

Generic Preference Based Measures:

how economists measure health benefit



Chris Sampson

is a Health Economist at The University of Nottingham. Amongst other things he currently works for the NIHR Collaboration for Leadership in Applied Health Research and Care for Nottinghamshire, Derbyshire and Lincolnshire (CLAHRC-NDL). His research interests centre on the development of methods for economic evaluation in health care.

Correspondence to:

Chris Sampson,
Institute of Mental Health,
University of Nottingham Innovation
Park, Nottingham, NG7 2TU, UK.
Email: chris.sampson@nottingham.ac.uk

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Summary

- Decision makers must choose between interventions for different health conditions with myriad outcomes
- The value of health can be derived from people's preferences
- Generic preference-based measures have been validated for use in a number of neurological conditions
- There is much scope for neurologists and rehabilitation specialists to support the development and refinement of preference-based measures

Resources are always scarce, but the possible uses of these resources are limitless. This simple observation underlies much of what economists do. It leads to competing demands from different parties and requires individuals and organisations to make choices about their use of scarce resources. The primary purpose of economics is to help us understand how decisions about the distribution of scarce resources are made, and to identify optimal decisions. It shouldn't take too much of an intellectual leap to see how adopting an economist's perspective might contribute to the improvement of patient care and health outcomes.

The process of evaluating health care interventions is well-established, with the randomised controlled trial maintaining its place as the gold standard method. A crucial decision that must be made in figuring out if an intervention works is which indicator should be used. The purpose of the intervention might be to reduce mortality, improve functioning or prevent falls. It could be all three. If the intervention produces an improvement in these indicators it is probably of value – but of what value? How do we value this intervention? And why might we want to?

Opportunity cost

The NHS must operate within a budget, as society's ability to fund healthcare (not to mention its willingness) is limited. In some countries this limitation applies to the individual. It is not possible for an individual to receive whatever treatment they want whenever they want it. It is necessary to prioritise. This means that decisions and trade-offs must be made. Consider a choice between two interventions of equivalent cost; one prevents 10 deaths, the other prevents 1000 falls. Which is of the greatest value?

Economists value things in terms of opportunity cost; the value of something is defined by the value of the next best alternative. It might be that the next best alternative to an intervention that prevents 10 deaths is an intervention that prevents 1000 falls. In

this case the opportunity cost of the intervention that prevents 10 deaths is the value associated with preventing 1000 falls, or vice versa. This is how economists think of cost – the pounds and pence associated with providing an intervention are incidental. In health care it isn't always clear what the next best alternative might be, though there is likely to be a long list of contenders. What this means is that we need a consistent way of estimating the opportunity cost of an intervention, in order to identify its value.

Utility theory

Not only must trade-offs be made between different treatments for the same disease, but also across clinical areas. This is where utility theory comes in. Utility is a complex and widely debated concept, but here we can assume it to be the satisfaction of an individual's desires. This is because health economists generally support the idea that the amount of utility an individual gains from something can be observed in their choices. It is assumed that, given the choice between two possible health care interventions, an individual will choose the one that maximises their utility.

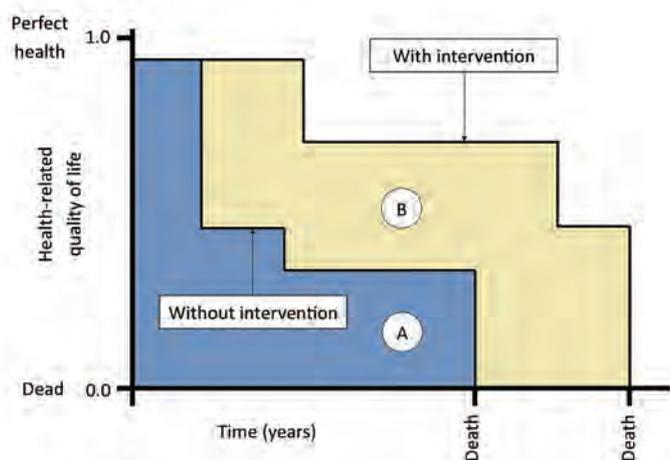
Economists have therefore contributed to the development of measures that can be used as outcomes across disease areas and patient groups. These measures attempt to capture the extent to which a person's health affects their underlying utility level; characterised as health-related quality of life.

EQ-5D-3L

By placing a tick in one box in each group below, please indicate which statements best describe your own health state today.

Mobility	
I have no problems in walking about	<input type="checkbox"/>
I have some problems in walking about	<input type="checkbox"/>
I am confined to bed	<input type="checkbox"/>
Self-Care	
I have no problems with self-care	<input type="checkbox"/>
I have some problems washing or dressing myself	<input type="checkbox"/>
I am unable to wash or dress myself	<input type="checkbox"/>
Usual Activities (e.g. work, study, housework, family or leisure activities)	
I have no problems with performing my usual activities	<input type="checkbox"/>
I have some problems with performing my usual activities	<input type="checkbox"/>
I am unable to perform my usual activities	<input type="checkbox"/>
Pain/Discomfort	
I have no pain or discomfort	<input type="checkbox"/>
I have moderate pain or discomfort	<input type="checkbox"/>
I have extreme pain or discomfort	<input type="checkbox"/>
Anxiety/Depression	
I am not anxious or depressed	<input type="checkbox"/>
I am moderately anxious or depressed	<input type="checkbox"/>
I am extremely anxious or depressed	<input type="checkbox"/>

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The area beneath the 'without intervention' curve (area A) represents the number of QALYs associated with the control group. The area beneath the 'with intervention' curve (area A plus area B) represents the number of QALYs associated with the treatment group. Area B represents the QALY gain associated with the intervention.

The QALY

But health care has the dual aim of improving life and extending life; of reducing both morbidity and mortality. This represents another trade-off. The quality-adjusted life year (QALY) has been developed to capture both of these goals. The trade-off between the two is again guided by preferences. The QALY works by attaching a value to a year of life in a given health state; based on an individual's health-related quality of life. When QALYs are used as the outcome measure in an economic evaluation we call it a cost-utility analysis.

And finally we arrive at an introduction to the concept mentioned in the title; generic preference-based measures. This is the easy part. Generic preference-based measures capture the 'Q' in the QALY. A number of generic preference-based measures have been developed over the past 25 years. The most well-known of these include the EQ-5D,¹ Health Utilities Index² and SF-6D.³ These are simple questionnaires that attempt to capture an individual's general level of health, consisting of items that have been chosen to reflect aspects of health that people consider important. Collecting individual responses to these questionnaires is the first of two steps. The second is a valuation process. This process is required to reflect individual's preferences – the importance of which is set out above. It is this valuation that enables us to compare very different health problems on the same scale. The most common method, in the UK at least, is to use societal valuations. In this case it is the general public valuing the health states rather than patients. Based on these values the generic preference-based measures produce an index value on a scale from 0 to 1, where 1 represents perfect health and 0 represents a health state equivalent to being dead. It is possible for health states to be negative; that is, worse than being dead. A year spent with a health state of 1 equates to 1 QALY, which equates to 2 years in a health state of 0.5, which equates to 10 years in a health state of 0.1.

In addition to generic measures, it is also possible to use condition-specific preference-based measures. These are designed to detect the extent to which an individual's disease-related quality of life affects their utility. The extent to which these measures are comparable with generic measures is debated.

QALYs in neuroscience and rehabilitation

The QALY is now a widely adopted outcome measure in most areas of health, including rehabilitation and neurology. It is the preferred measure of benefit in the NICE reference case, and generic preference-based measures (PBMs) such as the EQ-5D are the preferred health state descriptors. While generic PBMs might not always be the most appropriate choice of indicator, they have been validated and used in a wide range of clinical areas. For Parkinson's disease, the EQ-5D has been shown to be feasible and valid; correlating well with the PDQ-39.⁴ Similarly, the EQ-5D reflects the presence of neuropathic pain,⁵ while the EQ-5D, SF-6D and Health Utilities Index have all been found to be responsive in stroke.⁶

Limited work has been done to decide which measure is best in any given situation. Even within a given field, such as neurology, different measures may be more appropriate in different circumstances. Researchers and clinicians should be familiar with different measures to know which is most appropriate, though it is likely that they will need to rely on common sense rather than quantitative or qualitative evidence.

It is sometimes argued that generic measures do not identify the issues that matter to patients.⁷ A review of the use of quality of life measures for palliative care of people severely affected by multiple sclerosis found that the EQ-5D did not correlate as expected with condition-specific measures.⁸ In cases such as this it might be more appropriate to use, or indeed develop, condition-specific PBMs. In relation to this it is also possible to 'map' onto measures such as the EQ-5D from condition-specific measures. This means that an EQ-5D value can be derived from a validated condition-specific measure. In stroke, for example, preference-based versions of the Barthel Index⁹ and Modified Rankin Scale¹⁰ have been developed and used. Measures such as the MSWS-12¹¹ and MSIS-29¹² have been mapped to the EQ-5D for use in multiple sclerosis, and the HIT-6 and MSQ questionnaires for migraine.¹³

The future

It's crucial that trials of new treatments in neurology and rehabilitation include preference-based measures in order that we can understand their value to patients. It has also been argued that such measures should be collected on a routine basis. Since April 2009, the Patient Reported Outcome Measures (PROMs) programme has collected EQ-5D from NHS patients receiving surgery for hip replacements, knee replacements, hernia and varicose veins. Other services, such as the Improving Access to Psychological Therapies (IAPT) programme, administer similar sets of questionnaires. Rehabilitation services could gain much from doing the same. The routine collection of measures like the EQ-5D will enable researchers to further develop health state valuation methods in the field; whether this be through validating preference-based measures, mapping from condition-specific to generic measures or developing new measures where appropriate. There is also scope for a full systematic review of the use of generic and condition-specific PBMs across all neurological conditions in order to understand when measures should and shouldn't be used and to identify gaps in understanding. Such work is necessary to ensure that interventions are valued appropriately and that decisions can be made to optimise health outcomes. ♦

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