The future of HTA is MCDA

Jack Dowie, LSHTM [jack.dowie@lshtm.ac.uk]

This is a very short paper, for various reasons, one of which is that I want to pose the issue very clearly as a practical issue not an academic problem. And to communicate the central point very crisply to non-HE audiences.

When should NICE approve a new technology?
The National Institute for Health and Clinical Excellence (**NICE**) is charged with appraising new technologies (NTs) to determine whether the NHS of England and Wales should reimburse health authorities for expenditure on them. The Appraisal Committee is required to 'take into account' various 'considerations'.

The 'considerations' to be 'taken into account'
These fall into two categories: (i) the results of rigorous assessments and evaluations of the clinical effectiveness and cost effectiveness of the new technology in relation to the appropriate comparator, carried out by specialist teams employing state-of-the-art analytical techniques; (ii) the considerations listed in the Methods Guide and other official documents, such as decisions of the Appeal Panel, dealt with by the application of the committee's judgement and discretion to the limited amount of relevant 'evidence' available.

The role of the 'other considerations'
While formally relevant in all Appraisals the 'other considerations' play an important role only when there is a question of raising the Willingness to Pay (WTP) for an Incremental Quality Adjusted Life Year (QALY) above the normal 'threshold' of £20,000 - up to £30,000 as a 'normal' maximum, or, 'exceptionally', beyond this figure (It is repeatedly stated that there is no official limit.) The current suggestion that the Committee operates on a 'range' is actually conceptually inappropriate and misleading, given the previous wording is an accurate representation of the position, and should not be dropped.

The problem and the solutions
Note that these 'other factors' can increase the opportunity cost of approval by 50% or more (i.e. from £20,000 to £30,000 … or more). The analytical level at which they are considered and justified contrasts starkly with that of the assessments. If their treatment to be raised to a more credible and transparent level NICE has two broad options. One is to derive and apply a standard WTP tariff adjustment for each such consideration and so (e.g.) bring a £33,000 ICER down to £28,000 if a consideration such as 'innovatory' were to be tariff rated at £5,000. The other is to move to Multi-Criteria Decision Analysis as the basis for Appraisal.

The exemplar 'Annalisa' developed and reported below illustrates the way MCDA could be used. Annalisa is obtainable at http://www.annalisa.org.uk and the exemplar file can be downloaded from http://www.cafeannalisa.org.uk. {Go to the front page of the latter to get the basic 'How to' guide.] More complex MCDA programs, such as Hi-View and Expert Choice (the latter implementing the Analytic Hierarchy Process version of MCDA), are also available and later we deal briefly with using MCDA for the meta-decision of how to decide to decide.

Attributes
This exemplar set is derived from **Guide to Methods of Technology Appraisal** and other NICE documents, including appeals (e.g. that on **Bortezomib**). Obviously it would be NICE's task to come up with an appropriate set (as well as organize/outsource ratings and weightings).

- pClEff= probability that the NT is clinically effective relative to the Comparator
- pCostE20k= probability that the NT is cost effective relative to the Comparator at a WTP below £20,000 per QALY
- Acceptability/Appropriateness/Preferences [of patients and professionals]
- Terminality= End of Life Use
- Orph/NoAlt/Rescue= NT is 'orphan drug' OR has no alternative besides Best Supportive Care OR is used in a 'Rule of Rescue' situation
- OtherEq= Other Equity considerations
- DHpriorities= clinical priority area as designated by Secretary of State for Health and Welsh Assembly Government
- HSFeasability/Impact

- Innovatoriness
- WiderSocietalConsiderations

Options

- Approve New Technology
- Confirm Comparator Technology

Ratings
Belief judgements, assumed for this example. The pCostE20k rating would normally be available from the Assessment Report's Cost Effectiveness Acceptability Curve.

Weightings
Straightforward value judgements. Giving less weight to Cost-Effectiveness and greater weight to some 'other considerations' flips the recommendation between slides 1 and 2 below. Many patient and professional groups explicitly or implicitly argue that Cost-Effectiveness should be given little or no weight in their case. Giving Clinical Effectiveness great weight and Cost-Effectiveness very little will usually favour the NT, as in Slide 3, even without 'other considerations' being taken into account. N.B. The Chairman of the Bortezomib Appeal Panel recently denied that the AC had given Cost-Effectiveness 'unreasonable weight', thereby implying that there is a 'reasonable weight'.

Comment
The Methods Guide is currently **under review** but this appears to be focusing on the already sophisticated Assessment inputs into the Appraisal, rather than the processing of the other considerations – which as already noted can increase the opportunity cost of approval by 50% or more.

Slide 1

Slide 2

Slide 3

The meta-decision

The choice among MCDA implantations and softwares is itself appropriately addressed through a MCDA. In such an analysis the specification, rating and weighting of attributes relevant to effective communication among all stakeholders will almost certainly favour less complex implementations, such as Annalisa, where scientific rigour *can be* explicitly traded off, as it must often be, with practical usefulness... rather than being done implicitly and covertly, as it usually is. So while it is of relevance to note that (e.g.) that Annalisa involves a linear additive expectational model, it is irrelevant to go on to imply that this has any significance outside the context of an MCDA in which model structure is one attribute of the different implementations being evaluated.

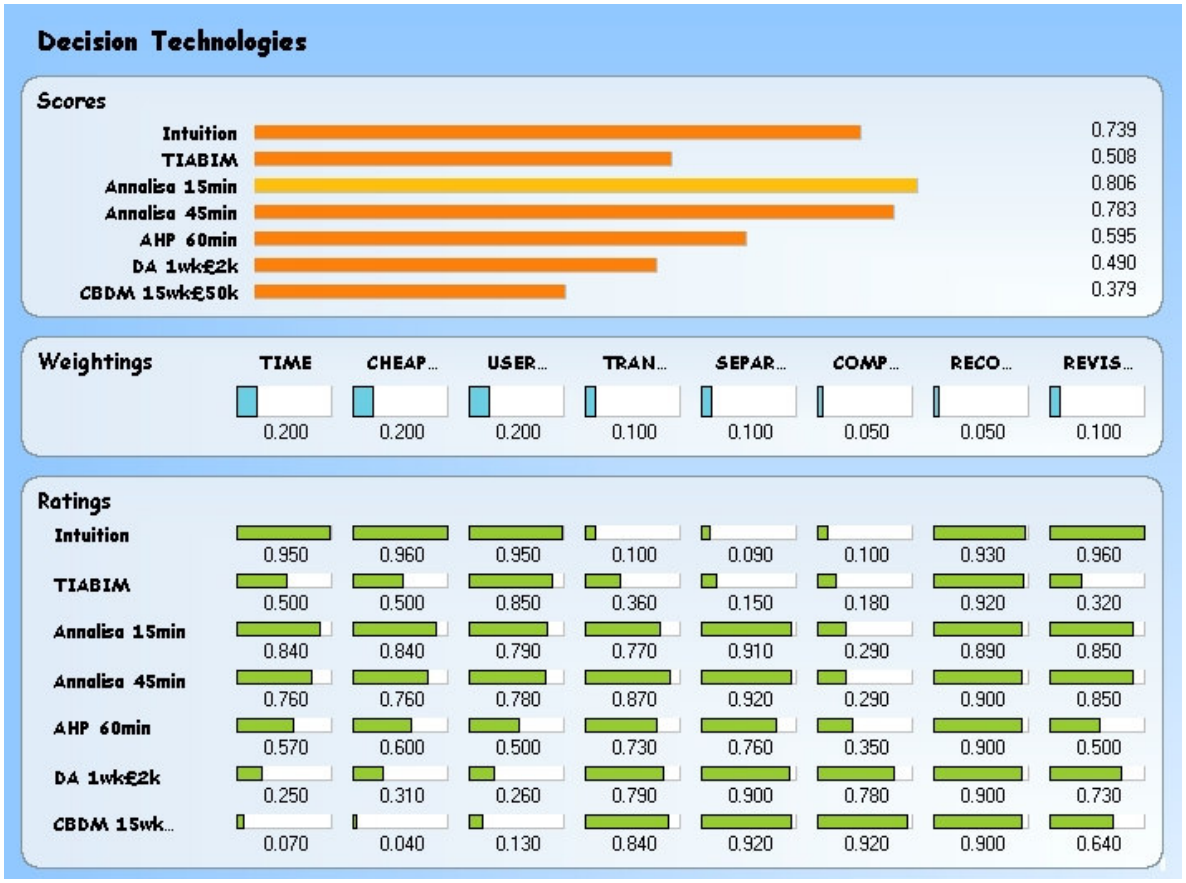
Slides 4 and 5 provide an exemplar MCDA for choice of Decision Technology. The attributes, their ratings and weightings are obviously illustrative (though reflecting some personal inclinations).

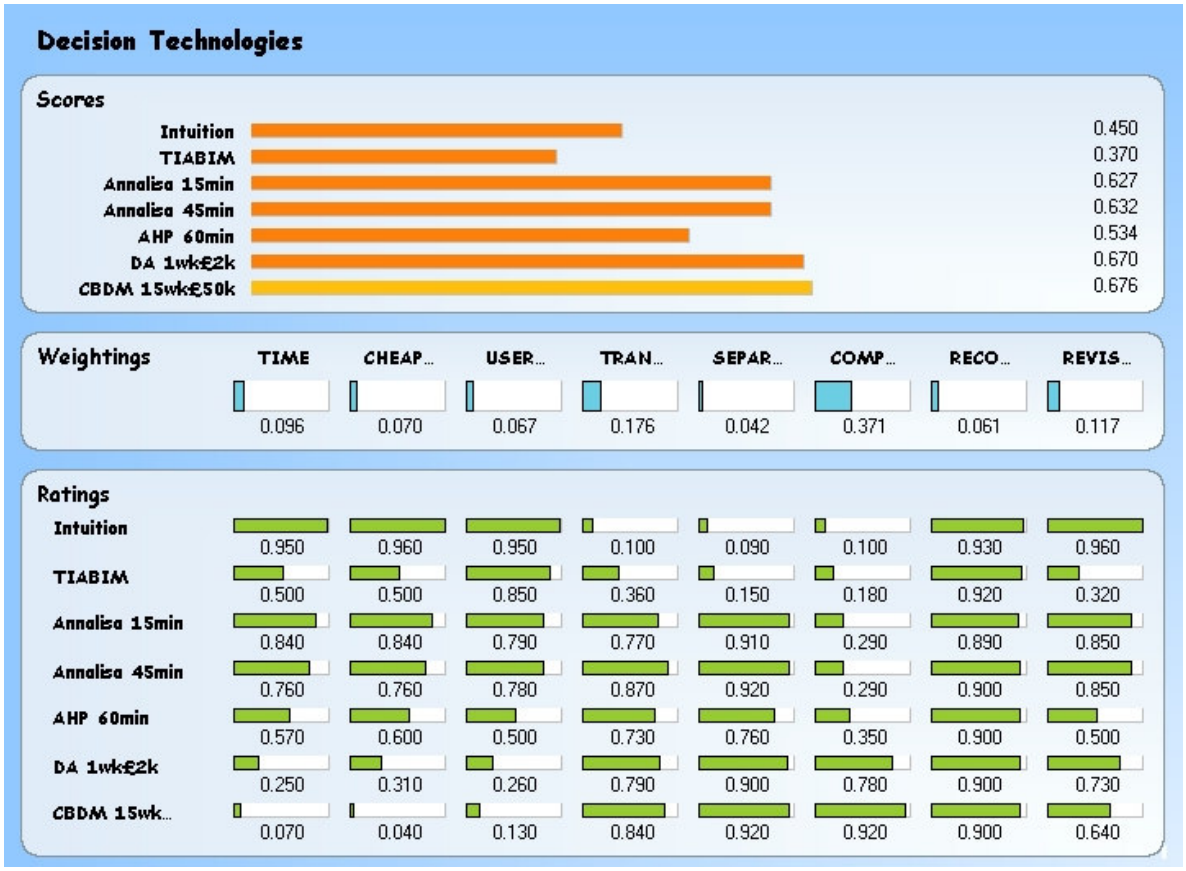
Attributes

- Time Demands
- Cost
- Cognitive Demands
- Transparency/Clarity
- Separation of Belief and Value Judgments
- Handling of Complexity
- Produces an Optimal Option/Recommendation
- Ease of Revision

Note that while in slide 4 a '15 minute Annalisa' wins on these ratings and weightings there is no suggestion that an Annalisa must be done quickly, merely that it can be. All aspects (option specification, attribute selection, rating, weighting) can be tackled as rigorously as time and resources permit. In Slide 5, with time and expense less important, a 15 week £50k Comprehensive Bayesian Decision Modelling comes out top.

Slide 4





Slide 5

It will be noted that the multi-criteria WTP tariff approach mentioned at the beginning of the paper has not been included in the contenders. It could, and probably should be, though intuitively it seems likely to be dominated on most attributes.