TITLE: Screening Tools Compared to Parental Concern for Identifying Speech and Language Delays in Preschool Children: A Review of the Diagnostic Accuracy

DATE: 15 July 2013

CONTEXT AND POLICY ISSUES

Speech and language skills are a fundamental aspect of development. Early identification of children at risk for communication or related developmental delays may lead to increased intervention services or assistance at an age where the chances for improvement are greatest.1

Screening for speech and language delays in young children can be done by direct interaction with the child, parent report on standardized instruments, or parental expressions of concern regarding communication skills.2,3 After children are identified as being at risk of having a speech or language delay, more formal and in-depth assessments and evaluations can be conducted which can guide the development of an appropriate intervention program.2

Parent-completed screening instruments are considered appropriate to determine the need for additional assessment as parents have been shown to be reliable observers and describers of their child’s communication development.2 However, routine or universal use of such screening instruments for speech and language delays is rare, thus a parent or carer raising an informal concern during a routine healthcare appointment is often the first indicator that a referral to screening services may be necessary. As early intervention is considered critical, there is concern that children in need of speech language services may be missed. This rationale has been used to call for universal screening of preschool and/or school-age children in primary healthcare or educational settings1,4 given that prevalence estimates based on studies of speech and language impairment in young children have ranged from 3.9% (USA, 2004, 2 to 6-year-olds) to 18.7% (Greece, 2001, kindergarten children).5

A 2006 systematic review1 conducted by the Agency for Healthcare Research and Quality, in an effort to determine the benefits of routine speech language screening of children up to five in primary care, concluded that data were not available concerning the effectiveness of screening in primary care settings.
The present review seeks to determine the accuracy of three widely-used parent report screening instruments\textsuperscript{6-8} compared to expressions of parental concern in identifying speech and language delays in preschool children in a primary healthcare setting.

**RESEARCH QUESTION**

What is the effectiveness of screening tools compared to parents' expression of concern to detect speech and language delays in children aged 1 to 5?

**KEY FINDINGS**

No health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, or non-randomized studies were identified regarding the effectiveness of screening tools compared to parents’ expressions of concern to detect speech and language delays in preschool children.

**METHODS**

**Literature Search Strategy**

A limited literature search was conducted on key resources including PubMed, Ovid PsychINFO, The Cochrane Library (2013, Issue 5), University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. The database search for this report consisted of two parts; a focused and a broad search. Methodological filters were applied to the search strategy that included the broader search terms to limit retrieval to health technology assessments, systematic reviews, meta-analyses and randomized controlled trials. No filters were applied to the focused search (names of specific screening approaches used) to limit retrieval by publication type. Where possible, retrieval was limited to the human population. No methodological filters were applied to limit retrieval while searching PsychINFO. The search was also limited to English language documents published between January 1, 2008 and June 17, 2013.

**Selection Criteria and Methods**

**Table 1: Selection Criteria**

<table>
<thead>
<tr>
<th>Population</th>
<th>Children ages 1 to 5 years in a primary setting</th>
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<tbody>
<tr>
<td>Intervention</td>
<td>English language versions of the Ages and Stages Questionnaire (ASQ), the Communication and Symbolic Behavior Scales Development Profile (CSBS-DP), or the MacArthur-Bates Communicative Development Inventory (MacArthur-Bates CDI)</td>
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<tr>
<td>Comparator</td>
<td>Parental expressions of concern</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Accuracy, sensitivity, specificity, referral rates, and health promotion</td>
</tr>
<tr>
<td>Study Designs</td>
<td>Health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies</td>
</tr>
</tbody>
</table>
Exclusion Criteria

Articles were excluded if they did not meet the inclusion criteria, if they were duplicate publications, or if they published prior to January 1, 2008.

Critical Appraisal of Individual Studies

Included articles were to be assessed using the Quality Assessment Tool for Diagnostic Accuracy Studies (QUADAS-2). No studies were identified regarding the accuracy of relevant speech delay tools compared to that of parental concern, thus no critical appraisal was performed.

SUMMARY OF EVIDENCE

Quantity of Research Available

The literature search identified a total of 202 citations. Of these, 188 citations were excluded during the title and abstract screening while 14 full text documents were retrieved based on their potential relevance. Three articles of potential interest were identified in the grey literature search. Of the 17 potentially relevant articles, none met the inclusion criteria and thus all were subsequently excluded. Reasons for exclusion included inappropriate populations (children over 5 years of age), inappropriate interventions (speech delay tools other than the English versions of the ASQ, CSBS-DP, or MacArthur Bates CDI), and inappropriate comparators (those other than parental concern).

A PRISMA diagram demonstrating the study selection process is presented in APPENDIX 1.

Additional references that did not meet the inclusion criteria but may be of potential interest are provided in the APPENDIX 2.

CONCLUSIONS AND IMPLICATIONS FOR DECISION OR POLICY MAKING

No studies were identified regarding the accuracy of the ASQ, CSBS-DP, or MacArthur-Bates CDI reporting tools compared to that of parental concern in identifying children at risk of speech and language delay.

While no studies were identified comparing the accuracy of other speech/language assessment tools to parental expressions of concern, one study measured the sensitivity and specificity of the Grammar and Phonology Screening (GAPS) test in 106 British children aged 3 to 6 years using parental concern about speech/language ability as the reference standard. The GAPS test uses a percentile score to determine whether further assessment is required with the 10th or 15th percentiles often used as cut-offs. At the 10th percentile cut-off, the GAPS had a sensitivity of 19% and a specificity of 97% in identifying children whose parents had expressed speech/language concerns, while the 15th percentile cut-off showed a sensitivity of 25% and a specificity of 91%. As the sensitivity and specificity of parental concern against other criteria were not reported in this study, it is not possible to conclude whether the GAPS was more or less accurate in identifying children at risk of communication delays than parental concern.
Additionally, a cohort study\(^5\) with information on the speech/language abilities of 4,983 Australian children aged 4 to 5 years found a prevalence of parental concern regarding speech ability of 25.2%, and 9.5% had concerns on how their child understood others. Direct assessment using the Adapted Peabody Picture Vocabulary Test-III found that 13% of children were one to two standard deviations below the mean and a further 1.7% were more than two standard deviations below the mean. ANOVA results comparing parental receptive language concern and the results of the direct assessment showed a weak positive relationship \((\eta^2=0.035;\; small\; effect)\).

As concluded in the 2006 AHRQ report,\(^1\) more research is required concerning the effectiveness of routine screening in primary care settings in identifying preschool children at risk of communication delays. There is insufficient evidence to indicate whether the institution of routine or universal screening in primary care would lead to improvements in the identification and referral to further screening, assessment, evaluation and intervention for preschool children at risk of speech and language delays.

**PREPARED BY:**
Canadian Agency for Drugs and Technologies in Health
Tel: 1-866-898-8439
[www.cadth.ca](http://www.cadth.ca)
REFERENCES


APPENDIX 1: Selection of Included Studies

202 citations identified from electronic literature search and screened

188 citations excluded

14 potentially relevant articles retrieved for scrutiny (full text, if available)

3 potentially relevant reports retrieved from other sources (grey literature, hand search)

17 potentially relevant reports

17 reports excluded:
- irrelevant population (1)
- irrelevant intervention (9)
- irrelevant comparator (4)
- other (review articles, editorials) (1)
- duplicate (2)

0 reports included in review
APPENDIX 2: Additional Articles of Potential Interest

Systematic Review of Population-Based SLI Screening in Germany


Risk Model with Parental Concern as a Prediction Factor