Virtual Mentor

Policy Forum

Some Ethical Corrections to Valuing Health Programs in Terms of Quality-Adjusted Life Years (QALYs)
by Erik Nord, PhD

Introduction
Health benefits resulting from preventive or curative interventions may be valued in terms of gained personal utility (improved quality of life) for the individuals concerned. These personal utility gains may be aggregated over time by weighting each affected year of life by the size of the utility gain in that year and adding the weighted years together. The result is an estimate of the value of health benefits in terms of quality-adjusted life years (QALYs).

Most Salient Ethical Problems in Use of QALYs
A question raised by many over the last 15 years is whether health benefits valued in this manner adequately represent the way society values health benefits across different groups of people. Three particularly salient ethical problems have been identified, related to the fact that the QALY approach focuses wholly on quantifying *utility gains*, with no regard to contextual factors and fair distribution of beneficial interventions across different groups [1].

The first ethical problem arises from the fact that QALYs pay no attention to the *'without-intervention-utility-level'* of the individuals concerned. But ethical theory and public opinion in a number of industrialized countries suggest that, in setting priorities for programs and their recipients, society values utility gains expressly on this factor—how bad off the individuals would be if intervention did not take place [1]. That is to say, the worse off an individual would be without a specific intervention, the more highly society tends to value that intervention [2]. The latter way of reckoning is often referred to as an *independent concern for severity*.

Second, valuing health benefits in terms of QALYs strongly favours those with greater capacity to benefit. But here again, ethical theory and public opinion in a number of industrialized countries suggest that, for *groups with the same severity of illness*, society does not wish to give strong priority to those with greater capacity to benefit over those with lesser capacity to benefit, as long as the benefit is substantial in both groups [2].

Third, valuing health gains in terms of QALYs means that life years gained in full health for the otherwise healthy—through prevention of fatal accidents, for example—are counted as more valuable than life years gained by those who are chronically ill or disabled. This conflicts with the idea of an equal right to protection of

life by all, irrespective of their health condition, as long as they themselves have the desire to live [2].

Possible Answers
A solution to the first 2 of these problems is to expand conventional QALY calculations by introducing equity weights to capture differences in illness severity (ie, employ an independent-concern-for-severity approach) and reduce discrimination against those with a lesser capacity to benefit [3].

Another solution is to do an appropriate mathematical transformation of utility measures that derive from a family of QALY-oriented health questionnaires called Multi-Attribute Utility instruments (MAU). These instruments establish a multi-dimensional health profile for each person in a given study group and an algorithm that translates the profiles into a single utility score on the 0-1 scale used in QALY calculations (where 0 = death and 1= full health). Utilities from MAU instruments can then be transformed into societal weights—valuations of health states that take into account not only disutility of illness and disability from a personal perspective but also the societal distributive concerns mentioned above, ie, society's interest in giving priority to the worst off and its non-discrimination against those with lesser capacity to benefit. In health state valuations consistent with societal concern, scores for severe problems are much higher than 0, and scores for moderate problems are compressed to the upper end of the 0-1 scale. This has 2 consequences. First, it reduces the value of improvements for the moderately ill relative to improvements for the severely ill and, particularly, relative to preventing death. Second, it reduces the value of large improvements relative to small improvements when comparing groups with different capacities to benefit—groups for whom medical technology happens to have different degrees of curative potential.

By way of example, consider the states "blind" and "very near sighted." Assume that MAU instruments assign them utility scores 0.4 and 0.8 respectively. Assume further that these scores are transformed into societal weights of 0.7 and 0.95 respectively. Three effects may be observed. First, the transformation reduces the value of curing nearsightedness relative to curing blindness (from 0.2 / 0.6 to 0.05 / 0.3). Second, the value of both these cures is reduced relative to preventing fatal illness (eg, for blindness from 0.6 / 1.0 to 0.3 / 1.0). Third, the value ratio between (a) bringing a person from blindness to normal vision and (b) bringing a person from blindness to "very near sighted," is reduced (from 0.6 / 0.4 to 0.3 / 0.25).

A potential solution to the third problem is to count as 1 all life years gained as long as they are desired by the individuals concerned [1]. This has been labelled the "equal value of life" approach (EVL) [4]. Swedish health economist Magnus Johannesson has argued that EVL may lead to societal choices that violate a given individual's preference for quality of life years over quantity of life or vice-versa [5]. I believe Johannesson is right, but I think the inconsistency to which he refers is not specifically related to EVL. Rather, it may be seen as an inevitable consequence of the fact that human preferences change as the context in which the choice is made changes. That is, the decision any individual makes for him or herself may differ from the decision he

or she makes when contributing to collective decisions about health policy where distributive fairness is involved.

Other Ethical Issues
British health economist Alan Williams has argued that, rather than introducing concerns for severity into QALY calculations, one should consider life time health, so that QALYs for people who have already had a reasonable number of life years and health—which Williams calls "fair innings"—should count less than QALYs for people who are looking at below-average lifetime health [6]. With respect to gains in life years beyond the age of 75-80, this is arguably a fair proposal. There may thus be a case for supplementing conventional QALY calculations with some kind of age weighting in health program evaluations that purport to take societal concerns for fairness into account. But when applied to gains in *quality of life* in old people, Williams' proposal is far more problematic. In countries like Norway and Sweden, there is widespread consensus that older people have the same right to relief of pain and discomfort as young people, even those who are past their fair innings in terms of length of life [7]. I would assume that most other countries are no different in this respect.

A final ethical concern is that the conventional QALY approach to resource allocation does not ask whether a particular gain occurs as a substantial benefit to a few or as small improvements to a large number of people. To my knowledge there is not much empirical evidence of societal preferences on this issue. But one could relate this issue to the point made above that most people seem to think that the size of the health increase should *not* be given too much weight when comparing people with different capacities to benefit from an intervention, as long as the people in question have the same severity of illness and the benefit is deemed substantial in every case. One way of interpreting this ethical view is to say that there is diminishing marginal societal value of health increases. This again would lead to the view that a given total QALY gain should be assigned greater societal value if it is distributed among many rather than concentrated on a few. I stress that this is assuming that severity of illness is the same.

References
1. Nord E. *Cost-value Analysis in Health Care*. Cambridge, England: Cambridge University Press; 1999.
2. Nord E, Pinto JL, Richardson J, Menzel P, Ubel P. Incorporating concerns for fairness in numerical valuations of health programmes. *Health Econ*. 1999;8:25-39.
3. Nord E. Health state values from multi-attribute utility instruments need correction. *Ann Med*. 2001;33:371-374. See also figure in http://www.eriknord.no/engelsk/health/transformutil.htm
4. Nord E, Menzel P, Richardson J. The value of life: Individual preferences and social choice. *Health Econ*. 2003;12:873-877.
5. Johannesson M. Should we aggregate relative or absolute changes in QALYs? *Health Econ*. 2001;10:537-577.
6. Williams A. The fair innings argument deserves a fairer hearing. *Health Econ*. 2001;10:583-585.

7. Nord E. Concerns for the worse off: severity versus fair innings. *Soc Sci Med.* 2005;60:257-263.

Erik Nord is a PhD in health economics. He is a senior researcher at the Norwegian Institute of Public Health in Oslo.

To correspond with other listserv members about this article email House Calls.

To join the House Calls discussion listserv e-mail us at virtualmentor@ama-assn.org. If you are already a member you need not join again.

The viewpoints expressed on this site are those of the authors and do not necessarily reflect the views and policies of the AMA.