Screening for speech and language delay in preschool children: systematic evidence review for the US Preventive Services Task Force - Screening


CRD summary
This review evaluated the effectiveness of screening for speech and language delay in pre-school children. The authors concluded that there is insufficient evidence on the optimal methods of screening and which instruments to use. Although these conclusions are likely to be reliable, they should be interpreted with some degree of caution given the possibility of language and publication bias.

Authors' objectives
To evaluate the effectiveness of screening and interventions for speech and language delay in pre-school aged children (up to 5 years). The review addressed a number of objectives. This abstract reports on those related to screening: the effects of screening on outcomes; the accuracy of the different screening techniques and how this differs by age; the adverse effects of screening; and the role of enhanced surveillance by primary care clinicians. Objectives related to interventions are reported in another DARE abstract (DARE abstract number 12006003326).

Searching
MEDLINE, PsycINFO, and CINAHL were searched from database inception to November 2004. Systematic reviews, editorials, websites and reference lists of retrieved articles were screened for additional relevant studies, and experts in the field were contacted. Only studies published in the English language and available through libraries were included in the review.

Study selection
Study designs of evaluations included in the review
Inclusion criteria were not defined in terms of the study design. The included studies appeared to use both diagnostic cohort and case-control designs.

Specific interventions included in the review
Studies that evaluated screening techniques for assessing speech and language delay, which could be applied in a primary care setting in 10 minutes or less by a non-specialist in a primary care setting and used clearly defined measures, were eligible for inclusion. Studies of broader developmental screening instruments were also eligible. A variety of standardised and non-standardised instruments were assessed, many of which were not developed specifically for screening purposes (details were provided). Screening was carried out by parents, medical/doctoral/graduate students, psychologists, speech and language pathologists, research assistants, developmental paediatricians, health visitors, medical practitioners, teachers and paraprofessionals.

Reference standard test against which the new test was compared
Studies that included an acceptable reference standard (not defined) were eligible for inclusion. A variety of reference standards were used across the studies: these included clinical assessment/judgement, specific speech and language screening tools, and batteries of measures (full details were provided).

Participants included in the review
Studies that focused on children aged 5 years or younger and that were applicable to U.S. clinical practice were eligible for inclusion. Studies of children with previously diagnosed conditions known to cause speech and language delay were excluded. The studies were conducted in physicians’ offices, pre-school, speech and hearing clinics, day-care centres, educational and health facilities, or at home. Most of the studies included predominantly white children with similar proportions of boys and girls.

Outcomes assessed in the review
Studies of the accuracy of screening instruments had to report sufficient data to enable the calculation of sensitivity and specificity for outcomes related to speech and language delay.
How were decisions on the relevance of primary studies made?
The authors reported that multiple investigators reviewed the retrieved abstracts, but did not state exactly how many investigators were involved or how any discrepancies were resolved.

**Assessment of study quality**
Independent investigators (number not specified) assessed studies for methodological quality using the following criteria developed by the U.S. Preventive Services Task Force: relevance, reliability, availability and description of screening test; use of credible reference standard performed regardless of test results; reference standard interpreted independently of the index test; indeterminate results handled reasonably; spectrum of patients included; sample size. The studies were categorised as ‘good’, ‘fair’ or ‘poor’.

**Data extraction**
The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction. The sensitivity and specificity were calculated for studies of screening accuracy.

**Methods of synthesis**
How were the studies combined?
The studies were combined in a narrative.

How were differences between studies investigated?
Differences between the studies were discussed in the text and summarised in tables. The studies were also grouped by age range (0 to 2 years, 2 to 3 years and 3 to 5 years).

**Results of the review**
Twenty-two studies (24 evaluations, 7,819 children) were included in the review.

Accuracy of screening for speech and language delay.

Children aged 0 to 2 years (11 evaluations, 1,716 children): 10 studies were judged to be of fair or good quality. The sensitivity ranged from 22 to 97% and the specificity from 66 to 97%. Four studies reported a sensitivity and specificity of at least 80%; these assessed the early language milestone scale, the language development survey, and the clinical linguistic and auditory milestone scale. These tests were not assessed in any other studies.

Children aged 2 to 3 years (10 evaluations, 5,805 children): 8 studies were judged to be of fair or good quality. The sensitivity ranged from 17 to 100% and the specificity from 45 to 100%. Two studies reported a sensitivity and specificity above 80%; these assessed the Levett-Muir language screening test and the screening kit of language development. These tests were not assessed in any other studies.

Children aged 3 to 5 years (3 evaluations, 298 children): 2 studies were judged to be of fair quality. These reported sensitivities of 60% and 62% and specificities of 80% and 91%.

No studies were identified that assessed the effects of screening on outcomes; determined the optimal ages and frequency for screening; reported on the adverse effects of screening; or reported on the role of enhanced surveillance by primary care clinicians.

**Authors’ conclusions**
There is insufficient evidence on the optimal methods of screening and which screening instrument to use. There is no evidence for the effects of screening on outcomes, optimal ages and frequency for screening, adverse effects of screening, or the role of enhanced surveillance by primary care clinicians.

**CRD commentary**
This review addressed a very broad objective stratified into several more defined objectives. Inclusion criteria were defined in terms of the intervention, population and outcomes. The literature search for published studies was adequate.
but the review was limited to English language publications so there is a possibility of language and publication bias. A quality assessment was conducted, but the criteria used were very subjective and the results were summarised by classifying the studies as 'poor', 'fair' or 'good', rather than providing details of the individual quality items fulfilled. The quality of the included studies therefore remains unclear. Details of the review methods were poorly reported and it is not possible to determine whether appropriate steps were taken to minimise bias and error in the study selection, quality assessment and data extraction processes. The narrative synthesis was appropriate given the wide variety of instruments assessed and the different reference standards employed. Although the authors' cautious conclusions are likely to be reliable, they should be interpreted with some degree of caution given the possibility of language and publication bias.

**Implications of the review for practice and research**

**Practice:** The authors did not state any implications for practice.

**Research:** The authors stated that future research should determine optimal approaches to identify pre-school aged children with speech and language delay in primary care settings who would be appropriate candidates for additional evaluation and possibly interventions. In particular, they recommended an evaluation of specific speech and language components of broad developmental screening tools, such as the Ages and Stages questionnaire. There is a need for a 'gold' standard for speech and language delay and appropriate referral criteria; these criteria should be evaluated in different populations to minimise cultural and language biases.

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.