Title **Prioritization of Health Technology Assessment. The PATHS Model: Methods and Case Studies**

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Aim

To develop a method of decision analysis for economic evaluation and triage for prioritizing health research funding.

Conclusions and results

Three case studies to test the model indicated net clinical benefit or no clinical loss of benefit, in addition to health service cost savings above the cost of the trials. For two, values of the proposed trials, as evaluated in the (ex ante) predictions, were consistent with the (ex post) evaluations following publication of the trial results, providing positive tests of the value of the model. In the third case, meaningful ex post analysis was not possible as poor compliance with the trial protocol (indicated in the ex ante evaluation) seriously undermined its conclusions. During the study, at the request of the UK HTA program, the model was also used to evaluate a funding request for a large randomized trial of ß-interferon for multiple sclerosis treatment.

Recommendations

The PATHS model plays a valuable part in the research prioritization process. The method emphasizes the impact of research results on policy and practice (the keystone for NHS research) and the net effects on health benefits and costs. It assesses the cost effectiveness of one piece, or area of research relative to others and may identify ways to enhance the research design, endpoints relevant to implementation, analytical methods, and dissemination.

Methods

Papers of primary relevance that included a proposed model were reviewed in detail, and their models appraised using predetermined criteria and previous experience. From this, the Preliminary Assessment of Technology for Health Services (PATHS) model was developed. It assumes 3 or more possible alternative outcomes or scenarios in research results: 'favorable' to the technology being assessed, 'unfavorable' or 'inconclusive'. An associated net flow of benefits or disbenefits, costs or savings, is identified for each potential research outcome depending on the likely implementation of each 'result scenario' as judged by experts. These net benefits and costs are weighted and discounted in the model to give an expected incremental cost-effectiveness ratio (EICER). EICERs can be estimated for any number of research areas or proposals to inform funding prioritization. The model was tested and evaluated on 3 case studies identified in liaison with the NHS R&D HTA program and the UK Medical Research Council. These were funded research projects where full evaluation was underway and results expected to be published during the PATHS project. They were selected to include trials of surgery, other invasive procedures, and non-invasive health services projects.

Further research/reviews required

- Investigate the scope for synthesizing the strengths of the PATHS model with other approaches such as value of information.
- Compare ex ante and immediate ex post assessments of implementation with long-term followup of actual implementation.
- Assess the robustness of such approaches to the choice and number of experts used.

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