

Value-Based Pricing and Market Allocative Efficiency: How Should Cost-Effectiveness Thresholds be Set to “Optimally” Distribute Value between Payers and Developers?

Presenters:

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CONFLICT OF INTEREST STATEMENT

Laura Vallejo-Torres

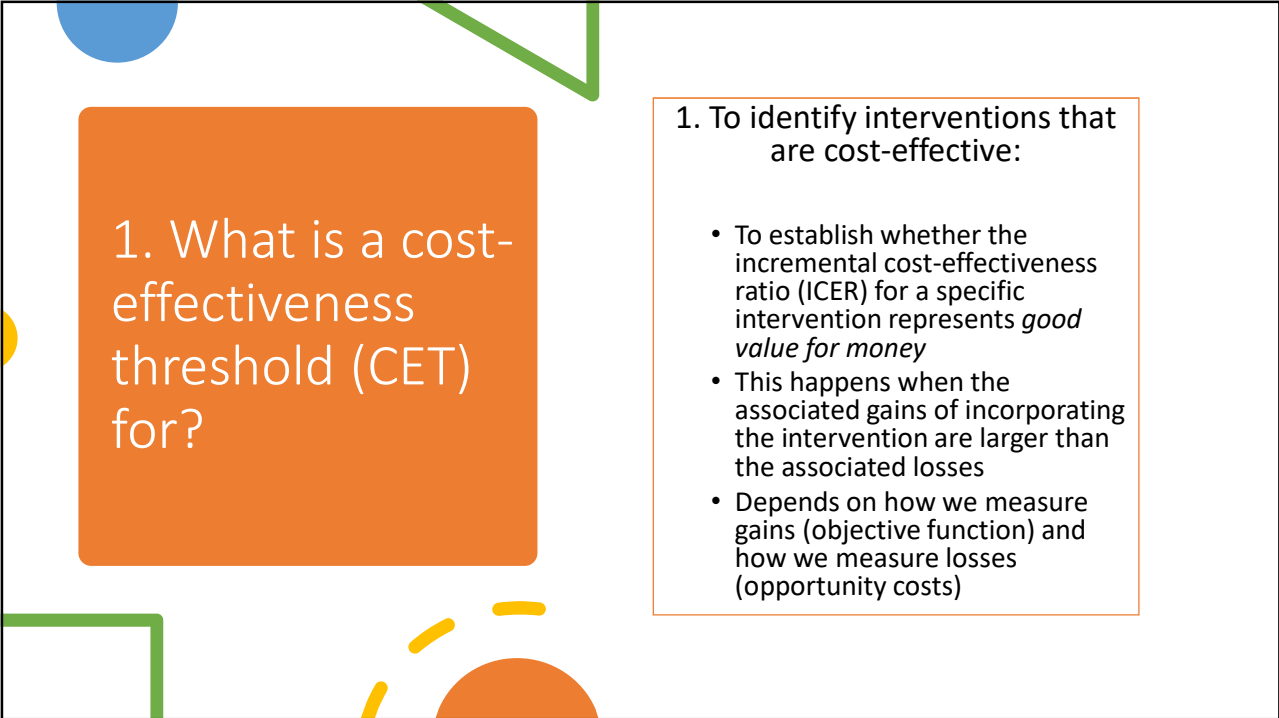


- University of Las Palmas de Gran Canaria
- Collaborator of Spanish Network of Health Technology Assessment Agencies funded by the Ministry of Health, Social Services and Equality in Spain.
- Only ever employed by public universities and non-profit organizations
- This presentation content is (mostly) based on research commissioned and funded by the Ministry of Health, Social Services and Equality in Spain and the Canary Islands Health Research Foundation (FUNCANIS).
- I have no conflicts of interest to declare.
- Views expressed here my own and do not necessarily reflect the views of the aforementioned organizations.



CONTENT

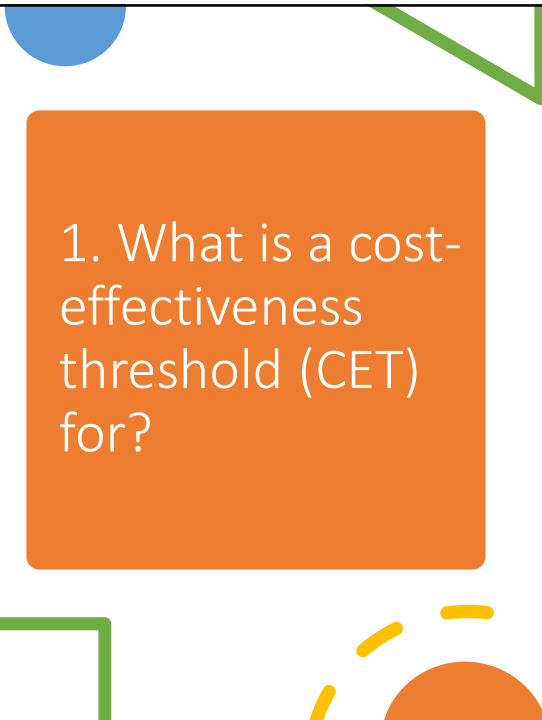
1. What is a cost-effectiveness threshold (CET) for?
2. What should the CET reflect?
3. How is the CET empirically estimated?
4. What are the consequences of setting a decision threshold above/below the CET?



1. What is a cost-effectiveness threshold (CET) for?

1. To identify interventions that are cost-effective:

- To establish whether the incremental cost-effectiveness ratio (ICER) for a specific intervention represents *good value for money*
- This happens when the associated gains of incorporating the intervention are larger than the associated losses
- Depends on how we measure gains (objective function) and how we measure losses (opportunity costs)



1. What is a cost-effectiveness threshold (CET) for?

2. To identify a *decision* threshold that incorporates other policy objectives. For instance:

- Equity considerations
- End of life/rare diseases
- Incentives to R&D efforts
- Desired allocation of total surplus between patients (payers) and producers (developers)



CONTENT

1. What is a cost-effectiveness threshold (CET) for?
2. What should the CET reflect?
3. How is the CET empirically estimated?
4. What are the consequences of setting a decision threshold above/below the CET?

2. What should a CET reflect?

Demand side:

- ✓ CET should reflect the societal value of health gains
- ✓ Takes into account societal preferences
- ✓ Allows comparison of societal gains and societal costs related to a new technology
- ✓ Appropriate to guide decisions in contexts with flexible budgets

2. What should a CET reflect?

Supply side:

- ✓ CET 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

2. What should a CET reflect?

Societal perspective: demand-side

- Maximise social welfare from a flexible budget
- Value of health gains of treated patients > societal costs of intervention ($C_T = C_H + C_C$)
- CET should reflect the consumption value of health, i.e. the monetary value of a unit of health gain (v)

$$v\Delta Q - \Delta C_T > 0 \rightarrow \frac{\Delta C_T}{\Delta Q} < v$$

Brouwer et al., 2019. When is it too expensive? Cost-effectiveness thresholds and health care decision-making. *EJHE* 20; p175–180

2. What should a CET reflect?

Health care system perspective: supply-side

- Maximize health subject to a fixed health care budget
- Health gains of treated patients > health losses of patients somewhere in the system due to displacement
- CET should reflect the opportunity costs of health care spending, i.e. the marginal cost-effectiveness of current spending in the NHS (k)

$$\Delta Q - \frac{\Delta C_H}{k} > 0 \rightarrow \frac{\Delta C_H}{\Delta Q} < k$$

Brouwer et al., 2019. When is it too expensive? Cost-effectiveness thresholds and health care decision-making. *EJHE* 20; p175–180

2. What should a CET reflect?

With an optimal budget for health care $k = v$

If $k \neq v$ and budget fixed $\rightarrow v \left[\Delta Q - \frac{\Delta C_H}{k} \right] - \Delta C_C > 0$

Information on both k and v are relevant from both the societal and the healthcare system perspective

Brouwer et al., 2019. When is it too expensive? Cost-effectiveness thresholds and health care decision-making. EJHE 20; p175–180

3. How is the CET empirically estimated?

Demand-side:

- Willingness to pay studies
 - × Assumption of linearity of the value of health gains does not hold
 - × Presence of non-traders
 - × Aggregation/heterogeneity issues
 - × Sensitive to procedural techniques
- Value of Statistical Life
 - × Depends on method to arrive at VSL
 - × Focus on mortality only

3. How is the CET empirically estimated?

Supply-side:

- Observation of past decisions
 - × Non-consistent decisions
 - × Do not reflect current opportunity costs
- Relationship between marginal changes in expenditure and health outcomes
 - × Endogeneity
 - × Difficult to infer effect on QoL

3. How is the CET empirically estimated?

questionnaire. The data were jointly analysed using regression analyses and bootstrapping techniques. Our findings indicate that societal values for a QALY corresponding to different EQ-5D-3L health gains vary approximately between 10,000€ and 30,000€. MVQALY associated with larger improvements on QoL was found to be lower than that associated with moderate

The European Journal of Health Economics
https://doi.org/10.1016/j.ejhe.2019.01.004

ORIGINAL PAPER

The societal monetary value of a QALY associated with EQ-5D-3L health gains

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Abstract
This note conforming to the linearity assumption imposed in the QALY and MVQALY values when it is associated with different types and magnitudes for a comprehensive assessment, we derive the MVQALY corresponding to EQ-5D-3L instrument. The analysis was based on a large and representative cohort experiment and a time trade-off exercise were used to derive a valid questionnaire. The data were jointly analysed using regression analysis that societal values for a QALY corresponding to different EQ-5D-3L, for 30,000 MVQALY associated with larger improvements on QoL, was 10,000€. The potential source of the observed non-constant MVQALY.

Keywords Willingness to pay | Quality-adjusted life year | Social preference

JEL Classification D61 | D10 | I18

Introduction
Cost-effectiveness analysis results are usually summarized by the incremental cost-effectiveness ratio (ICER), defined as the incremental cost divided by the incremental effectiveness of two competing alternatives, using quality-adjusted life years (QALY) as the measure of effectiveness. However, cost-effectiveness analysis evidence is typically expressed in terms of the incremental cost per QALY gained of adopting health technologies in our country to ultimately make adoption or otherwise recommendations on the basis of cost-effectiveness. The decision making, the ICER of a technology needs to be compared with a value that indicates the maximum amount considered acceptable to be paid for health gains in the health system, that is, the cost-effectiveness threshold. This value is unknown in most health care systems.

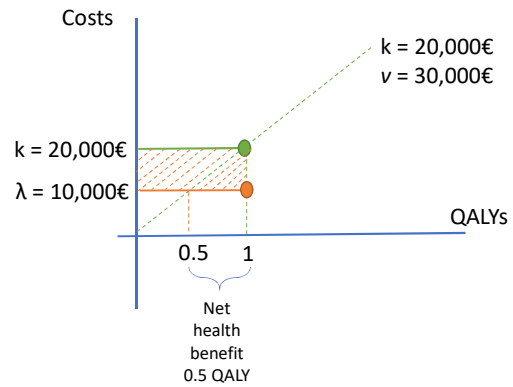
A recent review of studies estimating a cost-effectiveness threshold identified 39 studies (Vallej@-Torres et al., 2016). The studies were driven by different views as to what the threshold might represent. The two main conceptual perspectives are that the threshold should reflect (a) society's necessary valuation of health gains or (b) the opportunity cost resulting from the disinvestment required to adopt a new technology (Baker et al., 2011). A consultation among experts conducted in Spain concluded that both approaches should be explored in order to infer a cost-effectiveness threshold.

1 | INTRODUCTION

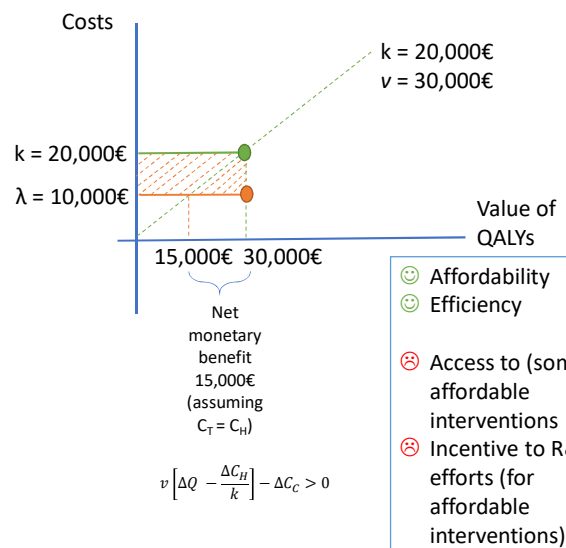
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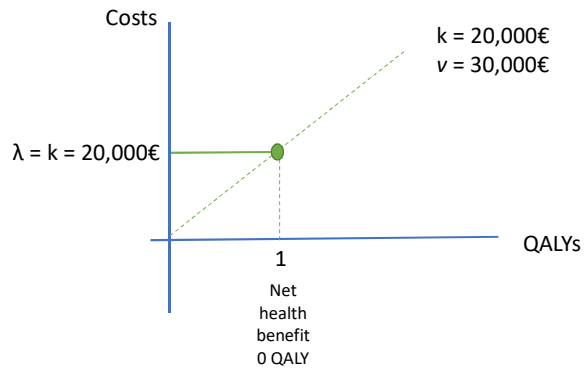
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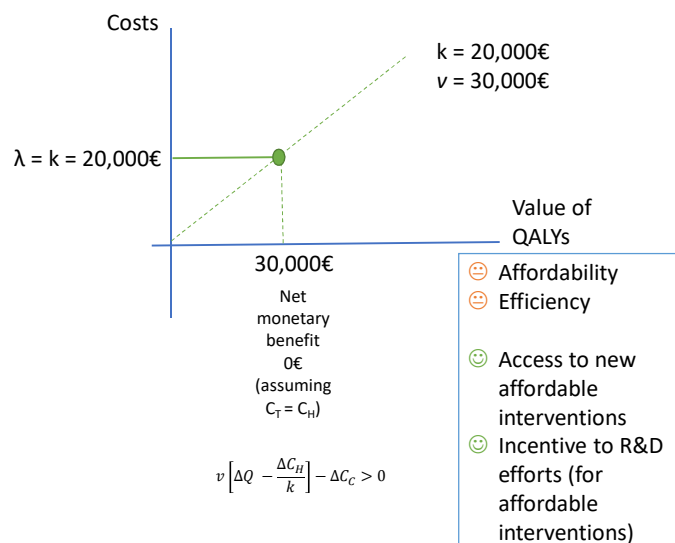
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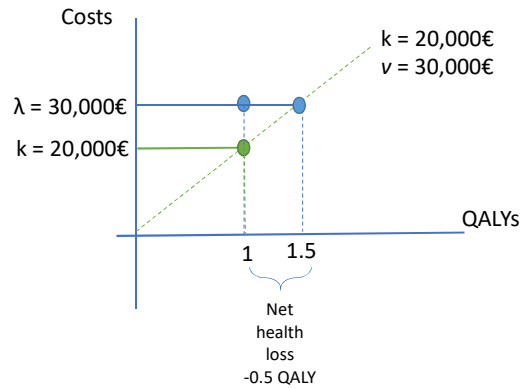
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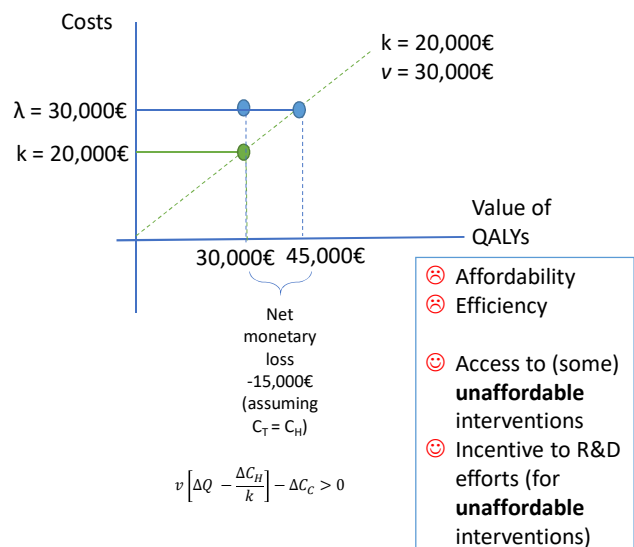
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Next presentation

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Final remarks

Discrepancies between
OHE and Paulden models

1. Main focus on:

- OHE: "...reconcile incentives for developers to invest in future medical innovations with the maximum possible patient access to currently available innovations"
- Paulden: "...maximise population health"
- Possibly all these (and other) aims are relevant policy objectives

2. Extent of final "pricing to the threshold"

- OHE: Payers can negotiate a final price below the specified threshold (and so we could set $\lambda > k$ and still get a positive consumer surplus)
- Paulden: Developers will always price to the specified threshold (and so we ought to set $\lambda < k$ in order to get a positive consumer surplus, and $\lambda \ll k$ for consumer surplus to be maximised)
- Possibly somewhere in between, and thus more knowledge is needed to set a decision threshold based on assumptions about this behaviour



Final remarks

- ✓ CETs are tools to identify interventions that a good use of scarce resources
- ✓ CET-k advocate for the invisible patients (those bearing the opportunity costs of health funding decisions in the system)
- ✓ CET-v informs about the value attached to health gains and can serve as a call for action (needs to increase health budget) if $v > k$
- ✓ Decision thresholds are not CETs
- ✓ Decision thresholds can be set up to meet other policies objectives, but this will imply a sacrifice of efficiency (if $\lambda > k$) or of access to cost-effective technologies (if $\lambda < k$)



Thanks for listening!