The National Institute for Health and Clinical Excellence (NICE) Technology Appraisals Programme produces guidance on the use of technologies in the UK NHS, with specific reference to clinical and cost effectiveness. As with all NICE guidance, the Institute’s methods and processes are subject to regular review. The 2004 NICE Guide to the Methods of Technology Appraisal[1] was reviewed during 2007, and an updated 2008 Methods Guide has recently been published.[2]

NICE guidance is produced according to principles of robustness, transparency and inclusiveness. This robustness is derived in part from a comprehensive review of the evidence base and an appraisal of that evidence by a multi-disciplinary Appraisal Committee. Transparency and inclusiveness are important to the Institute and we aim to ensure that stakeholders and the general public understand the basis for the Committee’s recommendations and participate by providing their views and interpretations of the evidence base.

Within this context, the Methods Guide[2] provides guidance on the types of analysis preferred or required by the Institute for those submitting evidence to the Technology Appraisal Programme. By describing a framework for analysis, it aims to promote consistency in analyses submitted by stakeholders and provides guidance to those preparing dossiers of evidence. The Methods Guide needs to achieve a balance between ensuring the Committee receives evidence on clinical and cost effectiveness in a format suitable for its needs while allowing flexibility to tailor analyses to the individual technology being appraised.

Like most fields of science, health technology assessment is in a state of continuous development, with new methods and techniques being investigated, reported and promoted. This dynamism is essential and NICE encourages the work of researchers in developing better analytical techniques aimed at the needs of healthcare decision makers. Some of these new developments have the potential to provide more accurate estimates of effectiveness and cost effectiveness. However, NICE needs to ensure that an appropriate balance is maintained between the acceptance and promotion of ‘state-of-the-art’ methods of analysis and the Institute’s principles of robustness, transparency and inclusiveness. We must consider whether the new methods are sufficiently well developed to be incorporated into our methodological framework, and also whether the ‘analytical gain’ is reasonable given the extra demands that the use of new methods will place on those people producing evidence submissions to NICE, on our advisory committees, and on our stakeholders who need to be able to understand that evidence. Additionally, and importantly, where new methods are recommended, we need to be confident that they can be utilized consistently across the technologies evaluated within the Technology Appraisal Programme.

We also need to consider the added value of methodological developments in terms of their contribution to the decision-making process. NICE needs analyses that are fit for the Committee’s purpose of judging whether a technology is an appropri-
ate use of NHS resources. In some cases, this may necessitate complex analyses, but in others simpler approaches will suffice, or the collective judgement of the members of the Advisory Committee, rather than a complex analytical model, is needed.

The papers in this edition of PharmacoEconomics have been developed from a series of briefing papers[3-8] that were commissioned from our Decision Support Unit as part of the recent review of NICE’s methods for conducting technology appraisals. The papers themselves do not describe NICE’s position on the methodological issues concerned, but were produced to inform and provoke discussion at a series of external workshops organized as part of the technology appraisal methods review process. Participants at the workshops reflected the range of stakeholders involved in the NICE technology appraisal process and also included academics with expertise in the relevant topic area. We heard a wide range of views at each workshop topic and some of the papers proved to be very successful in provoking discussion!

The whole of the methods manual was subject to review, although key topics were chosen for detailed exploration in the briefing papers. The topics represent areas of methodology that, based on our experience over the past few years, have raised challenges for us and those where we have been aware of significant methodological development.

Evidence synthesis is an area that has seen recent methodological developments. Sutton et al.[8] describe methods for the use of networks of evidence for conducting mixed and indirect treatment comparisons. These ‘network of evidence’ methods have potential benefit to the work of NICE as several technologies are considered together in a technology appraisal. The available clinical trials for these technologies may have been designed to compare the technology with placebo rather than an active comparator. This is a difficulty, given the decision problem facing NICE: does the technology represent a good use of NHS resources compared with technologies routinely used in the NHS? The methods described by Sutton et al.[8] may offer improvements in methodology in circumstances where all the technologies of interest have not been compared in a head-to-head trial. The paper highlights some of the technical details behind approaches to comparing the effectiveness of technologies through connected networks of evidence, including their potential benefits and considerations that need to be taken into account when appraising such evidence.

It is in methodological developments such as these that the interplay between the use of cutting-edge analytical techniques and the practicalities of adopting them routinely have to be carefully considered. We recognize that such methods, when properly conducted, can be of considerable benefit to decision makers, and they have been used to inform NICE technology appraisals in the past. However, we must also consider the availability of skills and knowledge to conduct these analyses appropriately and to understand where potential bias may be introduced. Some of the challenges associated with the use of these new methods are relevant to more widely adopted methods of evidence synthesis, such as dealing with heterogeneity between trials in meta-analysis, and others are new to the methods described by Sutton et al.[8] such as establishing the size of the evidence network and the comparators included within it. In the 2008 Methods Guide[2] we have adopted a pragmatic approach whereby it is highlighted that mixed and indirect comparisons have the potential to be useful to the NICE Appraisal Committee and may be presented in submissions. However, the preference for comparative data from head-to-head trials of the technologies being appraised is unchanged.

NICE requests that health outcomes are expressed in term of QALYs for the purpose of economic evaluation in its Technology Appraisal Programme. The methods used to derive the ‘quality’ element of the QALY are another area where there have been developments in methodology and this has been a ‘hot topic’ for NICE. Brazier[3] highlights some of the key issues in the use of health-state utility values for the purpose of economic evaluation. He raises questions about the most appropriate choice of instrument for deriving health-state utility values for the purpose of NICE technology apprais-
als, and discusses alternative approaches that may be used if relevant data have not been directly collected in trials. It is noted that different instruments for eliciting health states may produce different values. This poses a challenge for NICE if there is to be a consistent approach to analysis and decision making between technologies. For this pragmatic reason, a preference for data obtained using the EQ-5D is stated in the 2008 Methods Guide. However, it is also highlighted that the EQ-5D may not be appropriate or data may not be available in all cases, and further advice is provided in the guide for these situations.

The costs associated with technologies are considered in detail in NICE technology appraisals. This is important, because the routine introduction of new technologies will displace funding of other technologies or investments elsewhere in the health system. Miners considers the extent to which costing data collected routinely in the NHS can and should be used for evaluations submitted to NICE. In particular, there have been developments in the NHS to produce more, and better quality, data for healthcare resource groupings. While recognizing the advantages of such routinely collected data, he highlights that the data may not always accurately reflect what it is intended to measure. This demonstrates the difficulty in providing step-by-step guidance on techniques for gathering costing, and other data sources for technology appraisals. The 2008 Methods Guide emphasizes that people and organizations submitting evidence to the Technology Appraisals Programme should take particular care to describe how data sources have been selected, the rationale for their inclusion and the reasoning for the exclusion of alternative data sources.

The Guide to the Methods of Technology Appraisal also describes the general principles adopted by the Committee when formulating its recommendations, including how it considers the cost effectiveness of technologies. McCabe et al. explore alternative definitions as to what the cost-effectiveness threshold represents and alternative sources for informing the appropriate level at which it should be set. The authors cite recent research by Martin et al. that suggest that the current cost-effectiveness range adopted by the Institute is too high. Updated versions of this research have become available since McCabe et al. developed the original briefing paper. In the updated research, Martin et al. note that their most recent results are not out of line with the threshold range adopted by NICE.

NICE’s Appraisal Committee makes decisions in the context of uncertainty. Claxton highlights the importance of quantifying uncertainty around cost-effectiveness estimates so that the potential consequences of an uncertain decision can be taken into account when formulating guidance. He questions whether computational challenges associated with some models should limit the extent to which uncertainty is formally reflected in analyses. He highlights that extremely complicated models that provide representation of the technology in the current pathway of care may not always be required. Rather, what is needed is a model that sufficiently reflects the decision problem faced by the Committee and one that enables the Committee to review and appraise the inputs to and assumptions made within it. The 2008 Methods Guide acknowledges the need for the quantification of uncertainty around the central estimates of cost effectiveness, and includes a preference for probabilistic sensitivity analysis to reflect parameter uncertainty, as described by Claxton.

Sculpher discusses issues relating to subgroup analyses. NICE technology appraisal guidance frequently recommends the use of technologies in specific subgroups of patients. Sculpher highlights the importance that differences in baseline characteristics, particularly disease severity or the risk of a clinical event, play in the analysis of the cost effectiveness of a technology. He explains how differences in the cost effectiveness of a technology between patient groups can be masked when considering the average cost effectiveness of a technology across a population.

All the briefing papers presented here played a valuable role in provoking discussion and in informing the update to our Methods Guide. Some of the methodological developments highlighted in the pa-
pers have not been recommended as routine practice for those submitting evidence to the NICE Technology Appraisals Programme. As a result, some observers may feel that NICE are not at the cutting edge of health technology assessment. To those observers, we offer this thought ‘there are two sides to an edge’. We feel that our new methods guide stays, just about, on the right side!

References


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