ESTIMATING THE WTP FOR A QALY – EXPLORING DIFFERENCES BY TYPES OF HEALTH GAIN

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Context

• Funded by Ministry of Health, Social Services and Equality
• Duration: 2014-2017
• Aim: To determine the cost-effectiveness threshold for the Spanish National Health Service
• Stages:
  • Literature review
  • Critical appraisal and expert consultation
  • Empirical work(s)
  • Recommendations and dissemination
Literature and expert review

**Demand**
- Threshold should reflect societal value of health gains
- Takes into account societal preferences
- In line with general cost-benefit approach taken in other public sectors
- Appropriate to guide decisions on how to allocate new resources and size of health budget

**Supply**
- Threshold should reflect the opportunity cost resulting from disinvestment required to adopt a new technology
- Takes into account budget restrictions
- Allow comparison of health gains from new technology with health losses from displaced resources
- Appropriate when budget is fixed
Valor Monetario de un Año de Vida Ajustado por Calidad: Revisión y Valoración Crítica de la Literatura

Informes de Evaluación de Tecnologías Sanitarias SESCS

ARTICLE IN PRESS


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ABSTRACT

Background. Many health care decision makers are incorporating threshold values into their decision-making, limiting the use of certain technologies. The choice of the threshold that will determine whether a certain technology is cost-effective is an important issue. The aim of this article is to identify and critically appraise the conceptual premises and methodologies used to determine the cost-effectiveness threshold (CET). Methods. We performed a depth literature search of different databases and selected a systematic review of conceptual analyses. Broadly, the studies can be grouped into four main conceptual approaches: CETs based on the value that society places on a QALY and the opportunity cost of resources; CETs based on the economic environment, the benefits that are derived from different types of technologies; CETs based on the expected value of a QALY; and CETs based on the threshold value that maximizes the total benefits. Results. The three conceptual approaches are characterized by different underlying assumptions. The CETs based on the value that society places on a QALY and the opportunity cost of resources are influenced by the perspective of the analysis, the QALY value, and the opportunity cost of resources. The CETs based on the economic environment are influenced by the perspective of the analysis, the QALY value, and the expected value of a QALY. The CETs based on the threshold value that maximizes the total benefits are influenced by the perspective of the analysis, the QALY value, and the expected value of a QALY. Conclusion. The different conceptual approaches can lead to different CETs, and it is important to be aware of the underlying assumptions and the implications for decision making.

COLABORACIÓN ESPECIAL

EVALUACIÓN ECONÓMICA BÍSCA EBRIAL PARA AYUDAR LA TOMA DE DECISIONES

Resumen. La evaluación económica (EE) es un instrumento fundamental para la toma de decisiones en la salud. La Búsqueda de la Información Relacionada con los Costes y los Efectos (BICARE) es una herramienta que permite realizar una evaluación económica de la eficiencia de la intervención. La BICARE de este estudio se basó en la revisión sistemática de la literatura existente sobre la utilización de la EE en el sistema sanitario canario. Se identificaron 42 estudios, de los cuales 39 se seleccionaron para su análisis. Los resultados mostraron que la EE es una herramienta muy útil para la toma de decisiones, pero también se identificaron algunas limitaciones, como la falta de estudios comparativos y la diversidad de métodos utilizados. Se recomienda la implementación de una estrategia integral que incluya el uso de la EE en las decisiones de salud.

RESUMEN

Economic Evaluation Study to Support Decision-making

Abstract. Economic evaluation studies are important tools for decision making in healthcare. This study aims to analyze the economic evaluation studies published in the Canary Islands Health System. A systematic review of the literature was performed to identify articles related to economic evaluation studies. A total of 42 studies were identified, of which 39 were selected for analysis. The results showed that economic evaluation studies are a valuable tool for decision making, but some limitations were also identified, such as the lack of comparative studies and the diversity of methods used. It is recommended to implement an integrated strategy that includes the use of economic evaluation studies in healthcare decision making.
Empirical work 1: Opportunity cost

• We aim to estimate the marginal cost per QALY at the Spanish NHS

• Data on health expenditure across the 17 regional health services that compose the Spanish NHS over the period 2008-2013

• We exploited variations between regions and over time due to economic crisis to estimate the impact of health spending on health outcomes

• Panel data methods with fixed effects and instrumental variable approach

• Threshold value estimated between 20,000€ and 24,000€
Empirical work 1: Opportunity cost
Empirical work 2: Societal value of a QALY

• **Aim:** to estimate society willingness to pay (WTP) for a QALY in Spain, allowing for differences by type of health gains

• **Data:** online survey on a large and representative sample (age/gender/area of residence) of the Spanish population (N=2,003)

• We follow **three steps:**
  1. Elicitation of health gains in terms of QALYs by a means of a Discrete Choice Experiment (DCE) and an exercise of Time Trade-Off (TTO)
  2. Estimation of the WTP for these health gains
  3. Aggregation of both estimations to yield the monetary value of a QALY, according to different types of health gains
Empirical work 2: Societal value of a QALY

- **Questionnaire (5 sections)**
  1. Demographics/own health (EQ-5D-3L and general health)
  2. DCE task
  3. WTP task
  4. TTO task
  5. Socioeconomics/difficulties completing questionnaire
Empirical work 2: Societal value of a QALY

- **DCE task**
  - Respondents asked to imagine themselves living for one month in two possible health states (EQ-5D-3L)
  - Choose which one they preferred
  - Each respondent answered 8 pairs
  - Design: Choice set of 80 possible combinations divided in 10 blocks, with no dominance, only 3 attribute varied at the time (after pilot), random variation of position in screen, and fixed duration
Empirical work 2: Societal value of a QALY

- WTP task
  - Respondents asked how much they will be willing to pay for a drug that will avoid one month with health problem as defined by EQ-5D-3L health states
  - Each respondent answered 8 states
  - Design: wide ranges followed by open-ended question, “cheap talk”
Empirical work 2: Societal value of a QALY

• TTO task
  ✓ Respondents asked to compared two scenarios: to live 10 years with health problems or (less) years with perfect health
  ✓ Iterative effect until indifference
  ✓ Health state: 22222 (some problems)
  ✓ Method to achieve anchoring of DCE results
Empirical work 2: Societal value of a QALY

• Data analysis: regression models
  • DCE (conditional multinomial logit model):
    \[ u_{ij} = \alpha_1 M02_{ij} + \alpha_2 M03_{ij} + \alpha_3 SC2_{ij} + \alpha_4 SC3_{ij} + \alpha_5 UA2_{ij} + \alpha_6 UA3_{ij} \\
    + \alpha_7 PD2_{ij} + \alpha_8 PD3_{ij} + \alpha_9 AD2_{ij} + \alpha_{10} AD3_{ij} + \varepsilon_{ij} \]
  • WTP (multilevel random effect log-transformed model):
    \[ \log(\text{WTP}_{ij}) = \gamma_1 M02_{ij} + \gamma_2 M03_{ij} + \gamma_3 SC2_{ij} + \gamma_4 SC3_{ij} + \gamma_5 UA2_{ij} + \gamma_6 UA3_{ij} + \gamma_7 PD2_{ij} + \gamma_8 PD3_{ij} + \gamma_9 AD2_{ij} + \gamma_{10} AD3_{ij} + \mu_i + \varepsilon_{ij} \]
  • Aggregation (bootstrapping methods): \( \gamma^{\text{anual}} / \alpha^{\text{rescalado}} \)

• Exclusion criteria: Outliers (WTP>1 million €), same WTP all states, <10 minutes

• Control variables: Age, gender, income
Empirical work 2: Societal value of a QALY

<table>
<thead>
<tr>
<th>Dimensión /nivel</th>
<th>Utilities</th>
<th>WTP</th>
<th>WTP for a QALY (full sample)</th>
<th>WTP for a QALY (inclusion criteria)</th>
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<tr>
<td>mo2</td>
<td>-0.2402***</td>
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Empirical work 2: Societal value of a QALY

• WTP values for a QALY estimated according to our analysis varied from 10,000€ to 30,000€

• Depend on the level of severity and the health dimension being affected
  • Moderate health problems were associated to significantly higher WTP for a QALY values → non linearity between severity and WTP
  • Health problems affecting mobility, self-care and, in the case of severe problems, pain, were associated to higher WTP values than those affecting usual activities and anxiety/depression
Summary/conclusions

• Similar estimates from opportunity costs/willingness to pay perspective
• We recommend using 20,000€-25,000€ threshold
• We recommend to further explore differences in social value of a QALY estimates, to assess the feasibility of incorporating such information in setting cost-effectiveness thresholds in contexts where disinvestment is not required
THANKS!