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Systematic Searching and Selection of Health State Utility Values from the Literature

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ABSTRACT

Health state utility values (HSUVs) are important parameters in decision models in health technology assessment submissions. Reimbursement agencies, such as the National Institute for Health and Clinical Excellence, recognize that such values are obtainable from the published literature. However, to use published values in health technology assessment submissions, it should be demonstrated that HSUVs have been identified and selected systematically to avoid using biased HSUVs resulting in cost-effectiveness analyses. This article presents guidance on how to conduct a systematic literature review to identify and select HSUVs from the published literature based on the authors' experience. A case study is used to demonstrate some of the features of a systematic

HSUV review. Methods are discussed in relation to identifying and selecting the evidence, performing quality and relevance assessment, and undertaking data extraction. It has been developed from a Technical Support Document produced for the National Institute for Health and Clinical Excellence by the Decision Support Unit at the School of Health and Related Research, University of Sheffield.

Keywords: health utility values, literature review, literature searching, systematic review.

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Introduction

There is little guidance in texts for health economic evaluation [1,2] on how to identify health state utility value (HSUV) evidence systematically for the health states used in decision models to estimate incremental cost-effectiveness. Decision models often present a single set of HSUVs to inform such parameters, with little justification as to why they have been selected above other values [3].

Obtaining an unbiased selection of studies is an essential component of any systematic review. Methods for identifying evidence for systematic reviews undertaken to generate reliable estimates of clinical effects for use in decision models are well developed [4,5]. With a growing literature of empirically derived HSUVs, it is increasingly important to ensure that the methods used to identify and select HSUVs are systematic and transparent to justify the values that are used in decision models. Biased HSUVs will result in biased cost-effectiveness analyses and potential misallocation of resources.

In 2008, Brazier [6] argued that parameter values for decision-analytic models should be obtained from a systematic review of the literature, akin to that of a review of clinical evidence, thus requiring thorough searching by using appropriate terms and the main databases. Brazier [6] also noted that systemically reviewing the published literature might be different with regard to the conventional hierarchy of evidence for clinical reviews. A review

of economic models submitted to the National Institute for Health and Clinical Excellence (NICE) as part of a technology appraisal found that only 12 out of 71 submissions (17%) identified HSUVs from a systematic review [3]. Methods on systematic searching and selection of HSUVs from the published literature, however, were not discussed in either article. This article seeks to address this gap.

It has been developed from a Technical Support Document (TSD) for NICE on "The identification, review and synthesis of health state utility values from the literature" [7]. This article focuses on the identification and selection stage in a systematic HSUV review and summarizes the issues and guidance discussed in the TSD. The TSD also considered methods of synthesis.

The authors do not know of any specific guidance on systematic searching and selection of HSUVs from the published literature. The TSD and this article present guidance based on experience of the authors, who have substantial practice in searching and reviewing for clinical and cost-effectiveness analyses.

This article will discuss how to identify and select HSUVs for review from the published literature in a systematic way and how to review studies containing HSUV data in terms of quality and relevance and how to extract HSUV values.

An outline of the HSUV systematic review process is provided in Figure 1.

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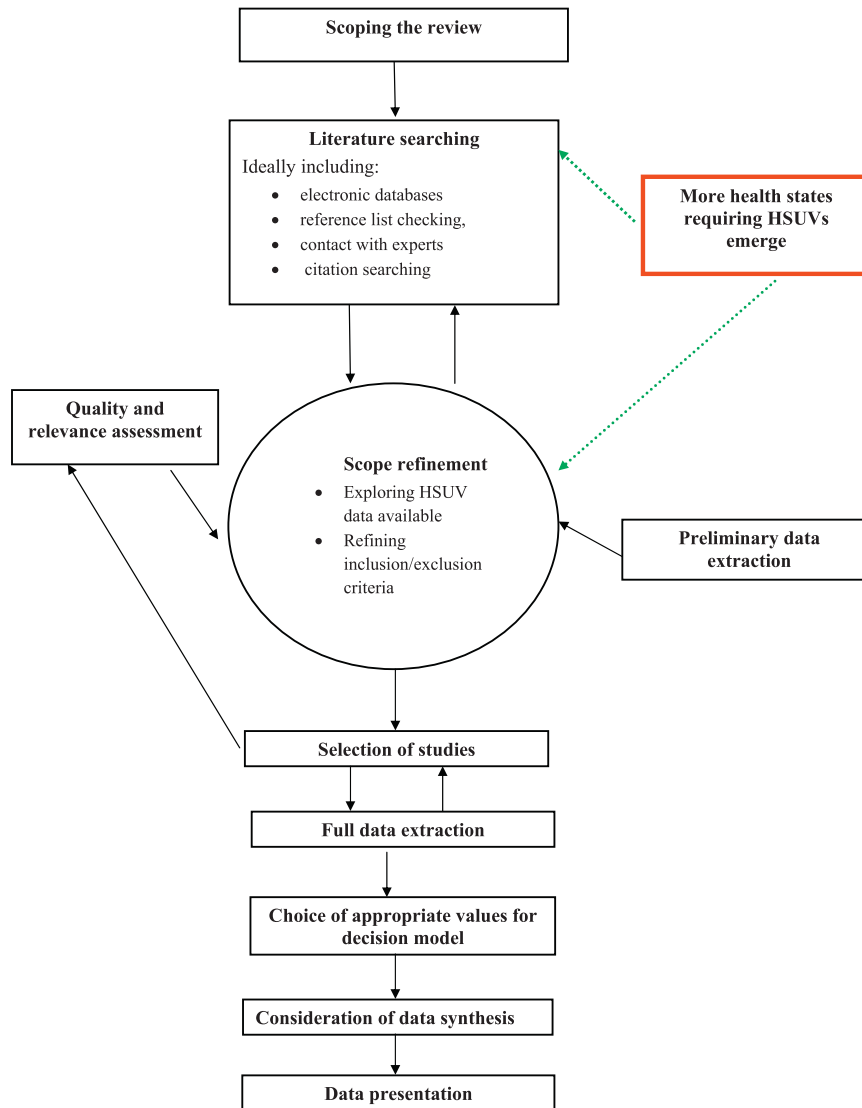


Fig. 1 – Reviewing HSUVs. HSUVs, health state utility values.

Methods

The article draws on the experience of the authors and is illustrated with a case study that was chosen as a real-life example of a review undertaken for a NICE Technology Appraisal.

Throughout the article, the case study referred to is a systematic review of HSUVs in osteoporosis-related conditions [8]. The characteristics of this review are described in Table 1. The osteoporosis review was chosen as a good example that demonstrates the problems of systematically reviewing published HSUVs. The authors were well informed on the case study (one of the authors was involved in this study). In addition, the review was used to provide HSUVs for a cost-effectiveness model in a submission to NICE.

Scoping the Review

The aim at the scoping stage is to characterize the precise HSUVs that need to be captured by the review so as to inform the decision model. We recommend when scoping reviews of HSUVs to define the specific health states required for the decision model and the type of HSUV data required by the reimbursement agency Box 1.

While in reviews of clinical effects, methods guides recommend structuring the review question according to the Patient, Intervention, Comparison, and Outcome (PICO) question [4,5], this is not a useful framework for scoping HSUV reviews. First, the “Intervention” and “Comparison” elements in PICO are not usually relevant to HSUVs’ reviews, where the aim is often to identify HSUV data for particular health states that are not necessarily attached to an intervention. Second, decision models typically require a series of HSUVs as they examine the whole treatment pathway and thus what happens to patients over a longer time horizon (e.g., rest of the patient’s life). For example, over a period of treatment, HSUVs may be required for receiving effective treatment, receiving noneffective treatment, each individual adverse event, disease progression, or stable disease. Third, while reviews of clinical effects often focus on specific study designs (with evidence from randomized controlled trials [RCTs] often being seen as the gold standard by which to assess clinical efficacy) [4,5], HSUV data are not exclusively reported in RCTs. Often, HSUVs are reported in observational studies as well as in other cost-effectiveness studies such as health technology assessments (HTAs) and economic evaluations, and thus limiting by study design is not appropriate for reviews of HSUVs.

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