A SYSTEMATIC REVIEW OF UTILITY DERIVATION METHODS: TIME TRADE OFF IN COMPARISON TO EQ-5D

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INTRODUCTION:
- Decisions about (new) medical therapies involve, besides the clinical component, a value judgment. An important one is evaluating potential tradeoffs between quality of life and length of life or between different domains of quality of life resulting from different treatment options.
- Utility values for health economic analyses could be derived through different methods. Two prominent tools are the Time-Trade-Off (TTO) and EQ-5D in order to derive utility measures for different health states. Health state values are applied in health technology assessments, and in that context comparability of information is desired.
- TTO values health states sharing the core element of trading length of life for quality of life.
- Utilizing the method Time-Trade-Off (TTO) method includes the presentation of a set of questions to patients and/or the general population. The scale for the answers of these questions usually ranges from 1 to 10 and the person’s score is calculated by dividing the number corresponding to their cross by 10.
- The method Time EQ-5D measures health related quality of life with a standardized questionnaire. An EQ-5D health state is a set of observations about a person defined by the descriptive system utilizing the questionnaire. An EQ-5D health state may be converted to a single summary index by applying a formula that attaches weights to each of the levels in each dimension.
- The research question remains: what is the more appropriate way to measure health related quality of life / utility values.

METHODS:
A systematic literature research in the Pub Med (http://www.ncbi.nlm.nih.gov/pubmed) was executed:
- Utilizing the key words Time-Trade-Off and EQ-5D
- The search was limited to the last 10 years (2006 to 2016)
- Only articles with abstracted were accepted
- No specific disease area or therapeutic area was selected
- The key focus for the evaluation of the articles was the description of the research question: “Which utility derivation method might be more appropriate measuring patient’s utilities? EQ-5D or the TTO?”

RESULTS:
After the execution of the search, titles were screened and abstracts as well as full text articles were evaluated and assessed for its content. Articles were divided into groups of:
- direct comparison of TTO and EQ-5D–Questionnaire
- developing and adapting EQ-5D and TTO for other world regions and
- other articles comparing or developing methodologies related to Time-Trade-Off.
The first group again was divided for articles with relevant information and non-relevant information for the research question. Figure 1 shows the further steps of exclusion of irrelevant articles.

Figure 1: Flow chart

In total there were 194 articles considered. 123 articles developed EQ-5D with TTO techniques or adapted EQ-5D to other regions, while 65 articles discussed a directed comparison of TTO and EQ-5D questionnaire and also others, while 6 articles compared or developed further TTO techniques. Of the 65 comparisons between TTO and EQ-5D, 6 articles were excluded due to not measurable results (see Figure 2).

Figure 2: Summary of reported measures in the relevant articles

All remaining relevant articles were read and pros and cons were summarized qualitatively as described in Figures 3 and 4.

Figure 3: Pros and Cons of TTO

Figure 4: Pros and Cons of EQ-5D

CONCLUSIONS:
- Results from the remaining 59 articles showed a broad spectrum of findings in favor and against the two different methods.
- In general, TTO methods were seen as more sensitive to specific disease areas and hence health states than an EQ-5D questionnaire, while some others argue the EQ-5D might be easier in its application with the general population or patients than TTO.
- Further research with direct comparisons of the two methods in various disease areas might be needed.