

Growth monitoring for short stature: update of a systematic review and economic model

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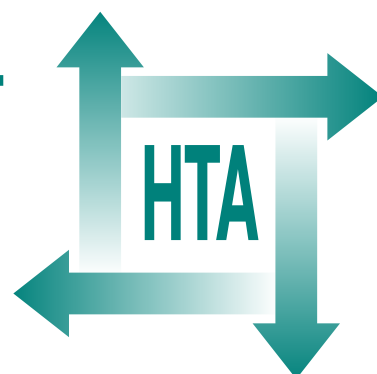
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Executive summary

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Executive summary

Background

Early detection and diagnosis of causes of short stature are desirable to maximise height gain and to minimise the impact of any underlying health condition. However, children are frequently diagnosed late. A previous technology assessment indicated that a growth monitoring programme could help identify children who have been missed or failed to present in clinical practice. However, further research is needed to investigate the most effective and cost-effective approach to growth monitoring.

Objectives

The aim of this assessment was to compare different screening rules and/or referral cut-offs for the identification of children with disorders of short stature by updating a systematic review and economic model.

Methods

We undertook a systematic review to identify studies that compared growth monitoring/screening strategies. As this review was conducted as an update to our previous assessment [Fayter D, *et al.* A systematic review of the routine monitoring of growth in children of primary school age to identify growth-related conditions. *Health Technol Assess* 2007;**11**(22)], searching covered a range of databases from January 2005 to November 2009 with no language or publication restrictions. As part of our search strategy, we aimed to identify new studies containing quality of life/utilities data to utilise in the economic model. Two reviewers examined full papers for relevance. One reviewer extracted data and one checked the data and authors were contacted for supplementary information where required. We summarised the results narratively.

We developed a probabilistic decision analytic model to estimate the costs and quality-adjusted life-year (QALY) gains. The model adopted the perspective of the UK NHS and personal social services. The price year was 2009 and an annual discount rate of 3.5% was used. The model was a cohort model, assuming a homogeneous population of 5-year-olds at baseline.

Results

One study was included in the systematic review of referral strategies. The study's authors examined the performance of a number of rules to determine sensitivity and specificity of referral for short stature in four patient groups and three reference groups in the Netherlands. They derived an algorithm for referral based on the best-performing rules.

No new studies were located that provided appropriate quality of life or utilities data for the economic model.

The model was based on the previous assessment, which was updated to better reflect current UK clinical practice. We compared two alternative monitoring strategies, one of which was based on the study identified in our systematic review (Grote strategy); the other was based on UK consensus (UK strategy). We identified that the UK strategy was the least effective and least costly with a mean gain of 0.001 QALYs at a mean cost of £21. The Grote strategy was both more expensive and more effective, with a mean cost of £68 and a mean QALY gain of 0.042. The incremental cost-effectiveness ratio (ICER) was £1144 per QALY gained. We tested a range of assumptions in sensitivity analyses. Under no scenario did the ICER exceed £8000.

Discussion

We conducted a thorough systematic review of the literature on referral for short stature in children of primary school age. However, we identified just one relevant study. We conclude from this that there is a lack of evidence on appropriate referral strategies. We also found a lack of evidence in relation to quality of life and utility gains in children with short stature, particularly linking gains in height to utilities.

The model structure and the lack of evidence affects the robustness of our economic model findings owing to the large number of assumptions required.

Conclusions

This assessment contributes further knowledge, but does not provide definitive answers on how to deliver growth monitoring. In particular, we were unable to evaluate an optimal referral cut-off and age at which to screen. The results obtained are logical in the sense that referring more children results in a higher detection rate and thereby a higher ICER. Our assessment suggests that from the strategies we have evaluated the Grote strategy appears to be a cost-effective option given current willingness-to-pay thresholds. We identified a number of research questions that would further inform referral strategies, which in summary would involve further primary and secondary data collection.

Funding

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Publication

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NIHR Health Technology Assessment programme

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The research reported in this issue of the journal was commissioned by the HTA programme as project number 09/52/01. The contractual start date was in February 2010. The draft report began editorial review in April 2010 and was accepted for publication in September 2010. As the funder, by devising a commissioning brief, the HTA programme specified the research question and study design. The authors have been wholly responsible for all data collection, analysis and interpretation, and for writing up their work. The HTA editors and publisher have tried to ensure the accuracy of the authors' report and would like to thank the referees for their constructive comments on the draft document. However, they do not accept liability for damages or losses arising from material published in this report.

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