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Equity and Health Technology Appraisal:

Can Health Economics Help?

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Abstract

This paper stems from a belief that there is a need to make the process of health technology appraisal (e.g. NICE appraisal process), more consistent/systematic and more explicit with respect to equity considerations (where equity considerations are inputs to the decision-making process); especially where appraisal decisions are made which determine the general availability, or not, of health technologies within systems of healthcare (e.g. 'on the NHS'). I believe there is a need to make progress on the notion of equity within health technology appraisal and on the practical and operational considerations in delivering on objectives surrounding fairness and distribution, which impact on guidance and/or recommendations resulting from health technology appraisal. A number of different frameworks have been proposed to attempt to tackle the complex nature of equity within health care decisions. Economics has put forward notions of social welfare and the framework of the social welfare function to assist with the issues of equity and distribution. More recently the economics literature has been reflecting the notion of societal values and preferences which can be attached to measures of health outcomes such as the QALY. In this paper I examine some of the contributions to the health equity debate, in the context of economic evaluation and health technology appraisal. I also explore (begin an inquiry into) the aspects of health economics which may be able to offer some help to decision-makers faced with difficult decisions in the prevailing health technology appraisal climate.

Acknowledgements: I have been able to draw on some excellent recent references on health equity. Of particular note are the recent HTA review by Franco Sassi and Colleagues, a recent edition of the Journal of Medical Ethics edited by Tony Culyer, papers by Jan Abel Olsen, Paul Dolan and colleagues, and an earlier paper from Adam Wagstaff. I would like to thank Alan Hamlin and Hakan Brodin for comments on early drafts of this paper. The usual disclaimer applies.

PREAMBLE

Health economists have made much progress in addressing issues of efficiency with respect to the allocation of limited health care resources. Economic evaluation is now common place in the forums for decision-making, with findings on the cost-effectiveness of health technologies (e.g. cost-per life-year or cost-per QALY), often cited as a means of determining how attractive a particular technology may be to a potential funder (e.g. NHS). Yet, considerations outside of efficiency, related to equity and the distribution of health outcomes, are often very important in assessing the overall value of a health technology, and economic evaluation, as well as the QALY, have got nothing at all to tell us about equity or distribution, they are purely about efficiency (in their common form). Whether economists are best placed to enter into analysis concerning issues such as equity or the distribution of resources is a point open to debate, yet such considerations are pressing and economics, together with related-disciplines, is able to offer some support to decision-makers faced with difficult choices.

Where equity considerations are subject to investigation, it is often problematic due to the definitional uncertainty surrounding ‘what it is that we mean by equity’.¹ In many instances where equity is raised for discussion, the questions often out number the answers offered, and this paper will prove no exception to that observed pattern. In this paper, and especially in this forum, I do not want to get too ‘bogged down’ in the big questions surrounding equity, but will attempt to characterise equity in the context of the appraisal of health technologies.

The thoughts pulled together for this paper are undoubtedly raw, and the paper seeks only to open up some discussion at this meeting, with a view to identifying avenues of research that may prove useful, especially in the short-term. It seems sensible to start with an outline of some general views on equity.

EQUITY

When considering, in the context of this paper, what it is we mean by equity, and how I should try to define equity with respect to the point of interest (i.e. the appraisal of health technologies), I found the literature was characterised by definitional uncertainty and a very broad view as to what it is that we understand from the use of the word ‘equity’. Most commentators discuss broad operational objectives of an equitable system (e.g. equal access for equal need). Given the apparent absence of a

¹ Regardless of definitions, equity involves value judgments which introduce disagreement as they cannot be true or false, they can only be persuasive or otherwise (Ng, 1979).

simple definition of equity I did find some reassurance in the writings of Young (1995), who in the preface to his book titled ‘Equity’ starts:

“When I teach this material to students, I warn them that the subject [equity] does not exist. Among all nonexistent subjects, in fact, equity occupies a distinguished position because it fails to exist in several different ways. The arguments against existence take three different forms. The first is that equity is merely a word that hypocritical people use to cloak self-interest. It has no intrinsic meaning and therefore fails to exist. The second argument is that, even if equity does exist in some notional sense, it is so hopelessly subjective that it cannot be analysed scientifically. Thus it fails to exist in an *objective* sense. The third argument is that, even granting that equity might not be entirely subjective, there is no sensible theory about it, and certainly none that is compatible with modern welfare economics. In short, it fails to exist in an *academic* sense.

Set against these arguments is in fact that people who are not acquainted with them insist on using the term “equity” as if it did mean something. In everyday conversation we discuss with seeming abandon the equities and inequities of the tax structure, the health care system, the military draft, the price of the telephone system, and how offices are allocated at work. For a term that does not exist this is a pretty good beginning. One is tempted to say that rumours of equity’s non-existence may have been somewhat exaggerated.

... the central problem is to define what we mean by a just social order. Equity in this sense is concerned with the proper distribution of resources, rights, duties, opportunities, and obligations in society at large. ... I shall refer to these as theories of *social justice*.

This book is not about equity in this sense. Rather, it is about the meaning of equity in concrete situations that we meet every day. Equity is, after all, an every day concern. Families try to divide up the household chores equitably among their members. ... Public agencies worry about equity when they decide who has access to public housing; how much to charge for basic services such as water, electricity and public transport; who gets a kidney transplantation and who gets into a nursery school (or nursing home). ... All of these distributive problems can be and are solved without invoking theories of social justice. ... it is possible to analyse the meaning of equity in the small without resolving what social justice means in the large.

The aim ... is to examine how societies solve “everyday” distributive problems.” [xi – xii, italics in original]

Young goes on to characterise equity, as he wishes to address it, as an allocation problem, an issue of fair allocation. He uses ‘sharing rules’ as a notion of equity in the division of jointly produced goods, stressing the importance of context (what equity means in a given situation). I wish to draw on the ideas of Young to discuss the notion of equity in the allocation of health outcomes, within the process of health technology appraisal [the small], thereby side-stepping some of the broader issues of social justice [the large]. Most readers will be familiar with the literature surrounding the more general theories of justice, theories such as utilitarianism, egalitarianism, and the Rawlsian theory of justice (and the maximin approach). All three of these theories have been covered in some detail in the literature. Olsen (1997) offers a useful review, presenting his views on these theories to provide a normative basis for different priority setting approaches to health.

One of the broader theories I will discuss in outline is John Broome's theory of fairness. I do so as I have some misgivings over the philosophical notion of justice in the distribution of health care resources, and in the context of health technology appraisal. At a practical level I prefer the word 'fairness' to justice, when tackling equity considerations in the appraisal of health technologies. Justice suggests that there are rights and rights indicate that it is possible to honour those rights (Broome 1991), whereas it must be accepted that providing all health care to all patients is not possible (given present constraints), therefore there can be no right to such care. This is not doubt a topic worthy of discussion in itself, and there are a number of commentators exploring such issues (e.g. Anand & Wailoo, 2000), but I will not cover them in any detail in this paper.

Essentially Broome (1991) puts forward a theory about fairness, as it applies to the distribution of goods between people. The theory uses random lotteries to reflect a fair way of distributing a good. The theory is not limited to lotteries; lotteries are used as a guide to fairness in general. Broome does not believe that a lottery is always fair ["It would not, for instance, be a fair way of choosing whom to award a prize to in a violin competition" (p89)], but he believes it is fair when a good needs to be distributed and many candidates have 'reasons' why they should have some it [the good]; his theory considers the question of 'how do reasons work?'. Broome believes that merely weighing up reasons against each other and allocating to the individuals [groups] for whom the reasons are strongest, ignores the issue of fairness between individuals [groups]. Broome discusses the distinction between different types of reasons i.e. claims and duties, focusing on claims as he states that 'fairness is *only* concerned with claims, and not with other reasons'. The theory makes a distinction between different types of claims. Broome puts forward his theory of fairness, involving fairness-claims, with fairness cast as a subdivision of justice, where justice is concerned with all claims, but fairness only with fairness-claims. Fairness, to Broome, is about how far each person's claims are satisfied *relative* to the satisfaction of other people's claims. Broome suggests that fairness requires that "*claims* [fairness-claims] *should be satisfied in proportion to their strength*" not in too precise a fashion, but that "equal claims require equal satisfaction, that stronger claims require more satisfaction than weaker ones, and also – very importantly – that weaker claims require some satisfaction." (p95) Broome fits this notion of fairness into a definition of horizontal equity, where claims of equal strength should receive equal treatment. In such a situation it is unfair for a slightly stronger claim to completely override a slightly weaker one. Intuitively I find the theory put forward by Broome appealing, as in the distribution of health care resources it seems reasonable to talk of a fairness-claim to certain health interventions, whilst accepting persons do not have a right to those interventions. This may not apply to the whole continuum of health care interventions (i.e. we may feel we have a right to be attended by an ambulance in

an emergency situation), but it does seem reasonable to accept this position with regard to many interventions that have been (or will be) subject to health technology appraisal. The approach, in my opinion, does not offer a practical option for those seeking some assistance presently with difficult HTAP judgments [i.e. placing all candidates in a lottery where the chances of success are based on the strength of their claims, with the chance of getting a good seen as a surrogate satisfaction of a claim]. However, I feel that some aspects of the theory do offer a perspective on why a health technology appraisal process dominated by efficiency arguments (e.g. cost-effectiveness) may be viewed as inherently unfair. For example, where an individual is deprived a clinically beneficial treatment, due to a high cost-effectiveness ratio (on efficiency grounds), it may be seen as unfair that their claim on those resources was overridden completely on the basis of efficiency, when their fairness claim (a potentially weaker one) was deserving of greater attention (i.e. if there should be at least some chance of receiving funding, some consideration should be given to persons whose needs are as great as others but the cost of servicing those needs are much higher). This is, I suppose, entering into the ‘large’ questions surrounding equity and theories of justice [fairness], and I have stated above that I wish to focus on the ‘everyday’. However, the theory of fairness put forward by Broome does offer context to the ‘everyday’ discussion of equity in health technology appraisal (not least by reminding us of the fact that it is a very difficult problem to solve²).

It is not easy to ‘cut and paste’ a definition of equity with respect to the distribution of health care resources/outcomes, for health technology appraisal, but I feel it is reasonable to discuss equity in the context of an allocation problem (Young, 1995), and to consider it in the context of fairness-claims (Broome, 1991); whereby individuals do not have a right to all health technologies, but, where resources are being distributed, they have a fairness-claim associated with such resource decisions.

EVERY DAY PROBLEM OF EQUITY IN HTAP

The consideration of equity within the process of health technology appraisal (HTAP³) is the ‘everyday equity problem’ that I wish to reflect on in this paper. HTAP makes a judgement as to the overall value of a technology to a particular population, subject to the objectives of the organisation or the health care system it is servicing, and in doing so it may comprise considerations related to institutional, political or social priorities. HTAP is a common process, at a national policy level, as well as at a local and regional level. Health care commissioners and providers (local, regional or national) are continually in a position whereby limited health care

² Also indicating that it is easy to see how more visible issues such as efficiency can become dominating.

³ HTAP to distinguish from the more common abbreviation of HTA; health technology assessment.

resources must be assigned to competing programmes. HTAP seems to me to be somewhat broader than the process of health technology assessment (HTA). HTA, most would agree, concerns the effectiveness, and increasingly the cost-effectiveness of a health technology, in comparison to the relevant alternative courses of action. There seem few definitions of either process around for us to call on. I do not wish to get too involved in the differentiation here, only to say that HTAP is a broader process than HTA, and should not, as a rule, confine itself to the direct assessment of a technology based on effectiveness and cost-effectiveness; unless (i) resources are infinite, whereby all effective treatments would be universally available, or (ii) unless efficiency is the sole objective of the health care system, whereby cost-effectiveness would be the only input to a ‘funding decision’. Neither of these positions adequately describes the prevailing health policy environment in the UK.

Given the prominence of the NICE technology appraisal programme⁴, HTAP has presently got a very public profile in the UK. The NICE appraisal process results in a final appraisal determination (FAD) which is used as the basis of guidance to the NHS in England and Wales. Factors that influence an appraisal determination include politically determined clinical priorities, the degree of clinical need of the particular patient group, the balance of costs and benefits and the effective use of available resources, as well as any guidance from the Government “on the resources likely to be available and on such other matters as they may think fit”⁵. These factors help us to understand that HTAP is somewhat broader than HTA, with a potentially open ended remit to factor into a FAD anything that would seem to be relevant. For example, NHS organisational issues (e.g. the shortage of a particular specialist), budget impact considerations, or issues related to the equitable distribution of limited health care resources at a policy level.⁶

An important point for the discussion to follow is that HTAP is, more often than not, carried out in an isolated analytical environment. For example, a technology such as a new pharmaceutical for the prevention of CHD, is appraised based on its effectiveness against the next best alternative intervention for the prevention of CHD, and may be appraised based on the cost-effectiveness of the technology versus the next best intervention. Yet, outside of this analytical framework, the technology is also open to judgements such as how attractive, or important, it is in comparison with many other

⁴ In this paper I use the National Institute for Clinical Excellence (NICE) as an example of the HTAP process, yet, as stated, HTAP is a common process, at a national, local and regional level.

⁵ NICE. Guide to the Technology Appraisal Process. Technology Appraisal Process, Series No. 1. (June, 2001).

⁶ I am presently reviewing the guidance issued from NICE in order to consider how and where equity considerations may be included as part of the HTAP process. I am not able to present findings from this review. Raftery (2001) has considered NICE guidance in terms of cost-effectiveness data, and it may be that other papers submitted at this meeting are able to offer some insight in this area.

interventions across a whole spectrum of conditions from primary prevention through to palliative care. The effectiveness and cost-effectiveness of a technology are open to analytical enquiry, they are relatively transparent and understandable (regardless of methodological debates), but how do we compare, outside of effectiveness and efficiency concerns, treatment for condition X compared to treatment for condition Y, or X to Z. Equity considerations, amongst others, play their part in such subjective decisions. At a practical level how do we assess the performance of health technologies with respect to equity?

Presently, if a patient is deprived a clinically beneficial treatment ‘on the NHS’ due to guidance from an appraisal of that particular technology (an unfavourable finding), it seems to me, that the patient may rightly ask ‘why am I not able to receive that treatment?’, ‘on what basis is it fair to deprive me of clinically beneficial health care?’ If the health care system has as its sole objective the efficient use of resources, it may be that the cost-effectiveness of a technology alone provides an answer to this question. If efficiency is not the sole objective of the health care system an unfavourable cost-effectiveness profile for a technology may not be an acceptable explanation (i.e. a potential patient may wish to know how their ‘fairness-claim’ has been considered). Policy makers must surely be able to offer some rationale, beyond being ‘too expensive’, in instances where it is judged acceptable to deprive patients a clinically beneficial health technology. A cost-effectiveness finding of £40,000 per life year may appear unattractive on some occasions, but a price worth paying on others.⁷

This paper stems from a belief that there is a need to make the NICE appraisal process, and other similar cases of HTAP, more systematic and more explicit with respect to equity considerations (where equity considerations are inputs to the decision-making process); especially where appraisal decisions are made which determine the general availability, or not, of health technologies within systems of healthcare (e.g. ‘on the NHS’). I believe there is a need to make progress on the notion of equity in HTAP and on the practical and operational considerations in delivering on objectives surrounding fairness and distribution, which impact on guidance and/or recommendations resulting from HTAP.

⁷ In my opinion, it is not sensible to talk of a general ‘cost per QALY threshold value’, (an efficiency threshold), and an emphasis on cost-effectiveness (due to the availability of data) may create an ‘anchoring trap’ in the HTAP process, whereby cost-effectiveness is cited as the overriding factor in the decision-making process. [The anchoring trap: Mental phenomenon of anchoring – when considering a decision the mind gives disproportionate weight to the first information it receives. Initial impressions, estimates, or data anchor subsequent thoughts and judgements (Hammond, Keeney & Raiffa, 1998).]

With respect to HTAP I see equity as an issue of ‘distributive fairness’ and a more open and explicit approach to equity in the appraisal process is needed to offer the opportunity for the HTAP process to become more consistent and in some instances ‘fairer’.

This is not to say that we can ignore the fact that the NHS has a limited budget and is unable to provide effective health care free to all that have a need. Tough decisions are needed on a regular basis and there are no easy solutions. However, it does not mean that where equity considerations are factored into the decision making process, as may often be the case in HTAP, an explicit and systematic approach should not be used. Can health economics offer any help to decision makers?

HEALTH ECONOMICS AND EQUITY

Whenever we say that one situation is better than another we must be basing an assessment on a certain set of value judgements. Value judgments offer a view of what is desirable (or undesirable) without technical or objective data, but based on considerations of overall value (to society for example). Economists have applied the tools of welfare economics to consider the issues related to, and the evaluation of, such value judgments. Welfare economics is that part of economics where we study the possible effects of various policies on the welfare of society. Welfare economics introduces value judgments into economic analysis using the concept of the social welfare function (SWF), (Bergson, 1938). But what does the concept of the SWF mean? Bergson (1938) introduced the concept of the SWF in a strict sense, with a relation between social welfare and its determinants in the form of a dependent variable, i.e. social welfare, and a number of independent variables which determine social welfare, with the relation taken to be a well-behaved, continuous and differentiable function, which in principle could be given a well-defined form. But this is not the only form of the SWF. Nath (1973) has highlighted that for practical purposes, a more mundane view of the social welfare function may be taken, where the concept may sometimes be taken to simply imply any general statement of the objectives of a society, with some rough and ready idea of the relative weights of these objectives (p25). With respect to equity in health, both of these approaches can be taken. It is via the SWF that economists have introduced aspects of welfare economics to the study of different allocations of health care resources, in both a strict theoretical sense, using a defined form of the SWF, and in a more general application of the SWF with some general statements surrounding potential objectives of a society with respect to health. The most important aspect of the SWF is that it allows value judgements to be introduced into economic analysis in a systematic and objective way, and it allows, in principle, an objective analysis of implications of different sets of value judgements.

The analytical approach of the SWF is concerned with the consideration of production possibilities and the choices available on the production possibilities frontier, with the SWF offering a means of identifying a preferred distribution of goods. Wagstaff (1991) proposed a SWF approach to determine the optimal distribution of QALYs across different individuals or groups.

Wagstaff (1991) saw the attraction of the SWF approach as “its ability to capture both efficiency and equity considerations ... and to provide a way of examining the extent to which society wants to accept a lower per capita health status in order to achieve greater equity” (p37). Wagstaff’s notion of a SWF approach was one which defined health not over utility levels but over inter alia the health of the population, constructed to reflect an aversion to inequality, and permitting some consideration of trade-offs between inequality and efficiency, with the SWF being maximised subject to resource and other constraints. (p35)

In presenting his ideas on the SWF, Wagstaff specified an isoelastic function, drawing on the work of Atkinson (1970) surrounding an index of inequality:

$$\text{Wagstaff's SWF: } W = (\tau-1)^{-1}[(\alpha h_A)^{1-\tau} + (\beta h_B)^{1-\tau}], \tau \neq 1. \quad [1]$$

Where:

W denotes level of social welfare associated with the health distribution [hA, hB]

α indicates the weight to be attached to A’s health

β indicates the weight to be attached to B’s health

τ is the parameter that indicates the degree of aversion to inequality in health outcomes (this defines the slope of the welfare contour)

When $\tau = 0$, there is no concern for inequality

When $\tau > 0$; some aversion to inequality is indicated, with $\tau < \infty$, the contours of the welfare function are convex to the origin and as $\tau \rightarrow \infty$, the welfare contours become L-shaped with corners on the 45 degree line – the so called *Rawlsian* [maximin] SWF, since it implies a concern solely with the health of the least healthy person.

The discussion by Wagstaff, on the above SWF, surrounded parameter τ , aversion to inequality. Wagstaff presented only a theoretical discussion of the SWF, and in doing so accepted that any analysis employing the SWF required a measure of society’s aversion to inequalities in health, and that the use of experimental methods to provide such data presented a number of challenges. Others have responded to the notion of the SWF put forward by Wagstaff. Dolan (1998) has made both theoretical and empirical contributions, characterising a health-related social welfare function, and Dolan and colleagues (2001) have put forward views on the estimation of parameter values for the SWF approach using stated preference data, with respect to health choices. Bleichrodt (1997) has also proposed a well-defined approach to the SWF,

proposing a more general approach in the form of the social welfare functional (SWFL).

As can be seen from the SWF proposed by Wagstaff it not only captures value judgements surrounding welfare objectives (i.e. inequality aversion) but also allows consideration of differential weights for outcomes across different individuals or groups in society.

The use of welfare weights to reflect the objectives of society with respect to the distribution of health outcomes has been presented by a number of commentators, and this also reflects a notion of the SWF.

Welfare weights can be considered as scale numbers used to indicate the relative importance of particular equity concerns and objectives with respect to health (in this instance). The weighting of health outcomes provides a means of incorporating equity objectives into economic analysis and decision making. Equity weights as applied to health outcomes enable outcomes to be adjusted to offer a reflection of society's preferences for the distribution of outcomes, in just the same way that QALYs reflect a weighting of life years to represent the value attached to those life years. The cost-effectiveness of an intervention can be adjusted using equity weights to transform the value of outcomes. For example, where health outcomes are destined for a patient group where investment is thought to be relatively less desirable (e.g. they may already have had a major call on health resources and be in a 'good' state of health) weights would be applied to outcomes to scale back (relatively) the level of health that the patient group would be seen to receive (i.e. the investment in health outcomes would look less cost-effective), thereby making investments in other groups (where the purchase of health outcomes had looked a relatively less efficient purchase) more attractive. In the discussion of equity weights here I use the QALY to discuss the weighting of outcomes but a similar discussion could apply to other outcomes (e.g. life years).

Weighting of QALYs has been on the research agenda for over a decade, Wagstaff (1991) drew attention to the fact that advocates of the QALY approach were responding to disquiet about the distributional implications of the QALY by re-considering the notion that a QALY was to be regarded as of equal value to everyone (i.e. a QALY is a QALY is a QALY). Wagstaff comments that society may want to attach different values to QALY's going to different people, with age differences and differences in the way individuals had taken care of their health, being issues flagged up as a potential basis for weighting QALYS, as these issues had some preliminary support from earlier experimental work from Williams (1988).

From the early 1990's there has been growing empirical support against the treatment of QALYs as being of equal value to all individuals, and the QALY maximising approach indicated by cost-effectiveness analysis (Nord 1992, Nord et al 1995, Ubel et al 1996). There has also been a growth in the empirical research to quantify equity weights for QALYs, with the 'fair innings' approach from Williams (1997) probably being the most well-known of the contributions in this area. Other key contributions have come from Nord et al (1999), Olsen (1994, 1997)

Williams (1997) explores an entitlement to some 'normal' span of health as an equity objective. The approach is an outcomes based approach that seeks to place weights on outcomes (e.g. life-years, QALYs) to reflect an aversion to inequality with respect to life-expectancy and quality adjusted life expectancy. The equity principle is characterised by Williams as the concept of a 'fair innings', whereby a normal span of health may be expressed in terms of life years e.g. three score years and ten (p119). The fair innings argument seeks to address the notion of uniformly valued health gains by placing some quantifiable estimate of the units of health that may be sacrificed to pursue a policy which seeks to address inequalities in life-expectancy (QALYs). Williams' work is guided by earlier survey work which had highlighted age as an equity principle. Armed with QALY data (from the MVH Study, York) and survival data, Williams highlights inequalities in QALYS (lifetime experiences) between social classes (IV & V versus I & II) and presents some illustrative analysis using parameter values derived from a form of welfare function, and illustrative equity age weights where the fair innings is assumed to be 70 years. Williams suggests that weights be elicited from members of the general population to determine the equity-efficiency trade-offs with respect to their aversion to inequalities for life expectancy. Readers are encouraged to seek further clarification from the original paper. Discussion of the 'fair innings' arguments and a review of age weighting in health are provided by Tsuchiya (1999).

Nord et al (1999) have presented views on the incorporation of societal concerns for fairness in the valuation of health care interventions. The authors, following from Williams' views on equity age weighting, suggest that a strong case can be put forward for treating other equity concerns in the same way (i.e. applying welfare weights). They highlight that objectives with respect to the distribution of health resources/outcomes should incorporate considerations concerning 'the severity of illness' and 'limitations in potential for health', and outline a methodology for establishing equity weights to reflect these concerns. Nord and colleagues provide a theoretical insight to the equity weighting debate, involving a two step valuation procedure, a multiplicative model of societal value, as shown below.

$$SV = dU \times SW \times PW$$

Where: SV = societal value, dU represents utility gain, SW is a weight determined by the severity of the initial condition and PW is a weight determined by the potential for health.

One of the examples highlighted by the authors is program A: where initial utility is 0.60, end utility (after intervention) is 0.70, giving a health gain of 0.10, severity weight is 0.20, and potential for health weight is 2.5, therefore:

$$SV \text{ for Program A} = 0.05; [\text{i.e. } 0.05 = 0.10 (\text{gain}) \times 0.20 (\text{SW}) \times 2.5 (\text{PW})]$$

The authors provide some hypothetical values for the equity concerns, to reflect their own values, and suggest that such weights could be determined empirically using a technique such as the person trade-off (PTO).

Other contributions to the equity weighting literature have been discussed in a recent review by Sassi et al (2001), who found that much of the literature was characterised by survey studies to determine the extent of the equity-efficiency trade-off. I have only outlined some elements of the literature related to the specified SWF approach and the weighting of health outcomes to illustrate the strands of literature on equity in health that may offer assistance within HTAP. The paper is not intended to be a comprehensive review, and other approaches will be available I'm sure. I would be interested to hear of other theoretical and empirical work which may offer some practical assistance within HTAP.

CAN HEALTH ECONOMICS HELP?

The SWF framework can provide a background against which equity issues can be discussed and it can also enhance our understanding of the factors that policy makers take into account when making resource allocation decisions. The SWF has both conceptual and operational dimensions and the former would appear to be more appealing than the latter.⁸ Conceptually the SWF is very helpful. The SWF is a useful tool to have for the diagrammatic exposition of distributional issues with respect to health care and health outcomes. The approach has been used very widely to represent ideas concerning different definitional aspects of equity and inequality (e.g. Culyer & Wagstaff, 1993), and to demonstrate different theories of justice (e.g. Olsen, 1997) and to reflect different streams of health (e.g. Dolan & Olsen, 2001), with the SWF able to illustrate implications with respect to these issues in the context of an equity-efficiency trade-offs.

⁸ The literature to date reflects a conceptual approach to the evaluation of health-related social welfare, and authors do not necessarily propose their theories as a practical solution.

In terms of the operational dimension of the SWF, contributions from Wagstaff (1991), Dolan (1998) and Dolan and colleagues (2001) have been able to illustrate the theoretical appeal of a well-defined SWF approach and to indicate that empirical investigation is possible, yet the difficulties faced in determining the functional form and the empirical parameter values for a SWF that could be applied practically, seem empirically untenable at the present time,⁹ - [especially where a well-defined functional form of SWF is prescribed e.g. Wagstaff, 1991]. Sassi and colleagues (2001), comment on the SWF approach as potentially attractive in theory, but with “major, if not insurmountable, difficulties” in terms of its practical application (p7). These difficulties are “mainly related to the feasibility of eliciting decision-makers’ values and measuring trade-offs, as well as to the limited number of equity dimensions that can be considered in a social-welfare function”.¹⁰

Further empirical investigation of the SWF is encouraged, yet it is necessary to establish some equity objectives upon which empirical research should centre (i.e. in the first instance equity objectives need to be determined a priori, in order to seek out the empirical data required to inform a specified SWF). For example, in the case of Dolan et al (2001) it is assumed that the shape of the SWF is determined through the equitable distribution of life expectancy and rates of long-term illness, presented as relativities between different groups. Whilst in a limited way this is a very helpful contribution to the equity literature, it is not likely that such a SWF will capture the generic health equity concerns that may shape the way society wishes to distribute health outcomes. The reduction of inequalities across different groups (e.g. social class, gender, or ethnicity) has undoubtedly got a strong case when it comes to stating some of the prime contenders for equitable concerns, but it will be only one of many concerns upon which a SWF will be defined. (We have yet to explore how multiple objectives and parameter values could be incorporated into a workable SWF approach.)

Bleichrodt (1997) has given some excellent theoretical insights to a number of the issues relevant to considerations of equity in the distribution of health care. Bleichrodt suggests a social utility functional relationship, using multi-attribute utility theory, similar in principle to a SWF approach, whereby equity considerations could be factored into analysis. However, Bleichrodt accepts there are limitations with such

⁹ Given the growing literature on the difficulties associated with eliciting health state values, and with similar problems, if not more, foreseen in assessing societal values for health, I would echo the concerns of Sassi and colleagues (2001) on the SWF approach [well-defined form] as potentially attractive in theory, but with “major, if not insurmountable, difficulties” in terms of its practical application (see above).

¹⁰ I interpret the comments of Sassi et al, in the context of a well-defined functional form of the SWF.

an approach, both empirical and operational, and such problems also exist for the SWF.

The use of welfare weights is a less strict notion of the SWF as it seeks simply to support a general statement on particular equity objectives, with a view to establishing some idea as to the relative weights associated with these objectives. But, as with the former discussion, the use of welfare weights has a conceptual appeal, but faces practical difficulties. For example, how do we combine a range of equity objectives and welfare weights? How do we provide estimates of weights for isolated concerns, such as age, accurately? It is difficult to disentangle the different strands of health and different reasons for preference ordering, given the available techniques, and the potentially unstable preferences for health. Is an estimate of an age weight just that, or does it include some aspects concerning severity of the conditions or health states used in the framing of questions to determine equity weights? (Ubel et al, 2001) Furthermore, is an estimate of a welfare weight context specific or generalisable.¹¹ Research to date has been unidimensional, and largely theoretical, with questionable survey findings and limited quantitative empirical research (Sassi et al, 2001). In a recent review of the literature Sassi et al (2001) conclude that the current knowledge of societal preferences in the UK is not sufficient to form the basis for a set of equity weights (p31). Sassi et al identified only one empirical study to derive quantitative weights on the preferences for a UK sample; and this study was an experimental study using a convenience sample. Given the methodological uncertainties highlighted with respect to the elicitation of health state values, transferring similar techniques to the process of eliciting equity weights, may yield greater uncertainty as it involves the combination of empirical data (i.e. the transformation of uncertain health state utilities with uncertain empirical data on welfare weights). Adopting an approach to the evaluation of equity using a series of welfare weights to adjust outcomes might be likened to going into ‘mass production before a prototype has been shown to be trustworthy’. Also, as in the case of the specified SWF, the different equity concerns which may be under consideration in a multi criteria HTAP may be difficult to factor into a meaningful outcome, or social value. As shown in the example from the paper by Nord et al (1999), the end format of an adjusted QALY may be somewhat removed from a simple outcome value. It may be the case that an age weighting of QALYs, for example, may seem operationally feasible, but what is the prognosis for outcome

¹¹ With respect to welfare/equity weights, there are such a range of competing ‘human’ reasons for and against each argument that it may be difficult to consider the objective of the weighting required outside of specific appraisal problems. For example, whilst Williams would argue that a ‘times up’ rationale may be reasonable, Dolan and Olsen believe it would be wrong to have a general principle that gave less weight to the future health gains of people whose previous gains were the result of ‘own actions’ (p832). That is, should the healthy elderly, be discriminated against after their ‘fair innings’, when they have not been a burden on the NHS due to responsible health behaviour during that so called fair innings.

weights when a judgement depends on differences in severity, differences in type of condition (acute versus chronic), on life saving versus life enhancing, on gender differences, on differences in social class and a desire to reduce inequalities between such groups – I suspect that the multiplicative weighting of outcomes would present a few extra problems. Not that these problems could not, or should not, be quantified, but in an operational sense it is important that it is possible in a reasonably accurate fashion, or that ‘rough and ready’ estimates are used for ‘crude judgements’ only, and not open to ‘miss-representation’. My concern is that to some decision makers ‘what is quantified is qualified’, and enquiry into the robustness of estimates, be it for health utilities or equity weights, is often disregarded, in the apparent pursuit of expediency and the need to make a judgment (e.g. “we need something which helps us make a decision”). Further empirical investigation should be encouraged, but first it would be helpful to seek out answers to important questions on ‘which equity objectives are most important for particular decisions?’ Thereafter, the empirical challenges will still need to be faced.¹²

I believe that in proposing the notion of equity weights surrounding age Williams was attempting to move the debate surrounding equity and distribution forward in a policy-relevant way, stating that “this discussion has to move on to seek quantification of what are otherwise merely vaguely appealing and ambiguous slogans” (p120). Wagstaff (1991) with his proffered belief in the promise of the SWF was also addressing a need to bring distributional concerns to the fore. In considering the literature to date my assessment of the ‘equity debate’ is that progress has been made, the literature is growing and attention has turned to the consideration of arguments other than efficiency. Yet, progress of a practical nature is essential.¹³ Empirical challenges are significant in the operational use of a well-defined SWF and through a series of welfare weights, but in principle the concept of the SWF is a constructive and helpful one. However, as with many theoretical approaches “bearing fruit is more important than shedding light” (Ng, 1979 – citing Pigou).

As indicated above I do not see the SWF approach or the equity weighting of health outcomes as immediate avenues for incorporating equity considerations into the HTAP judgment process. Both of these former approaches have made, and continue to make, a positive contribution in this area, but the judgements which may need to be made will essentially require handling outside of economic evaluation.¹⁴ Presently I believe that welfare economics and the notion of the SWF can offer a framework for consideration of equity issues, I believe the economics framework for explicit

¹² For example, empirical concerns surrounding, framing and context effects in the techniques and survey instruments used to elicit data.

¹³ Culyer (2001) has recently urged a more policy-relevant and practical approach to equity.

¹⁴ This latter point was one of the conclusions from the review undertaken by Sassi et al, 2001

decision making can be a model for the explicit discussion and reporting of equity considerations (value judgments) within HTAP, and outline below a method, probably classed as ‘descriptive’ (Sassi et al, 2001) which seeks to make decision making more systematic – the ‘*even-swaps*’ approach – whilst still embodying the notion of the SWF and offering a means to ‘make progress’ through an assessment of distributional considerations, and their relative importance (albeit roughly) in a HTAP environment.

EVEN SWAPS

Hammond, Keeney and Raiffa (1998) present a means of multi criteria decision making, a rational method for making trade-offs. Although it is not introduced with respect to health care, I felt it might be worth considering how it may be applied to HTAP. Hammond et al believe that where trade-offs have to be made, in often complex decisions, decision makers have relied mostly on instinct, common sense and guess work, when lacking a clear, rational and easy to use trade-off methodology. To offer such a methodology the authors developed a system, which they call *even swaps*, to provide a practical analytical way of making trade-offs among any set of objectives across a range of alternatives. Hammond et al believe the method “is a form of bartering – it forces you to think about the value of one objective in terms of another” (p137). The approach is basically just a manner in which alternatives can be compared on the basis of common objectives. There is nothing terribly scientific in the approach, it is merely a way in which decisions involving trade-offs could be made more systematic and explicit. The even-swap method will not make complex decisions easy, hard choices will still have to be made surrounding values set (e.g. equity and efficiency) and the trade-offs that are to be made between them.

Hammond et al suggest a consequences table is used to present a clear picture of all alternatives and the consequences of the alternatives against each of the objectives (i.e. how the alternatives rate against the objectives). The consequences table is a matrix in which a concise description of consequences are placed, using consistent terminology across each individual objective (some may be quantitative, some may be qualitative). Terminology must be consistent to allow consistent rational trade-offs and choices between alternatives (e.g. it may be that for efficiency, a cost per QALY estimate is a concise consistent way to express performance against the objective). The authors use simple examples of complex decisions to illustrate the approach (e.g. changing job, or simple business decisions), but it could be applied to a HTAP framework. Table 1 below suggests a very simple consequences table to assist in a HTAP judgement. The benefit of a consequences table is that it forces a view of all objectives, which could otherwise be overlooked. Without something like a consequences table “important information can be overlooked and trade-offs can be made haphazardly, leading to wrongheaded decisions” (p143). From a table of

alternatives those that are dominated will be apparent and can be eliminated. Where alternatives are shown for comparison it is important to make the right trade-offs between them, to take an even-swaps approach.

When comparing alternatives over objectives in similar terms it offers a way to consider how the values of different alternatives against objectives could be adjusted, in order to consider how they might be considered equivalent and thus potentially irrelevant in a trade-off context. Thus, you seek to eliminate some objectives from a judgement so that fewer issues are relevant to a decision and the decision becomes easier (not to say that it is easy). The process also becomes explicit and systematic.

The paper by Hammond et al (1998) is set in a business decision-making context, but their simple proposition fits in well with the suggestion by Sassi et al (2001) surrounding a descriptive approach to the presentation of “essential information on the effects of health interventions in different population groups to decision makers who would ultimately apply their own values and trade-offs and make decisions accordingly” (p.iv). Yet, it may also be possible to influence decisions-makers through the provision of estimates reflecting the values and trade-offs of the population (or other sub-groups) in connection with the objectives used. In such a way, we may be able to begin to make progress on the evaluation of equity considerations within the HTAP process.

A variant of the even-swaps approach¹⁵ may offer a simple approach to documenting what is already taking place. It offers an opportunity to learn from experience, and an ability to document some historical picture of previous assessments, to allow a broader appraisal perspective (allows decision makers to consider the general allocation problem). The approach would also indicate the informational needs specific to particular decision sets (e.g. different approaches for different contexts, such as, chronic care, or acute care, health promotion, surgery). The approach, neither technical nor contentious, is presented here for discussion, to gauge whether HTAP needs some help, and if so, could such an approach be a ‘first step’ to assessing different decision objectives (i.e. making progress).

SHORT DISCUSSION / CONCLUSION

In a recent edition of the Journal of Medical Ethics, a number of commentators have discussed equity issues and the way in which they can be applied practically. Culyer (2001) addresses a number of equity based questions, and highlights the need to clarify central issues, arguing for some “broad agreement on a set of guiding

¹⁵ This terminology seems much friendlier to non-economists than the use of multi-attribute utility theory.

principles or policy assumptions”¹⁶. Culyer suggests, amongst other things, that “there may be no single, overriding equity principle to guide resource distributions. Policy makers should be prepared to juggle with several, for example by including merit as well as equality of health” (p281). With such a ‘pluralist’ approach, this would appear to reflect a situation where there are several indicators/objectives of equity that have to be combined in some consistent way – how is this to be done? Culyer discusses, more broadly, the ‘weighing and balancing of rival concepts, rival theories, and rival disciplines’ (p276).¹⁷

Recognising the need to make advances from theory to policy, this paper is presented to place a focus on equity as it relates to HTAP. Equity in HTAP is framed as an allocation problem and an issue of distributive fairness, which can be handled in an everyday way without addressing large issues of social justice. In HTAP, technologies are often evaluated in an isolated framework without any direct comparison to other similar technologies and this paper argues for a more explicit and consistent consideration of equity considerations in HTAP. Whilst welfare economics and the SWF are able to offer a conceptual framework to assist with decision making, there has been a lack of practical progress on the explicit integration of equity considerations in HTAP. A more mundane approach to the consideration of the SWF is suggested via a descriptive approach, which may allow us to make progress and to form appropriate judgments surrounding the way that we should assess the overall value of a health technology as part of a HTAP.

¹⁶ See Culyer for further detail, where he puts forward some thoughts on the practical implications for taking theory to policy, under the headings: policy assumptions; target groups; information, and research (p281-3)

¹⁷ Also in this edition of the Journal of Medical Ethics, Alan Williams presents his views on the need for quantification in the field of medical ethics.

Work in Progress – Not for Citation

List of possible points for discussion at the HESG meeting (trying to avoid the BIG questions on equity and social justice):

- *Is equity important in HTAP (does it have an impact on recommendations)?*
- *If so, how should we try to define the equity problem/objectives of HTAP?*
- *Frameworks within health economics that can help to assist with equity considerations in HTAP?*
- *Empirical research to determine the main generic equity objectives which are relevant for HTAP (e.g. health outcomes, efficiency, number of patients treated, severity of condition, availability of other treatment options).*
- *Empirical research to assess the relative importance of the equity objectives in a small number of well defined decision arenas (e.g. acute care, chronic disease).*

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Table 1. Consequences Table for HTAP - Technology X

		[Decision Context - e.g. Chronic Disease]			
		Present Technology		Previous Technologies	
		X	Y	Z	W
Objectives/Measures					
Clinical Effectiveness	Clinically Significant – Retards progression for approx. 5 years	Clinically Significant – Reduces severe long-term complications	Clinically Significant – Mortality impact, with reduction in adverse events	Clinically significant – Small impact on progression of disease	
Cost Effectiveness (Efficiency)	£30,000 per QALY	£18,000 per QALY	£26,000 per QALY	£54,000 per QALY	
Magnitude of Health Gain (0-10)	6	6	8	2	
Life Saving or Life Enhancing	Life-enhancing	Life-enhancing	Life-saving and Life-enhancing	Life-saving	
Impact on Measurable QOL (0-10)	6	5	5	2	
Impact on other QOL dimensions (e.g. lifestyle impact, flexibility issues)	Descriptive evidence of patient benefits.	Descriptive evidence of patient benefits.	Descriptive evidence of patient benefits.	No evidence of relevant impacts.	
Characteristics of the patient group	Elderly	Young Adults	General / All	Child & Adolescent	
Opportunity to address specific inequalities (0-4)	2	2	2	2	
Potential impact in terms of patient numbers	Large (100-200K)	Moderate (50-100K)	Large (100-200K)	Moderate/Small (20-50K)	
Availability of other treatment options (cat. 1-3:defined) e.g. 1 = pharmaceutical/surgical options.	2	2	2	3	
Severity of illness	Severe	Moderate	Moderate	Severe	
“Judgement”	?	Recommended, subject to treatment guidelines	Recommended, subject to treatment guidelines	Recommended, subject to treatment guidelines	

** This Table has been very rapidly compiled, for presentational purposes - other suggestions welcome.