

Guidelines for economic evaluation: from critical appraisal to study design

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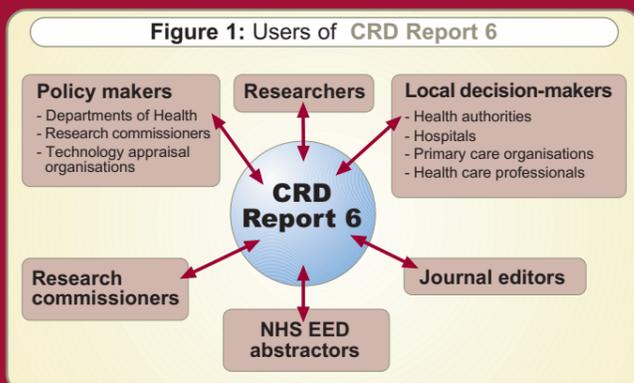
Introduction

Jefferson and Demicelli suggest stricter adherence to guidelines by journal peer reviewers in order to improve the quality of published economic evaluations¹. However, numerous full guidelines exist for the appraisal of economic evaluations along with brief guidelines and scoring systems for critical appraisal both pre and post publication^{2,3}. It would be clearly optimal to identify one generalisable and commonly-agreed guidance that could be used for designing, writing, publishing and critically appraising economic evaluations.

We believe that useful guidance is already available in the form of 'Making Cost-Effectiveness Information Accessible: The NHS Economic Evaluation Database (NHS EED) Project' (*CRD Report 6*)⁴. This document has been designed to provide guidance on assessing and reporting critical summaries of economic evaluations.

We present an overview of the potential users of *CRD Report 6* and an illustrative case study by a team of researchers from the University of Manchester (the HER@M team) of the use of *CRD Report 6* in designing, conducting and publishing research. We also discuss the potential advantages and limitations of using guidelines as part of the research process.

The developing roles of NHS EED



NHS EED is a free public database of critical summaries of economic evaluations (<http://nhscrd.york.ac.uk/welcome.htm>). Abstracts are compiled using *CRD Report 6*. However, as shown in Figure 1, *CRD Report 6* is also potentially useful to:

- research commissioners and policy makers' who can use *CRD Report 6* to assess the quality of research proposals and research reports that have not yet passed through the peer review process.
- those conducting technology assessments who need to assess the quality of economic evaluations and company data.⁵
- researchers (as exemplified by the HER@M team) who use *CRD Report 6* as guidance to the methods of conducting a study and producing a paper that reports its methods succinctly in appropriate detail, following a clear and logical structure.
- local healthcare decision-makers and managers (for example staff of health authorities, hospitals, and primary care organisations) who might use the report as a guide to understanding the methodological requirements of an economic evaluation.
- journal editors who might use it as a guide to assess the quality of the research submitted to them before making a decision to pass it on to peer reviewers.
- peer reviewers who may welcome a helpful checklist to help them to ensure that the authors have reported all relevant aspects of the evaluation.

CRD Report 6 is developed through the findings of research and through advice from the project's Quality Assurance Group and leading health economists and decision-makers.

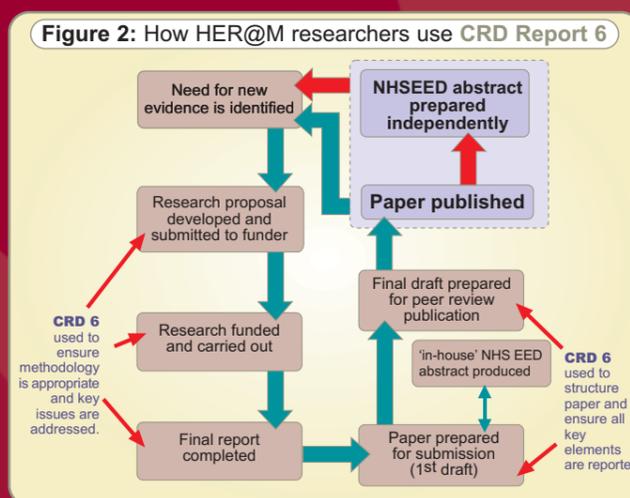
References

1. Jefferson T, Demicelli V. Quality of economic evaluations in health care. *BMJ* 2002;324:313-314.
 2. Hjelmgren J, Berggren F, Andersson F. Health economic guidelines-similarities, differences and some implications. *Value in Health* 2001;4:225-250.

The case study

Figure 2 shows in more detail the novel use of *CRD Report 6* by the HER@M team. The arrows (starting top left) indicate the sequence of steps in the research process and key points where *CRD Report 6* can be used.

Once the need for new evidence has been identified, perhaps by noting the implications for research from an NHS EED abstract, the key aspects of economic evaluations outlined in



CRD Report 6 are used to inform the research proposal. By using *CRD Report 6* researchers can check that their proposal covers all the potentially problematic areas and provides referenced material in support of the methods proposed. The guidance can also aid researchers in identifying areas of methodological uncertainty to be addressed in the proposed study design.

The guidance can help to ensure that the submitted proposal requests adequate resources for the work by encouraging researchers to think laterally about the detailed requirements of the research they are about to undertake. The methodological guidance in *CRD Report 6* is then used throughout the research process and in the production of the final report. By using *CRD Report 6* throughout the research and in compiling the final report, the team are confident that methodological issues have been comprehensively identified and addressed in the most relevant manner.

After the final report has been written and submitted to the research commissioners, researchers at HER@M preparing a paper for publication would draft an NHS EED abstract of their paper as well (using *CRD Report 6*). The production of an abstract at this stage acts as a check that all relevant methods are reported clearly in the first draft of the paper. The subsequent peer review process may result in changes to the original draft. However, by using the methodological principles by which *CRD Report 6* critically appraises a paper the authors can maintain the quality of the paper whilst conforming to the journal's requirements. The in-house and independently produced NHS EED abstracts are used for internal appraisal and to support external reviews of the quality and substance of the research programme.

Discussion

Although addressing economic evaluation quality requires multiple solutions, *CRD Report 6* and NHS EED are already important tools for a

wide range of users, including researchers and health-care decision-makers. As far as we are aware, *CRD Report 6* provides the only guidance, which, as the case study shows, can be applied from study design through to final independent critical appraisal.

Table 1 shows the principal advantages and potential limitations of using *CRD Report 6* as a guide through the research process, as experienced by the HER@M team. The key benefits from following the *CRD Report 6* guidelines from the initial proposal to the final report is a systematic and comprehensive approach to the collection and assessment of evidence, which promotes better study design. Throughout the research design process *CRD Report 6* can act as an educational tool and aide memoir for both researchers and health care professionals. Also, the case study indicates how its use leads to a reduction in the number of revisions to papers following peer review, and improves the quality and publication prospects of an economic evaluation.

The potential limitations of using *CRD Report 6* are that the toolbox approach may constrain the development of new methods by forcing researchers into following a set of predetermined guidelines. If the guidelines are adhered to closely, this may lead to rigid and inflexible application, thus re-inforcing barriers to inter-disciplinary communication and development. Additionally, there is a tendency to produce papers that might be too long for publication because of a desire to promote clear reporting. However, increasingly journal editors are amenable to including extra detail on journal websites and authors can always publish the full details of their methods on their own websites.

Conclusions

CRD Report 6 can be used by researchers throughout the research cycle in designing, conducting and publishing economic evaluations. It can also be used by a range of other decision-makers to structure thinking about and the assessment of economic evaluations. Future research could compare the usefulness of *CRD Report 6* with other published guidance in terms of their relative costs and benefits in supporting decision-making as well as investigating intermediate endpoints such as speed or probability of publication. The case study has shown that by using *CRD Report 6* the HER@M team believe they have conducted research more efficiently and have needed fewer revisions when submitting for peer review. They believe this has led to a higher standard of economic evaluation.

Table 1: Potential advantages and limitations of using *CRD Report 6*

Potential advantages of using <i>CRD Report 6</i>	Potential limitations of using <i>CRD Report 6</i>
<ul style="list-style-type: none"> Promotes efficient study commissioning and design Systematic and comprehensive approach to collection and assessment of evidence Helps feasibility and cost decisions 	<ul style="list-style-type: none"> Change in methods and interventions over time requires re-appraisal of evidence Requires continuous development of <i>CRD Report 6</i> to reflect best practice
<ul style="list-style-type: none"> Supports discussion with clinical collaborators Educational tool for researchers and clinicians Strengthens intrinsic relationship between clinical and economic data Promotes clarity and transparency of reporting 	<ul style="list-style-type: none"> Tool box approach can constrain development of methods and discussion of issues
<ul style="list-style-type: none"> Internal quality assessment Reduces the number of revisions following peer review Improves quality and publishability of economic evaluation 	<ul style="list-style-type: none"> Initially more time-consuming Journal editors might not see the relevance of detailed criteria Produces a paper that might be too long for publication

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 4. Centre for Reviews and Dissemination. *Improving Access to Cost-effectiveness Information for Health Care Decision-making: The NHS Economic Evaluation Database, CRD Report No 6. 2 ed.* York: NHS CRD, 2001.
 5. Nixon J, Duffy S, Armstrong N, Craig D, Glanville J, Christie J, et al. Improving outcomes through access to critiqued economic evaluations: the NHS economic evaluation database within the HTA review process. *Poster presentation, ISPOR*, 18 - 21 May 2003, Arlington, USA.