Screening for specific developmental disorders of speech and language in children

1 Translation of the executive summary of the final report “Früherkennungsuntersuchung auf umschriebene Entwicklungsstörungen des Sprechens und der Sprache” (Version 1.0; Status: 17.06.2009). Please note: This translation is provided as a service by IQWiG to English-language readers. However, solely the German original text is absolutely authoritative and legally binding.
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Executive summary

Research question

The primary goal of this investigation is to assess the benefit of early detection screening for specific developmental disorders of speech and language in children up to 6 years of age in the form of universal speech screening with respect to patient-relevant outcomes. With diagnosis and treatment of a specific developmental language disorder carried out as early as possible, a child's developmental impairments and the associated potentially lifelong consequences should be prevented, or at least reduced.

Methods

This report investigated the research question using a descending hierarchical method. Studies that looked at the complete screening chain were in the best position to answer the question of whether there is a benefit in universal language screening, and so were expected to provide the greatest validity with reference to the research question. If no clear proof was detectable here, proof of the effectiveness of screening could also be valid if suitable German-language instruments were available for the diagnosis of specific developmental language disorders, and sufficient evidence existed of the benefit of language therapy in general and of the benefit of an early as opposed to a late(r) treatment.

To answer the question on screening, randomized or non-randomized trials with sufficient measures for avoiding selection processes were to be included, in which a universal screening method was compared to one without screening, or a comparison was undertaken of screening strategies of varying intensity. The diagnosis part was exclusively concerned with the accuracy of the language development test. Studies of children from the total population up to 6 years of age (preschool children) were assessed in which complete contingency tables either already existed or could be derived for diagnostic and prognostic accuracy with regard to detecting specific developmental language disorders.

The type of treatment measure was not further restricted in the treatment studies. A search was undertaken for randomized and non-randomized trials. Direct comparisons (within one trial) and also indirect comparisons (between different trials) were evaluated to assess the benefit of early (or earlier) treatment. Outcomes were collected that enabled patient-relevant outcomes to be evaluated, such as health-related quality of life, language development (e.g. developing standard language, acquisition and mastery of the written language, speech enjoyment), psychosocial development (e.g. communicative skills, social integration, development of self-image), emotional development (e.g. behavioural problems), cognitive and educational development (e.g. performance at school, type of schooling/class position,
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A systematic literature search was performed in electronic databases (for example, MEDLINE, EMBASE, CINAHL, PsycINFO and Cochrane databases), and covered the period up till May 2008. In addition, literature indexes of systematic reviews and HTA reports were scanned as were the references from comments on the Federal Joint Committee's list of questions and from the comments procedure on the preliminary report plan and on the preliminary report. Relevant journals were searched by hand. The literature screening was carried out by a minimum of 2 reviewers independently of each other. The prespecified methodological approach (report plan) and IQWiG's preliminary benefit assessment (preliminary report) were published on the Internet and interested parties invited to submit comments. If unclear aspects from the comments gave rise to changes, these were mentioned in the present report. Major unclear aspects relating to the comments on the preliminary report were discussed in a scientific debate. The final report was subsequently prepared.

**Results**

**Screening**

Only 1 comparative study was identified that investigated the benefit of universal language screening in a cluster-randomized design. However, the results for the group of children with specific developmental language disorders were not shown separately in this study. Thus, no conclusions on the benefit of such a screening measure can be drawn from this study consistent with the research question in this report.

**Diagnosis**

None of the identified diagnostic studies met all of the inclusion criteria of the report. In particular, no robust data were available for any instrument on the diagnostic accuracy of specific developmental language disorders. Of the 17 tests for which a validation is published with a reference test, there is not one where the diagnostic accuracy, in relation to specific developmental disorders of speech and language, has hitherto been adequately investigated and where a complete and valid contingency table exists or could be derived.

In summary, it was established that no robust conclusions can be made based on evidence available to date on the suitability of existing German-language tests for identifying specific developmental disorders of speech and language.

**Treatment**

A pool of 57 studies in total was identified to assess the benefit of language therapy interventions for specific developmental language disorders. To answer the question regarding the general benefit of appropriate treatment measures in children and adolescents, the benefit
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assessment included 16 randomized trials in which the treatment was compared with no treatment or a sham treatment. Apart from a few exceptions, their validity is limited by a high risk of bias. Overall, the trials provide indications of short-term positive effects from language therapies. The long-term patient-relevant outcomes, however, have scarcely been investigated; nor have any undesirable treatment consequences that may result. Three trials (1 randomized, 2 non-randomized) with direct comparisons were considered in the question of whether an earlier treatment start is accompanied by greater benefit than a later one; however, due to the type of comparisons carried out, no evaluation of benefit for an earlier compared to a later therapy was possible. Therefore, indirect comparisons between different studies were also carried out to ascertain whether an advantage can be deduced from an earlier treatment start. However, these indirect comparisons did not prove to be methodologically robust and did not provide any proof of benefit from an earlier intervention. Thus, the question of benefit from an earlier treatment start cannot be answered.

Conclusions

The aim of early language screening is to identify a group of children who display a particularly high risk of struggling at school, and also of having difficulties in social interaction and on an emotional level. If effective interventions were introduced following early detection, these risks could be minimised. At present, there is no proof of benefit from early detection screening for the group of children with a specific developmental language disorder. This does not mean that there is definitely no benefit for this group.

In the absence of a screening study focused on children with specific developmental language disorders, the present report attempted to deduce from the reporting of results from diagnosis and treatment studies whether necessary prerequisites for a screening programme have been met.

This deduction assumes:

- firstly, that there is proof that the earlier treatment of specific developmental language disorders (at preschool age) is superior to treatment at school age
- secondly, that it is shown that the children for whom a treatment is indicated can be diagnosed with sufficient reliability at preschool age
- thirdly, that not too many children are wrongly classified as requiring treatment, so that the potential harm that can arise through false diagnoses does not outweigh the possible benefit.

Certainly, there are indications of short-term positive effects from language therapies, but long-term aims have scarcely been investigated, nor have undesirable treatment effects which may exist. There is no proof that a therapy has greater benefit in younger than in
older children. At the same time, no reliable accuracy criteria that enable children with specific developmental language disorders to be detected in the total population have been reported up till now for German language diagnostic instruments. This instrument validation is also necessary for estimating the expenditure associated with language screening, for instance, to clarify how many diagnostic examinations and treatments would be necessary in Germany.

There is currently a lack of essential methodological foundations in Germany for screening specific developmental language disorders. If the basic methodological foundations were laid down, this would open up the possibility of investigating the potential benefit and potential harm of screening within the framework of a comparative study. The effects of standardized screening could then be compared with the previous method within the framework of the directive on early detection of diseases in children up to 6 years of age ("Children's Directives").

**Keywords:** specific developmental disorders of speech and language, specific speech and language disorders, language screening, systematic review

The full report (in German) is available on www.iqwig.de/index.541.html