

# EUR Research Information Portal

## The new myth

**Published in:**

Pharmacoeconomics (Print)

**Publication status and date:**

Published: 01/01/2008

**DOI (link to publisher):**

[10.2165/00019053-200826010-00001](https://doi.org/10.2165/00019053-200826010-00001)

**Document Version**

Publisher's PDF, also known as Version of record

**Document License/Available under:**

Article 25fa Dutch Copyright Act

**Citation for the published version (APA):**

Brouwer, W., Van Exel, J., Baker, R., & Donaldson, C. (2008). The new myth: The Social Value of the QALY. *Pharmacoeconomics (Print)*, 26(1), 1-4. <https://doi.org/10.2165/00019053-200826010-00001>

[Link to publication on the EUR Research Information Portal](#)

**Terms and Conditions of Use**

Except as permitted by the applicable copyright law, you may not reproduce or make this material available to any third party without the prior written permission from the copyright holder(s). Copyright law allows the following uses of this material without prior permission:

- you may download, save and print a copy of this material for your personal use only;
- you may share the EUR portal link to this material.

In case the material is published with an open access license (e.g. a Creative Commons (CC) license), other uses may be allowed. Please check the terms and conditions of the specific license.

**Take-down policy**

If you believe that this material infringes your copyright and/or any other intellectual property rights, you may request its removal by contacting us at the following email address: [openaccess.library@eur.nl](mailto:openaccess.library@eur.nl). Please provide us with all the relevant information, including the reasons why you believe any of your rights have been infringed. In case of a legitimate complaint, we will make the material inaccessible and/or remove it from the website.

# The New Myth

## The Social Value of the QALY

Throughout history there have always been people who are susceptible to myths and have tried to find the unfindable, whether it be the Holy Grail providing eternal life for its finder, the alchemic formula turning lead into gold, Bigfoot or the pot of gold at the end of the rainbow. These myths come in different forms; some are clearly placed in a religious or metaphysical context (e.g. the Holy Grail), while others are marketed with an earthly and scientific aura (e.g. the hairs of Bigfoot).

At present, a new myth is seeking its way into the world. It has sought a particularly receptive bunch of people to nestle in, called health economists. We will call them 'Believers'. The Believers form a relatively friendly tribe, although some theoretical quarrels between tribe members have been reported. Their sole goal in life is to help societies in their struggle with the optimal allocation of resources in the healthcare sector.<sup>1</sup> To that end, the Believers have designed a friendly instrument that they normally refer to as 'Economic Evaluation'. The ritual of the Economic Evaluation involves assessing the incremental costs and health gains of one healthcare intervention compared with another.<sup>2</sup> The incremental health gain, which is believed to be the *maximand* of the healthcare sector, is normally dressed up in the ritual to take the shape of a quality-adjusted life-year – friends call her QALY. After the incremental costs and effects are assessed, the ritual involves some straightforward or more complex statistical magic, often performed by specialised priests

in the tribe. Then, tribe members proudly reveal the end result of the Economic Evaluation: the Ratio. The Ratio basically indicates how much wealth one needs to sacrifice on the altar of the healthcare system in order to obtain one additional QALY. The ritual ends by presenting the Ratio to all tribe members and others, mainly through an obscure system of holy books, called Journals, some of which are more holy than others.

For a long time, the tribe of Believers professed that The Ratio was all they needed, the highest knowledge, all Ratios being brought to a high altar, or table.<sup>3</sup> The Ratios, they repeated like a mantra, help us to maximise health effects from a given healthcare budget! But, as the tribe became more influential, it became more apparent that the Ratio could not solve all problems. At tribal meetings (preferably in sunny places), the Ratio was questioned as the sole source of information.<sup>4</sup> Some tribal members, for instance, argued that the Ratio itself does not indicate whether the healthcare budget should be raised or whether 'old care' should be replaced with 'new care' within the existing budget. What was needed was a way to interpret the Ratio in a broader context, the tribe's creed started to read. Something new was needed, something big, something of mythical proportions; something they called the 'Social Value of the QALY', codename:  $\lambda$ . Tribe members found ancient texts in sacred books (e.g. Boadway and Bruce<sup>[3]</sup>) that already pointed to the relationship between the Ratio and this mythical  $\lambda$ . And so the quest began ...

In order to reach the intended readership, we will use tribal language from now on.

- 
- 1 The very brave sometimes even attempt to assist in the optimal allocation of resources across (public) sectors.
  - 2 Although there is some international variation (e.g. especially slight differences in terms of which sacrifices – called costs – should be considered in the ritual and how), the basic ritual is the same in all branches of the tribe.
  - 3 Although it needs to be noted that a small group of persistent dissidents within the tribe have questioned the Ratio as highest knowledge, and have advocated other convictions regarding how to come to optimal allocations (for example, see Gafni and Birch<sup>[1]</sup>).
  - 4 For example, the session on the social value of a QALY during the iHEA conference in Copenhagen.<sup>[2]</sup>

## 1. The Importance and Role of the Social Value of a QALY

The importance of finding the social value of a QALY is clear. Conventional welfare economics insists that societal welfare is enhanced when the net benefits of some change are larger than zero (see equation 1):

$$\sum_0^t \frac{\lambda_t \Delta h_t - c_t}{(1+r)^t} > 0 \quad (\text{Eq. 1})$$

where  $\lambda_t$  denotes the social value of a unit of health,  $\Delta h_t$  denotes the change in health and  $c_t$  denotes the costs, all in year  $t$ , and  $r$  represents the discount rate). To put it differently, but equivalently, for a programme with costs and effects in 1 year only (to avoid ongoing tribal wars on discounting)<sup>5</sup>, the benefits should outweigh the costs of the change (so that  $\lambda_t \Delta h_t > c_t$ ), which is again equal to requiring that the Ratio should be smaller than the social value of a health unit ( $\lambda_t$ ) [so that  $c_t/\Delta h_t < \lambda_t$ ]. Therefore, in order to judge whether some change is welfare improving, ideally the cost-effectiveness ratio is judged against the social value of health. Thus, the relative opportunities to improve social welfare through healthcare or other types of consumption are expressed via the social value of health, which therefore also determines the optimal budget, since that is found when the cost-effectiveness ratio of the marginal programme equals  $\lambda_t$ .

Currently, fairly little is known about the social value of a QALY (e.g. Hirth et al.<sup>[5]</sup>). Therefore, we are rather unsure whether the thresholds we use in our real-life decision-making processes regarding health technologies, such as the £20 000–30 000 per QALY range used by the National Institute for Health and Clinical Excellence (NICE),<sup>[6]</sup> or the €20 000 per QALY often mentioned and sometimes used in The Netherlands, are indeed maximising

welfare or, in case of a fixed budget set externally, whether the budget is set appropriately. The existing evidence mostly indicates that our current thresholds are too low,<sup>[7]</sup> but there is a lot of uncertainty regarding the estimates and the appropriateness of applied methods.<sup>6</sup> The search for the social value of the QALY is therefore important and crucial. But unless we are clear about what exactly we are looking for, our search is bound to end like the search for the Holy Grail, because *the* social value of *the* QALY does not exist.

## 2. Three Reasons Why *the* Social Value of *the* QALY Does Not Exist

Essentially, the problem with searching for *the* social value of *the* QALY is that it assumes that there is some  $\lambda_t$  which, besides perhaps for the timing  $t$ , is unique and stable. That assumption is in fact reflected in the way that most countries currently deal with judging cost-effectiveness ratios, i.e. judging these ratios against one fixed threshold, whatever intervention or patient group involved. We indicate three reasons why *the* social value of the QALY will not exist.

### 2.1 Health Equity

There is a growing body of literature indicating that we prefer some health gains over others because of our concern with health equity. When faced with the choice between two interventions with identical cost effectiveness, one yielding some QALY gain in someone in a relatively poor health state, the other an identical gain in someone in a relatively good health state, many will prefer the first intervention. Moreover, again for reasons of health equity, we prefer health gains in people who have not yet had their ‘fair innings’ of health over those in people who are living in ‘extra time’. While the exact shape

<sup>5</sup> For example, see Gravelle et al.<sup>[4]</sup> and references therein.

<sup>6</sup> Indeed, it has even been argued that current thresholds may be too high (e.g. Williams<sup>[8]</sup>).

of these preferences may not yet be clear, it is clear that we value some QALY gains more than others (e.g. Williams,<sup>[9]</sup> Stolk et al.<sup>[10]</sup>). Put differently, we may prefer interventions with a poorer Ratio over interventions with a better Ratio, if the former produces more valuable QALYs. Therefore, some QALY gains are worth more than others, and context matters in determining this social value.

## 2.2 Broader Equity

Besides a fair distribution of health *per se*, we may prefer health gains in some people to those in others.<sup>7</sup> We may value health gains more in people having dependents or being employed (the WHO even developed a weighting scheme in which productivity was included). Such considerations need scrutiny and avoidance of double counting.<sup>8</sup> Another class of considerations would involve the source and nature of the health problems, such as self-inflicted or unavoidably imposed (e.g. being a drunk driver or getting hit by a drunk driver), avoidable versus unavoidable damage (being infected by unsafe blood in a hospital or having a ‘spontaneous’ blood disease), gains in identifiable or in statistical persons (defibrillators or primary prevention of heart attacks), etc. All such contextual variables can influence the value we attach to QALY gains, but we know little about how, nor is it immediately clear that we would like to use these preferences in societal decisions.

## 2.3 Private versus Social Value

While economic evaluations seek to inform societal decisions, methods used to derive a monetary value of a QALY will often seek to measure an individual’s valuation of health gains. The question then becomes whether the societal valuation of QALY gains should equal the (average) private valuation.<sup>9</sup> Besides the question of how to adjust for income differences between different (groups of) patients<sup>10</sup> (e.g. using target group averages or even population averages), we need to wonder whether individual preferences can steer societal decision making. For instance, Bleichrodt and Quiggin<sup>[13]</sup> indicate that “individuals in worse health are willing to pay more for improvements in quality of life.” This generally seems in line with societal preferences, but the formula they derive indicates that individual willingness to pay for QALY gains approaches infinity when quality of life approaches zero. While this seems plausible for the individual case, using these values in societal decision making would imply that we should devote all our resources to people who are dying or otherwise close to death on the QALY scale, since in that context any gain would be of infinite value ... This poses an important dilemma that is not easy to solve.

## 3. Let the Search Begin

What we have emphasised here, obviously presenting things as a bit more black and white than reality (with all its shades of grey) would require, is that if we set out to find *the* social value of *the* QALY, we will end up chasing rainbows. QALY

**7** For instance, Hammond<sup>[11]</sup> argued that most existing approaches to interpersonal comparisons of utility – both theoretical and empirical – are flawed by failing ‘to be recognised for what they really are – preferences for different kinds of people’.

**8** Productivity costs can be calculated separately, which seems more appropriate if to be included. Moreover, the well-being effects in dependents might also be captured directly rather than indirectly.

**9** The arguments above already implicitly addressed this issue, e.g. a drunk driver may highly value his/her own QALY gains (even more so than the person he/she hit) but society may judge differently.

**10** See Smith and Richardson<sup>[12]</sup> for an excellent discussion.

gains will be valued differently in different contexts and in different people. While this has been indicated before, for instance in the literature on (equity) weights for QALYs,<sup>[14]</sup> it is important to stress this in relation to QALY valuation exercises. Rather than searching for one context free value of a QALY, we need to search for context-specific values, to find out what the crucial contextual factors are that affect QALY valuations, which of these factors are deemed relevant at a societal level, and how to derive the social versus the private values of QALY gains empirically – if the difference between the two is deemed relevant. Therefore, the search for the social value of different QALY gains remains crucial but is not easy. Still, an increasing number of brave hearts are embarking on this endeavour. Indeed, just recently the knights (and princesses) of the European Value of a QALY project (EuroVaQ) have set out to derive monetary values of QALYs in ten countries.<sup>[15]</sup> Furthermore, while acknowledging that the difficulties addressed above may make the search for social values of QALYs more difficult than it would have been otherwise, at least it saves us from chasing an unfindable myth!

*P.S. For those of you who are still Believers rather than Dissenters by now, this final message: We have just found an old manuscript that, after deciphering, specifies that the social value of a QALY is written down on a piece of cloth worn by Merlin. This has been hidden (by King Arthur) in the Holy Grail, which can be found at the end of the rainbow that shines over the sunken city of Atlantis and is guarded by seven Yetis wearing golden robes. Go get it!!*

Werner Brouwer,<sup>1</sup> Job van Exel,<sup>1</sup> Rachel Baker<sup>2</sup> and Cam Donaldson<sup>2</sup>

1 Department of Health Policy & Management and Institute for Medical Technology Assessment, Erasmus University Rotterdam/Erasmus MC, Rotterdam, The Netherlands

2 Institute of Health and Society, Newcastle University, Newcastle upon Tyne, UK

## References

1. Gafni A, Birch S. Incremental cost effectiveness ratios (ICERs): the silence of the lambda. *Soc Sci Med* 2006; 62: 2091-100
2. 6th iHEA World Congress; 2007 Jul 8-11; Copenhagen
3. Boadway R, Bruce N. *Welfare economics*. Oxford: Basil Blackwell, 1984
4. Gravelle H, Brouwer WBF, Niessen LW, et al. Discounting in economic evaluations: stepping forward towards optimal decision rules. *Health Econ* 2007; 16 (3): 307-17
5. Hirth RA, Chernew ME, Miller E, et al. Willingness to pay for a quality-adjusted life year: in search of a standard. *Med Decis Making* 2000; 20 (3): 332-42
6. Taylor RS, Drummond MF, Salkeld G, et al. Inclusion of cost effectiveness in licensing requirements of new drugs: the fourth hurdle. *BMJ* 2004 Oct 23; 329 (7472): 972-5
7. Dranove D. *What's your life worth?* New York: FT Prentice Hall, 2003
8. Williams A. What could be nicer than NICE? OHE Annual Lecture 2004. London: Office of Health Economics, 2004
9. Williams A. Intergenerational equity: an exploration of the fair innings argument. *Health Econ* 1997; 6 (2): 117-32
10. Stolk EA, van Donselaar G, Brouwer WBF, et al. Reconciliation of economic concerns and health policy: illustration of an equity adjustment procedure using proportional shortfall. *Pharmacoeconomics* 2004; 22 (17): 1097-107
11. Hammond PJ. Interpersonal comparisons of utility: why and how they are and should be made. In: Elster J, Roemer JE, editors. *Interpersonal comparisons of well-being*. Cambridge (MA): Cambridge University Press, 1991
12. Smith R, Richardson J. Can we estimate the 'social' value of a QALY? Four core issues to resolve. *Health Policy* 2005; 74 (1): 77-84
13. Bleichrodt H, Quiggin J. Life cycle preferences over consumption and health: when is cost effectiveness analysis equivalent to cost benefit analysis? *J Health Econ* 1999; 18: 681-708
14. Williams A, Cookson R. Equity in health. In: Culyer AJ, Newhouse JP, editors. *Handbook of health economics*. Amsterdam: Elsevier Science, 2000
15. European Value of a Quality Adjusted Life Year [online]. Available from URL: <http://research.ncl.ac.uk/eurovaq> [Accessed 2007 Dec 06]

Correspondence: Dr Werner Brouwer, iBMG, Erasmus University Rotterdam, Room L4-125, 30000 DR, PO Box 1738, Rotterdam, The Netherlands.  
E-mail: Brouwer@bmg.eur.nl