Whose Quality of Life?
Issues in using the EQ5D in Australian health care evaluation

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History of the EQ5D (Euroqol)

EuroQol* — a new facility for the measurement of health-related quality of life

The EuroQol Group**
Accepted 14 August 1990

Summary
In the course of a programme of describing and valuing health states in England, The National Evaluation Group (whose members are described in the introduction) collected health states data using the EuroQol instrument. It was decided to ask people to rate health state valuations...[including] the capacity to generate cross-national comparisons of health state valuations...[under the] least favourable circumstances.
## The EQ5D (Euroqol) descriptive system

<table>
<thead>
<tr>
<th>1. Mobility</th>
<th>3. Usual Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>- I have no problems</td>
<td>- I have no problems</td>
</tr>
<tr>
<td>in walking about.</td>
<td>with performing</td>
</tr>
<tr>
<td>- I have some problems in walking about.</td>
<td>my usual activities</td>
</tr>
<tr>
<td>- I am confined to bed.</td>
<td>- I am unable to perform my usual activities.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- I have no problems</td>
<td>- I have no pain or</td>
</tr>
<tr>
<td>with self-care.</td>
<td>discomfort.</td>
</tr>
<tr>
<td>- I have some problems washing or dressing myself.</td>
<td>- I have moderate pain or discomfort.</td>
</tr>
<tr>
<td>- I am unable to wash or dress myself.</td>
<td>- I have extreme pain or discomfort.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. Anxiety/Depression</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- I am not anxious/depressed.</td>
<td></td>
</tr>
<tr>
<td>- I am moderately anxious/depressed.</td>
<td></td>
</tr>
<tr>
<td>- I am extremely anxious/depressed.</td>
<td></td>
</tr>
</tbody>
</table>

### Understanding health state descriptions

- **11111** = Mobility level 1; Self-care level 1; Usual activities level 1; Pain level 1; Anxiety level 1
- **12121** = Mobility level 1; Self-care level 2; Usual activities level 1; Pain level 2; Anxiety level 1
- **22122** = Mobility level 2; Self-care level 2; Usual activities level 1; Pain level 2; Anxiety level 2
- **13332** = Mobility level 1; Self-care level 3; Usual activities level 3; Pain level 3; Anxiety level 2
- **33333** = Mobility level 3; Self-care level 3; Usual activities level 3; Pain level 3; Anxiety level 2
Preferences from the UK EQ5D for use in CUA

\[ U = 1.00 - \alpha - \beta_1 - \beta_2 - \beta_3 - \beta_4 - \beta_5 - N_3 \]

\( U \) = EQ5D utility score
1.00 = Full health
\( \alpha = -0.081 \) (automatic constant for any disability at all)
\( \beta \) = TTO coefficient values (tariffs) for the different levels of health
1 = Mobility, 2 = Self-care, 3 = Usual activities, 4 = Pain, 5 = Anxiety
\( N_3 = -0.269 \) (automatic constant for any severe disability at all)

\( \beta \)-tariffs from a UK sample of 2,997 interviewed persons using TTO to value 42 different EQ5D health states
\( \alpha \) and \( N_3 \) terms are the constant intercepts from the best-fitting regression model

Source: Dolan (1997)

BUT..... are the constants and tariffs the same across cultures?

Are the TTO tariffs the same across cultures?
(TTO-tariffs in general population samples)

EQ5D TTO-derived tariffs

EQ5D defined health states

Implications for non-tariff countries?

EQ5D Group advice:
• “For economic studies, in the absence of a set of national population-based utility weights, then select a set of utility weights for a population that most closely approximates it. In the absence of a suitable candidate, adopt the most robust valuation set (pro tempore the UK TTO A1 set).”

In Australia at the end of 2007 there were 47 published studies
  – All had used the UK TTO weights

• BUT..... US value weights published in 2005 (Shaw et al)
  – Should we consider using the US weights?

Available datasets
• Victorian validation dataset (VVDS)
  – Collected: 1998
  – Stratified sample of Victorians (N=996)
    • In-patients: 266
    • Outpatients: 334
    • General community sample: 396
• South Australian Health Omnibus Survey
  – Collected: 2004
  – Representative sample of residents, weighted to 2001 census
  – N = 3015
Data distributions by UK and US weights

Impact of the UK constant & N3 term

• UK weights
  – $\alpha = -0.081$ if any item below Level 1
  – N3 = -0.267 if any item at Level 3

• US weights
  – $D1 = -0.140 \times$ (Number of items below Level 1 beyond the first)
  – $I2^{2} = -0.011 \times$ (N. items at Level 2 beyond the first)
  – $I3 = -0.122 \times$ (N. items at Level 3 beyond the first)
  – $I3^{2} = -0.0148 \times$ (N. items at Level 3 beyond the first)
Example of the impact of the UK constant & N3 term

Gap due to α-constant (-0.081)

‘Gap’ due to N3 term (-0.267)

Do the US-weights improve on this restriction?

Gap due to D1-term (0.140 X N)

Gap due to I2, I3 & I3²-terms
Impact on economic evaluation: Depression

EQ5D Mean utility (95%CIs)

Potential effect on economic evaluation

Modelled impact of depression treatment

• UK-EQ5D tariff:
  – Pre-treatment (Major depression) = 0.53
  – Post-treatment (no symptoms) = 0.86
  – QALY-gain = 0.33 X 10 years = 3.3 QALYs

• US-EQ5D tariff:
  – Pre-treatment (Major depression) = 0.66
  – Post-treatment (no symptoms) = 0.89
  – QALY-gain = 0.23 X 10 years = 2.3 QALYs
Australian researchers now have two sets of Anglo-weights for the EQ5D to choose from:

- We do not know which set most closely represents Australian values on health care
- Depending upon health condition, they may give different QALY-gain estimates for the same intervention
- We don’t know which QALY-estimates will be more accurate of the impact of interventions
- Neither set appears to properly handle some of the problems with the EQ5D
  - (ceiling scores, gaps, negative utilities, inconsistent evaluations)

Fryback (2005)

“We (US citizens) may be different in the way we value health states from the rest of the world and if we are really to implement US policies based on cost-effectiveness analysis, then we should use US preferences.”

The same argument applies to every other country, including Australia

(and we already acknowledged this through developing Australian weights for the SF-36)