Effectiveness and cost-effectiveness of height-screening programmes during the primary school years: a systematic review

Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

CRD summary
The primary objective was a systematic review of the published evidence of height-screening programmes in children. A secondary aim was to examine the cost-effectiveness of a height-screening programme in children of primary-school age. Screening was a cost-effective alternative to no screening from the perspective of the UK National Health Service. The study was based on validated methodology. However, the economic modelling was reported in a companion paper and not in this article. Overall, the authors’ conclusions appear to be valid.

Type of economic evaluation
Cost-utility analysis

Study objective
The objective was to carry out a systematic review of the published evidence of height-screening programmes of children aged 4 to 11 years. A secondary aim was to examine the cost-effectiveness of a height screening programme in children of primary-school age.

Interventions
The screening for short stature was performed at school entry, age five. A specific method for height measurement was not reported. Rather, multiple available approaches were considered. The screening programme was compared with no screening.

Location/setting
UK/school.

Methods
Analytical approach:
This economic evaluation modelled a hypothetical cohort of 594,000 children (the number of five-year-old children in England and Wales). A lifetime horizon was considered. The authors stated that the analysis was carried out from the perspective of the National Health Service (NHS).

Effectiveness data:
The clinical data were derived from a systematic review of the literature, which identified the relevant clinical sources of data for the diagnostic yield of the screening programme. The search was carried out on electronic databases and was supplemented by contact with clinical experts and a review of the reference lists of the articles retrieved. Unpublished sources of data were also searched. All types of studies, except case reports, were included in the review. The clinical data were combined narratively. The key clinical outcome was the diagnostic yield of the screening in identifying height-related conditions, particularly growth-hormone deficiency and Turner syndrome.

Monetary benefit and utility valuations:
The utility valuations were derived from the literature and were augmented by estimates from an expert clinical panel. Other details were not provided.

Measure of benefit:
Quality-adjusted life-years (QALYs) were used as the summary benefit measure, which was combined with costs. The
use of discounting was not reported.

Cost data:
The three main cost categories were screening, referral, and treatment of height-related conditions. The costs and quantities were derived from multiple sources including published studies, Department of Health Reference Costs, and UK Social Services. All costs were in UK pounds sterling (£) and the price year was 2006. Future costs were discounted at an annual rate of 3.5%.

Analysis of uncertainty:
A probabilistic sensitivity analysis was carried out, but no other details of this were provided.

Results
The expected costs and QALYs were not reported.

The incremental cost per QALY gained with screening over no screening was £9,900, which is well within accepted willingness-to-pay thresholds for the UK.

The probabilistic sensitivity analysis suggested that the screening programme was cost-effective (i.e., below the threshold of £30,000 per QALY) in 100% of the projections.

The majority of the costs were incurred in referrals and treatment.

Authors’ conclusions
The authors concluded that height screening in five-year-old children led to clinical improvements and was a cost-effective alternative to no screening from the perspective of the UK NHS. They stated that future research should be carried out using large-scale, long-term, controlled trials to determine the optimal strategy, and to identify all the factors that might affect detection rates.

CRD commentary
Interventions:
The no screening scenario was a valid comparator as it reflected the current pattern of care in most settings.

Effectiveness/benefits:
The methodological approach used to derive clinical data was extensively described and appears to have been valid. The methods and conduct of the review (inclusion criteria, search strategies, quality assessment of the studies identified, and combination approach) were described, enhancing the transparency of the analysis. The key characteristics of the primary studies were reported. The authors acknowledged that a limitation of the clinical sources was the lack of controlled studies comparing screening with no screening. Overall, the clinical analysis was credible. The derivation of the benefit measure was not fully reported, and the authors did not report details of the utility valuations. QALYs are an appropriate benefit measure, which allow cross-disease comparisons and which capture the impact of the interventions on quality of life. Discounting would have been relevant, but was not explicitly reported.

Costs:
The categories of costs included in the analysis appear to have been consistent with the viewpoint. However, the analysis was not reported in detail and it appears that the full methodology was published in a companion paper. A breakdown of the cost items was not given and details of the unit costs and quantities of resources used were not provided. The sources of costs were only mentioned, but not described. The use of discounting and the price year were reported. In general, it is difficult to judge the validity of the economic analysis using the information reported in this paper.

Analysis and results:
The costs and benefits were synthesised using an incremental analysis, which is an appropriate approach. The issue of uncertainty appears to have been addressed by means of a probabilistic sensitivity analysis, which is generally regarded as the most valid methodology. However, both base-case findings and the sensitivity analysis results were poorly
reported. The authors pointed out the strengths and limitations of their analysis. A strong feature was the use of a rigorous methodology for the literature review. A limitation was that the review was not able to fully define the effectiveness and cost-effectiveness of height-screening programmes using different measurement strategies. Finally, the study failed to capture the negative impact of labelling and inappropriate further referral.

Concluding remarks:
The study was generally well conducted and was based on validated methodology. However, the economic modelling was extensively reported in a companion paper and not in this article. Overall, the authors’ conclusions appear to be valid.

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