%.[3-11] In 4 fair- or good-quality studies conducted in children < 2 years of age, sensitivity and specificity of the Early Language Milestone Scale,[3] the Language Development Survey,[7,8] and the Clinical Linguistic and Auditory Milestone Scale [4] were ≥ 80%. These instruments assess areas such as auditory expressive and receptive skills, vocabulary, and other language skills. In children 2 to 3 years of age, 8 fair- or good-quality studies demonstrated sensitivity from 17% to 100% and specificity from 45% to100%. [12-22] The 2 studies that evaluated the Levett-Muir Language Screening Test [19] and the Screening Kit of Language Development, [15] both of which assess vocabulary and comprehension, found sensitivity and specificity of ≥ 80%. The 3 fair-quality studies of screening instruments in children 3 to 5 years of age reported sensitivity ranging from 57% to 100% and specificity ranging from 80% to 95%.[15, 23, 24] Sensitivity and specificity was >80% using the Screening Kit of Language Development in children 3 to 5 years of age.[15]

Studies have evaluated the effects of individual or group interventions that were directed by clinicians and/or parents focusing on specific speech and language domains. These domains included expressive and receptive language, articulation, phonology, and

syntax. Interventions were short-term, commonly lasting from 3 to 6 months, and took place in speech and language specialty clinics, community clinics, homes, schools, and other sites. Outcomes were measured by subjective reports from parents and by scores on standardized instruments.

No randomized control trials (RCTs) were found that exclusively focused on interventions in children < 2 years of age. However, one good-quality RCT compared 12 months of a clinician-directed speech and language intervention to 12 months of "watchful waiting" in children 18 to 42 months of age who had expressive, receptive, or phonological impairments. [25] Only one outcome measure, receptive auditory comprehension, showed significant benefit ($P < 0.025$) as a result of the intervention used.[25] One good-quality and 6 fair-quality RCTs evaluated speech and language interventions for children 2 to 3 years of age.[26] These studies reported improvement on a variety of speech and language domains, including clinician-directed treatment to improve expressive and receptive language delay, parent-directed therapy to improve expressive delay, and clinician-directed therapy to improve receptive auditory comprehension. In 3 fair-quality studies, there were no differences in results between groups receiving clinician-directed expressive or receptive language therapy, parent-directed expressive or receptive therapy, or parent-directed phonology treatment.[2]

Seven fair-quality RCTs examined speech and language interventions for children 3 to 5 years of age.[26] Five fair-quality studies reported significant improvements in the speech and language skills of the 3-to-5-year-olds who had received interventions compared with controls, while 2 of the fair-quality studies reported no differences. Both group-based interventions and clinician-directed interventions improved expressive and receptive competencies such as expression scores or increased vocabulary.[26] The RCTs that demonstrated improved speech and language outcomes had several limitations, such as small sample size, failure to consider potential confounders, the reporting of short-term outcomes, and heterogeneous methods of assessment, intervention, and outcome measurement. The lack of long-term outcomes, comparison data, and generalizability limits conclusions about the effectiveness of interventions.

Improvement in non-speech and language outcomes was shown in 3 fair- to poor-quality RCTs.[26] However, the interventions and outcomes varied across the studies and lacked appropriate comparison cohorts. Increased toddler socialization skills, improved child self-esteem, and improved play themes were reported for children in these intervention groups. Improved parent-related functional outcomes included decreased stress and increased positive feelings toward their children. One good-quality study demonstrated no significant treatment effect for the outcomes of well-being, levels of play and attention, and socialization skills. [26]

No studies have addressed the harms of screening and interventions for speech and language delay in children ≤ 5 years of age. A potential harm of screening includes receiving either false-positive or false-negative results. False-positive results can erroneously label children with normal speech and language as impaired, potentially leading to anxiety for children and families and the need for further testing and

interventions. False-negative results would miss identifying children with impairment, potentially leading to progressive speech and language delay and other long-term effects including communication, social, and academic problems. Potential harms of interventions include time and cost of interventions for clinicians, parents, children, and siblings as well as stigmatization, labeling, and loss of time for play and family activities.

There are several gaps in the research evidence on screening for speech and language delay in children ≤ 5 years of age. Areas in which more research is needed include: 1) identifying effective brief, formal instruments that can be used in the primary care setting to screen children in this age group; 2) assessing the effect of earlier compared with later interventions on a broad range of health, educational, and social outcomes related to speech and language delay; 3) identifying risk factors that may be helpful in screening for speech and language delay; 4) testing screening strategies in diverse populations to minimize cultural biases; and 5) translating effective, evidence-based screening approaches for use in primary care practices.

Recommendations of Other Groups

The American Academy of Pediatrics (AAP) recommends that all infants and young children receive periodic screening for developmental delays in the primary care setting. [27]
The AAP's recommendation statement on developmental screening includes discussions on language skills, behavioral problems, and autism and is not solely focused on speech and language delay. The Centers for Disease Control and Prevention (CDC) recommendation also does not focus specifically on speech and language delay, but encompasses developmental disabilities (e.g., autism, mental retardation) and delays (e.g., language). The CDC recommendation at www.cdc.gov/ncbddd/child/improve.htm[28] encourages developmental screening autism and other developmental delays in primary care settings. The American Speech-Language-Hearing Association (ASHA) recommends that pediatric speech-language screening be conducted by "appropriately credentialed and trained speech-language pathologists." [29]

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APPENDIX A

U.S. PREVENTIVE SERVICES TASK FORCE RECOMMENDATIONS AND RATINGS

The Task Force grades its recommendations according to one of 5 classifications (A, B, C, D, I) reflecting the strength of evidence and magnitude of net benefit (benefits minus harms):

A. The USPSTF strongly recommends that clinicians provide [the service] to eligible patients. *The USPSTF found good evidence that [the service] improves important health outcomes and concludes that benefits substantially outweigh harms.*

B. The USPSTF recommends that clinicians provide [the service] to eligible patients. *The USPSTF found at least fair evidence that [the service] improves important health outcomes and concludes that benefits outweigh harms.*

C. The USPSTF makes no recommendation for or against routine provision of [the service]. *The USPSTF found at least fair evidence that [the service] can improve health outcomes but concludes that the balance of benefits and harms is too close to justify a general recommendation.*

D. The USPSTF recommends against routinely providing [the service] to asymptomatic patients. *The USPSTF found at least fair evidence that [the service] is ineffective or that harms outweigh benefits.*

I. The USPSTF concludes that the evidence is insufficient to recommend for or against routinely providing [the service]. *Evidence that [the service] is effective is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined.*

APPENDIX B

U.S. PREVENTIVE SERVICES TASK FORCE
STRENGTH OF OVERALL EVIDENCE

The USPSTF grades the quality of the overall evidence for a service on a 3-point scale (good, fair, poor):

Good: Evidence includes consistent results from well-designed, well-conducted studies in representative populations that directly assess effects on health outcomes.

Fair: Evidence is sufficient to determine effects on health outcomes, but the strength of the evidence is limited by the number, quality, or consistency of the individual studies, generalizability to routine practice, or indirect nature of the evidence on health outcomes.

Poor: Evidence is insufficient to assess the effects on health outcomes because of limited number or power of studies, important flaws in their design or conduct, gaps in the chain of evidence, or lack of information on important health outcomes.