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**THE USEFULNESS AND LIMITATIONS OF  
PUBLISHED ECONOMIC EVALUATIONS  
FOR NHS DECISION-MAKING**

Boyka Stoykova<sup>1</sup>, Michael Drummond<sup>2</sup>, Christiane Hoffmann<sup>3</sup>,  
John Nixon<sup>1</sup>, Julie Glanville<sup>1,2</sup>

<sup>1</sup>NHS Centre for Reviews and Dissemination, University of York, UK

<sup>2</sup>Centre for Health Economics, University of York, UK

<sup>3</sup>– Institute of Insurance Economics, Hannover, Germany

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## I. INTRODUCTION

Although there is more than 35 years experience of undertaking economic evaluations in the United Kingdom, very little is known about the use of such studies by NHS decision-makers. The debate about the use and usefulness of economic evaluations is likely to intensify with the advent of the National Institute for Clinical Excellence (NICE). However, whereas NICE provides a vehicle for incorporating economic evaluations in decisions about the provision of national guidance, either through its appraisal or guidelines functions, there remain many decisions taken at the local level for which economic evidence could be helpful.

Three recent surveys undertaken in the UK shed some light on the use of economic evaluation by NHS decision-makers. Drummond *et al* (1997) surveyed almost 800 individuals (283 prescribing advisers, 400 directors of pharmacy, 101 directors of public health) by mail questionnaire, asking questions about; (i) the decision-makers' knowledge of economics; (ii) the importance of efficiency as a decision-making criterion; (iii) sources of information on costs and outcomes used by decision-makers; (iv) the barriers to the use of economic evaluation; and (v) actual use of economic evaluation results. Based on an overall response rate of 57%, the authors concluded that the use of economic evaluation was not very extensive. The main obstacles to the use of study results related either to rigidities in NHS budgets (eg, 'Cannot move resources from secondary to primary care. '; 'Budgets are so tight that we cannot free resources to adopt new therapies. '), or to concerns about the studies themselves (eg, 'Studies are open to bias because of the large number of assumptions. '; 'Industry funded studies are not credible. ').

In a second survey, by Duthie *et al* (1999), 17 pairs of NHS decision-makers (a mixture of managers and clinicians) were interviewed about the usefulness of economic studies and presented with a range of health economics outcomes

statements (eg, 'In a recent study a group of people surveyed stated that they were willing to pay twice as much for a new medicine, as compared with current therapy.'). It was found that a high proportion of statements conveying traditional health economics messages, featuring incremental cost-effectiveness ratios, quality-adjusted life-years (QALYs) and willingness-to-pay, were either 'not understood' or considered 'not relevant' by those surveyed.

In a third survey, by Crump *et al* (2000), 12 medical decision-makers in Leicestershire Health Authority (four medical directors of trusts, eight locality GPs) were interviewed individually and also participated in a focus group discussion. The interviewees were first asked about the information they would need to make decisions about the use of a (hypothetical) new drug for obesity, and then asked more general questions about their use of economic information, the relevance of economic considerations to particular types of decisions and the barriers and incentives to the use of economic evidence.

The results of this survey largely confirmed those of Drummond *et al* (1997). In particular, the main barriers to the use of economic evaluation related to rigidities in NHS budgets or concerns about the reliability of the studies themselves. Also, the top three factors that might encourage more use of economic evaluation were; (i) assessment/appraisal of studies by a trusted source; (ii) more flexibility in health care budgets; and (iii) more explanation of the practical relevance of study results.

The rigidities in NHS budgets can best be tackled in the context of broader NHS reforms. Indeed, some changes are already taking place, through the development of primary care groups (PCGs) and primary care trusts (PCTs). On the other hand, concerns about the methodology of studies, the presentation of study results and the critical appraisal of study quality can be tackled directly and should be a major interest of health economists.

Therefore, the objective of the research presented here was to explore the usefulness of economic evaluations to NHS decision-makers, concentrating on the issues of access of study results, their presentation and critical assessment of study quality. The research used the NHS Economic Evaluation Database (NHS EED), which was established in 1995 by the NHS R&D Programme to identify relevant economic evaluations of health technologies and to disseminate the principal findings to NHS decision-makers by means of a database of structured abstracts. These are accessible free *via* the Internet (NHS Centre for Reviews and Dissemination, 1996) and now as part of the Cochrane Library.

In principle, the availability of databases like the NHS EED should address some of the concerns, raised by decision-makers in the surveys, about the accessibility of economic evaluations and the appraisal of their quality by an independent source. The purpose of this research was to assess whether the results of published economic evaluations were indeed useful, given the decision-makers' questions, and whether the structured abstracts were presented in a useful way.

## **II. METHODS**

Decision-makers from two health authorities were invited to assess the actual and potential use of the NHS Economic Evaluation Database (NHS EED) for health service decision-making. Four meetings, two at each Health Authority (HA), were held over the three month period between February and April 2000, with a period of approximately one month between meetings. The participants from one HA consisted of eight personnel with responsibilities for two programme areas identified within the Health Improvement Plan in the HA concerned, namely emergency care and mental health. Emergency care was represented by one consultant in Public Health Medicine, two Commissioning Managers, one Specialist Registrar in Public Health Medicine, one Professor of Orthopaedic Trauma Surgery, one Associate Clinical Director

in Medicine, one Access Service Manager from a Social Services Department. From mental health the Project Director for Mental Health and the Director of Finance for mental health were present. From the other HA four participants took part with the following backgrounds: one Assistant Director (clinical effectiveness), one consultant in Public Health Medicine, one Quality Development Manager, and one General Practitioner with responsibilities for clinical governance for PCGs. Therefore both groups included professionals with a broad range of skills and individual members were closely associated with the day-to-day decision-making processes within their specialist areas. The meetings were chaired by one of the HA participants. The health economist researchers (two per group) explained the objectives of the research and provided background information, but avoided undue intervention in the discussions.

The main purpose of the first meeting was to explore the needs of decision-makers for economic evidence in the process of resource allocation, and to identify topics for further study. In preparation for the meeting a questionnaire was distributed in advance (see Appendix A). At the meeting the participants were given a brief description and a demonstration of NHS EED, followed by a discussion reflecting their initial impressions to the database and its potential usefulness to the NHS. In a further discussion, decision-makers shared their responses to the questionnaire addressing issues such as:

- (i) aspects of their role in which economic evaluations could be potentially useful;
- (ii) previous use of published economic evaluations;
- (iii) the usefulness of published economic evaluations in general, and;

- (iv) areas of decision-makers' current work which might require the use of economic evaluations.

More specifically, the participants were asked to identify several health care topics or areas, on which they were currently working, where economic evidence could potentially be of use.

Between the first and the second meeting an extensive search of NHS EED was undertaken in order to identify papers relevant to the areas selected by the participants. Copies of the relevant structured abstracts contained on NHS EED, as well as the references for cost, review and methodology papers were then forwarded to the participants from each health authority along with a second questionnaire (see Appendix B). At the second meeting the results of the database search were discussed, and the participants commented on how useful the findings had been. They also provided comments both on specific and broader issues relating to the use of the database, suggested by the second questionnaire (eg, readability and layout of abstracts, relevance to the specific topic or any other area, possible improvements in the database, etc).

### **III. RESULTS**

#### **1. General usefulness of economic studies.**

In general, all participants considered economic evaluations of health technologies to be a useful tool in making informed decisions in health care. It was pointed out that economic considerations are essential in daily decisions taken by clinical directors who have to ensure that the health services provided are good value for money. It was also mentioned that economic data are important in order to comply with the National Service Frameworks provided by the Department of Health. Another benefit from economic evidence was in avoiding the conflicts from varying 'expert opinions'. That is, the NHS EED abstracts were viewed as an independent appraisal of the strength of the economic evidence on particular topics.

The main perceived limitation was that most published studies explored the cost-effectiveness of particular health technologies and not broader health programmes, thus being of limited use to decision-makers at a health authority level. However, those studies assessing the cost-effectiveness of emerging technologies in areas where there had been no previous evidence available were considered to be potentially useful. The limited generalisability of some economic evaluations was also identified as a significant disadvantage with respect to their usefulness in the process of decision-making.

## **2. Previous experience with economic evaluations.**

Published economic evaluations had been used by the majority of participants, though to a varying degree. Some of the decision-makers from one HA had used economic evaluations in order to obtain general information or guidance for decisions, eg, in areas such as hip and knee replacement, accident prevention, aspects of diabetes services, and when writing the Health Improvement Programme (HImP). However, in both groups it was also emphasised that sometimes decisions cannot be based purely on economic evaluations, because other issues, such as equity considerations may override the economic criterion.

The most common reasons for avoiding the use of economic evidence related to the lack of knowledge and expertise in assessing the quality of, and interpreting the findings of, cost-effectiveness studies, and doubts about the reliability and usefulness of the existing economic evidence.

## **3. Areas where economic evidence could potentially be used.**

Decision-makers were encouraged to identify areas where economic evaluations might be potentially informative. Some fields of potential use of economic analysis, identified by the participants, were decisions about care pathways, different health programmes (eg, paediatric care vs. care for the

elderly), evidence about the cost-effectiveness of shifts from secondary to primary care (eg, secondary prevention with warfarin, minor surgery, etc). In addition, issues of prioritisation of services provided by medical practitioners were raised, for example, the primary prevention of cardiovascular disease using statins. The issue of the economic benefits of a reduction of hospital admission rate for both emergency care and mental health was raised by participants, as well as the identification of alternative treatments for patients within the community setting. Care in the community, independent living, as well as collaboration between health and social services were specifically identified as current issues in the NHS. Following on from the more general discussion participants in both HAs compiled a list of current areas of decision-making requiring cost-effectiveness evidence (Textbox 1).

### **Textbox 1: Areas Identified by Representatives**

1. Telemedicine (NHS Direct/specialist advice plus any other).
2. Hospital at home versus acute hospital admission.
3. Nurse practitioners vs doctors in minor injuries units.
4. Ambulance services - (First responder/paramedics/different skill levels).
5. Trauma assessment – home versus hospital.
6. Chest pain clinics.
7. Deep vein thrombosis (DVT) – home versus hospital care.
8. DVT – diagnostic tests (e.g. ultrasound).
9. Rapid access clinics.
10. 24 hour diagnostic tests in hospitals.
11. Mental health (mental disorders, schizophrenia, self-harmers) (long term side effects of treatment).
12. Mental health (mental disorders, schizophrenia, self-harmers) – treatment compliance.
13. Economic evaluation of rapid response versus acute hospital admission.
14. Use of statins in the primary prevention of ischaemic heart disease.
15. Management of backpain and the use of acupuncture.
16. Hip replacement revision - should it be before or after the symptomatic phase?
17. Management of COPD.
18. Stents and angioplasty and how they relate to CABG?
19. Hip and knee replacement.



**Table 1: Search Results**

<b>Area</b>	<b>Number of full abstracts</b>	<b>Number of references</b>
Telemedicine	6	22
Acute/emergency admission	1	1
Nurse practitioner	8	3
Ambulance/paramedics	14	3
Trauma/hospital	24	0
Trauma/home	4	0
Chest pain	19	4
DVTs	22	2
DVTs (home)	6	0
Home hospital	5	1
Adverse effects	42	0
Self harm	1	1
Compliance	10	1
Assertive outreach/ community treatment	2	1
Use of statins in the primary prevention of ischaemic heart disease	11	5
Management of backpain and the use of acupuncture	0	0
Hip replacement revision - should it be before or after the symptomatic phase?	6	0
Management of COPD	12	17
Stents and angioplasty and how it relates to CABG?	12	8
Hip and knee replacement	32	29
<b>TOTAL</b>	<b>237</b>	<b>98</b>

Using these areas as a guide, NHS EED was searched by the researchers between the two meetings. A total of 237 structured abstracts<sup>1</sup> were found, written by NHS EED abstractors on studies representing full economic evaluations of health technologies<sup>2</sup>. Also, 98 references of cost, methodology of review papers were retrieved. The details for each area in both Health Authorities are summarised in Table 1.

#### **4. NHS EED search results –relevance to the original question.**

The retrieved abstracts were generally found to be a useful decision-making tool, yet the value of the abstracts to participants varied. Although a broad range of studies were retrieved, not all of them were regarded as being useful to the decision-making process. Participants stated that some of the issues they had raised were defined in very broad terms and that some areas, such as emergency care, are very complex so that some of the studies retrieved were considered to be of limited value. In some cases the material was regarded as very interesting, although it did not necessarily answer the original question posed. However, participants emphasised that the search was helpful in terms of identifying areas for future research in economic evaluation as well as bringing other studies of potential interest to their attention. Some abstracts were regarded as quite complex and revealed areas where users lacked knowledge, such as in statistics and the methods of economic evaluation.

#### **5. Limitations to the usefulness of abstracts of full economic evaluations, related to the quality of the studies.**

Participants discussed some factors which they felt may limit the use of NHS EED abstracts to support health policy decision-making. Firstly, decision-makers underlined problems in ‘generalising’ results of health economic studies to the UK setting. As a high percentage of studies are carried out abroad (>80%), in particular in the United States, decision-makers doubted

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<sup>1</sup> See CRD Report 6 – App. 5 “Guidance for writing critical abstracts for the NHS EED”.

<sup>2</sup> Studies in which a comparison of two or more alternatives is undertaken and both their costs and outcomes are examined (CRD Report 6).

the transferability of findings to the NHS. Secondly, in some cases participants questioned the quality of the clinical evidence underpinning the economic studies. They held the view that merely highlighting the weaknesses of studies may be insufficient and it might be 'risky' basing decisions on such flawed papers. Thirdly, they also reaffirmed their opinion, as expressed at the first meeting, that some economic evaluation studies are very specific in terms of disease or intervention and consequently cannot reflect the more complex real world conditions under which decision-makers have to take action.

#### **6. Decision-makers' preferences regarding the presentation, structure and contents of the abstracts.**

Some participants stated the abstracts were about right for their purpose, whereas some expressed the view that abstracts may be too detailed. Only one participant considered the abstracts to be too brief, because information about the inclusion of economic evidence on social care interaction aspects (in relation to indirect as well as direct costs) was not available at first glance. Most participants found the abstracts to be satisfactory in terms of readability. Some, however, experienced problems with the economic jargon used. A recurring suggestion was that the commentary and conclusions should be at the beginning of an abstract in order to present the principal findings and limitations of the study at first glance.

As far as the quality of clinical evidence was concerned, it was also suggested that the NHS EED abstracts should be more explicit in criticising, where appropriate, the original paper. Decision-makers also thought that details about the interventions in question were often too brief. They pointed out that these details provide important background information which should be described more thoroughly. Participants also gave some recommendations as to how improvements in the layout, such as clearer headings and a more distinct separation of sections, could be achieved. Additionally, they favoured a more interactive interface offering links to relevant sites, e.g. to

glossaries or to health economic information sources such as the “Effectiveness Bulletins”. Some of these linkages, including links to the full text of papers where possible, are already provided on NHS EED. Another suggested improvement was the provision of a filter for searching, which might limit the search according to the quality of evidence, or the year of publication. (Of course, the year of publication can be entered as part of the search. The suggestion here was that this might be automatically limited because of the rapidly changing nature of the evidence.

It was also suggested that a scoring system, classifying studies according to their quality, would be extremely helpful. This way of grading studies was felt to be an important mechanism for guiding decision-makers to those health economic studies that are relevant to the NHS and of a high quality, thus being a reliable source on which to base decisions. All participants agreed that the additional hints for search strategies outlined in the database were of great value in guiding search strategies.

#### **IV. DISCUSSION**

Overall, the results of this study are fairly encouraging, in that the NHS decision-makers interviewed did find the structured abstracts of published economic evaluations both interesting and useful. Also, in most cases it was possible to find several published studies having a bearing on the questions or topics the decision-makers were considering. However, several issues were identified and merit further discussion.

##### **1. What do we mean by ‘use’ of a published study?**

Very few of the published studies came close to answering the decision-makers’ questions, particularly when these were framed fairly specifically (eg, hip replacement revision – should it be before or after the symptomatic phase?). This is not very surprising, given the relatively small number of studies in relation to the multitude of possible questions.

Therefore, if published studies rarely provide a direct answer to the questions posed, what is their use? Some commentators on economic evaluation refer to its contribution as a 'systematic way of thinking' about problems or as a 'way of assessing proposals' for the use of resources (Drummond *et al*, 1997, Chapter 9). Certainly, some of the feedback from decision-makers in this study suggested that published economic evaluations did help them think about the decision-making problems they were considering.

Nevertheless, there is a need for further research to explore precisely how decision-makers are helped by reading a published economic evaluation that fails to answer the specific question they had posed. For example, the level of understanding about a particular problem or issue could be assessed in two groups of individuals, one which had had access to published economic evaluations and one which had not.

## **2. Is there a serious mismatch between decision-makers' questions and those researched by health economists?**

There are at least two possible explanations why the published economic evaluations did not often answer the questions posed by decision-makers. First, there could be a lag between a given topic being identified as being of interest and the relevant research being conducted and published. That is, the decision-makers are addressing the concerns of today, whereas the current literature addresses the concerns of one or two years ago.

Certainly one might expect a lag between the publication of the relevant clinical research and the subsequent publication of the economic evaluation. This issue is currently being investigated by conducting simultaneous searches on the two databases held at the NHS Centre for Reviews and Dissemination (NHS EED and DARE – the Database of Reviews of Effectiveness). If such a lag did exist, one would expect to find relatively

more clinical studies on DARE that pertain to the decision-makers' specific questions.

The other component of the lag could be the timespan between the research being completed and eventual publication. (We might expect this to be around 9-12 months, applying equally to economic and clinical studies.) This could be investigated by comparing the abstracts submitted to conferences in a given year with the published literature. If it were found that a higher proportion of conference abstracts related to decision-makers' concerns, this might be an argument for including more of the grey literature on databases like NHS EED.

The second reason why published economic evaluations do not often answer the questions posed by decision-makers is that the topics studied in published studies are quite specific, whereas decision-makers' questions are often more general. There was some evidence of this in the current study. For example, one of the main questions posed by decision-makers in one of the HAs was 'How can we reduce the pressures on acute hospital beds?', whereas most of the evaluations located dealt with specific issues, such as hospital versus home care for particular medical conditions. Of course, these evaluations are relevant to the broader question, but would require synthesis and extrapolation to move from the specific to the general.

The research activity in economic evaluation is largely driven by the availability of funding, which is much more plentiful for the study of specific health technologies such as new pharmaceuticals. In principle, research investments through the NHS Health Technology Assessment Programme could redress this balance, although much of the research funded in this way is quite specific too. Indeed, much economic evaluation builds on randomised controlled trials, which tend to compare specific interventions, rather than systems of organising care.

Perhaps the new NHS programme on Service Delivery and Organisation will generate more research to meet decision-makers' needs, although this research may not be conducted within the traditional methodological framework of economic evaluation. Also, it should be recognised that not every managerial or policy question is researchable, without further refinement and clarification. Clearly, this is an area where more research could be commissioned.

### **3. Should we develop a quality scoring system for economic evaluation?**

Although the decision-makers interviewed in this study appreciated the greater accessibility to research studies afforded by the structured abstracts, the view was also expressed that an overall quality score would be useful. Presumably the idea is that a published paper achieving a low score could be quickly disregarded, avoiding the need to read even the structured abstract. (These have an average length of around three pages.) The first issue for health economists to address is whether such an approach would be desirable. The contrary view is that even a poor study, if appropriately critiqued, can be useful to a decision-maker considering a particular resource allocation problem. It is also somewhat ironic that decision-makers, who sometimes complain about the aggregation implicit in quality-adjusted life-years (QALYs), are keen to have a summary score for the evaluation as a whole!

Moreover, if health economists did see merit in developing an overall quality score, it is not immediately clear how one could be developed. One could presumably start with one of the existing methodological checklists and assess the proportion of items that had been handled satisfactorily in a given study. This was the approach adopted by Jefferson *et al* (1998) in their assessment of whether the BMJ guidelines on economic submissions had improved the quality of studies submitted to the BMJ and The Lancet.

However, this approach assumes that the criteria included in methodological checklists are; (i) comprehensive; (ii) mutually exclusive; and (iii) of equal weight. These conditions are unlikely to hold, so considerable extra thought would be required to produce a reliable quality score.

#### **4. How do we increase the generalisability of published studies, across settings and through time?**

One of the issues raised by decision-makers was that, although several relevant structured abstracts and references were identified, many of the studies were undertaken in a setting quite different from the NHS (eg, the USA) or were quite old.

In part, the seriousness of this concern relates to the earlier discussion about the use of studies. Namely, if the study is being used to provide a direct answer to a question, it had better be relevant to the decision-makers' setting and up-to-date. On the other hand, if the study is being used to help structure the decision-makers' thinking about a given problem, direct relevance to the time and place may not be so important.

Much has been written about the problems of generalising from a given economic evaluation and various solutions have been proposed (Drummond *et al*, 1997, Chapter 9). Beyond the rather obvious points, of being transparent in one's analysis and reporting quantities of resources separately from prices (unit costs), general guidance is difficult to give. More research is required to explore the ways in which particular features of studies that limit their generalisability and how the generalisability of studies can be increased. The development of interactive models, to supplement published studies, may help, but some analysts have concerns about this.



## **V. CONCLUSIONS**

Overall, the results of this research are quite encouraging, in that existing published economic evaluations were found by decision-makers to be interesting and useful. However, the comments of decision-makers do raise some additional methodological challenges for health economists, relating in particular to; (i) the development of an overall quality score for economic evaluations; (ii) the evaluation of broader, and more complex, choices in health care delivery and organisation, and; (iii) the development of methods to increase the generalisability of published economic evaluations.

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## Appendix A

### Questionnaire 1

In principle, economic studies should be helpful when thinking about the planning, commissioning or provision of services in the NHS – in short, where different service or treatment options are being considered.

1. In which aspects of your job would you say that economic studies are *potentially* useful to you?

2. Have you ever used a published\* economic study in order to:

- (a) inform you in general terms about a problem or issue;
- (b) help structure your thinking about a problem or issue;
- (c) guide your decision in a fairly specific way.

If so, please give some details.

3. Do you have any more general thoughts on why published economic studies may (or may not) be useful to NHS decision-makers?

4. Are there any areas of your current work that might usefully be informed by economic evaluations?

\* *Published in this context means available in the public domain, not necessarily published in a scientific journal.*

## **Appendix B**

### **Questionnaire 2**

- (i) Did you find the material helpful in addressing your original question/issue?
  - If so, how?
  - If not, why not?
- (ii) Did you find the material helpful for any other purpose?
- (iii) Would you say that the abstracts (as they appear on the database) were:
  - too detailed for your purpose?
  - about right for your purpose?
  - too brief for your purpose?
- (iv) Do you have any comments on the readability of the abstracts? (Please comment on the clarity, use of jargon, etc.)
- (v) Do you have any comments on the layout of the abstracts? (Please consider both the physical appearance of the abstracts and the order of the fields.)
- (vi) Was there any particular information you were looking for that you could not find in the abstracts?
- (vii) Are you going to consult any of the original papers as a result of receiving this material?
- (viii) Do you have any general thoughts on how the database may be improved?

