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

Presenters:

Laura Vallejo-Torres, University of Las Palmas de Gran Canaria, Spain

Mike Paulden, University of Alberta, Canada

Mikel Berdud, Office of Health Economics, UK

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 → $v\left[\Delta Q - \frac{\Delta C_H}{k}\right] - \Delta C_C > 0$

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:

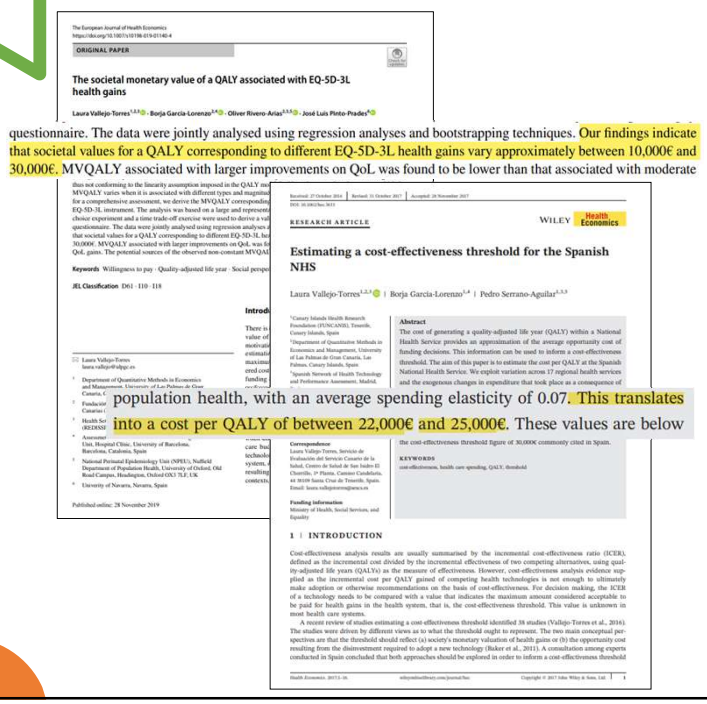
- Willingness to pay studies
  - × Assumption of linearity of the value of health gains does not hold
  - × Presence of non-traders
  - × Aggregation/heterogeneity issues
  - × Sensitive to procedural techniques
- Value of Statistical Life
  - × Depends on method to arrive at VSL
  - × Focus on mortality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



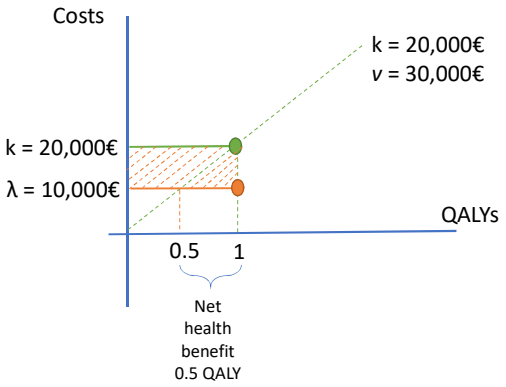
The societal monetary value of a QALY associated with EQ-5D-3L health gains

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

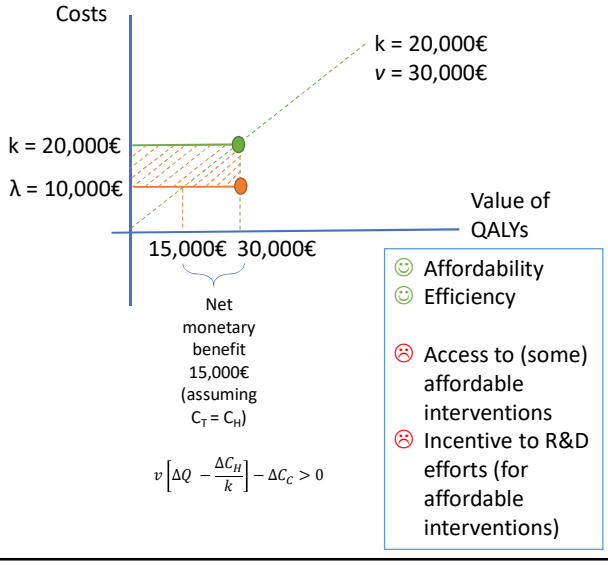
Estimating a cost-effectiveness threshold for the Spanish NHS

population health, with an average spending elasticity of 0.07. This translates into a cost per QALY of between 22,000€ and 25,000€. These values are below

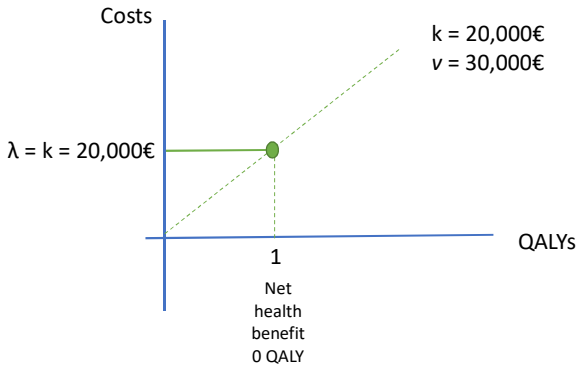
4. What are the consequences of setting a decision threshold above/below the CET?



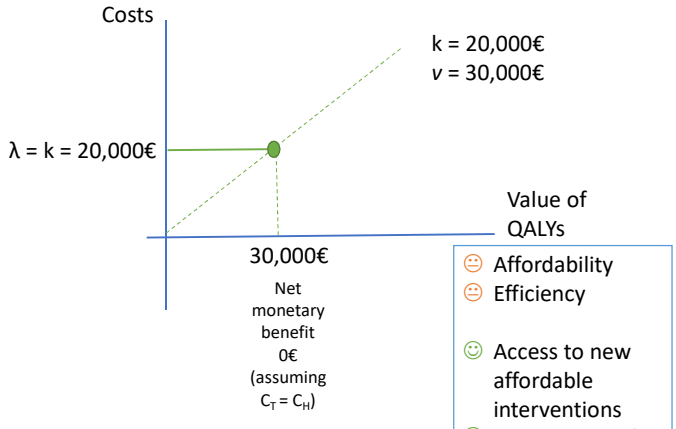
4. What are the consequences of setting a decision threshold above/below the CET?



4. What are the consequences of setting a decision threshold above/below the CET?



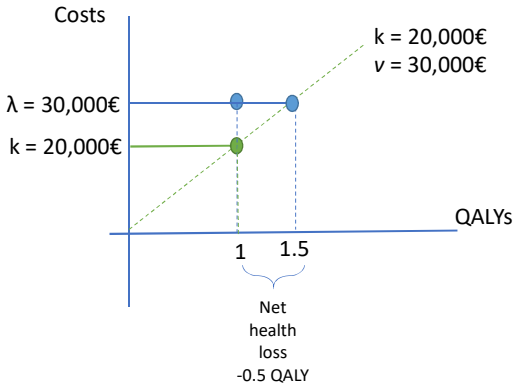
4. What are the consequences of setting a decision threshold above/below the CET?



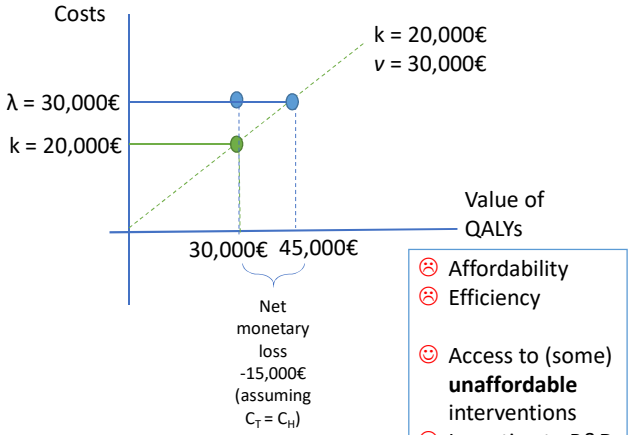
$$v\left[\Delta Q - \frac{\Delta C_H}{k}\right] - \Delta C_C > 0$$

- 😐 Affordability
- 😐 Efficiency
- ☺ Access to new affordable interventions
- ☺ Incentive to R&D efforts (for affordable interventions)

4. What are the consequences of setting a decision threshold above/below the CET?



4. What are the consequences of setting a decision threshold above/below the CET?



$$v\left[\Delta Q - \frac{\Delta C_H}{k}\right] - \Delta C_C > 0$$

☹ Affordability
☹ Efficiency

☺ Access to (some) **unaffordable** interventions
☺ Incentive to R&D efforts (for **unaffordable** interventions)

Next presentation

laura.vallejo@ulpgc.es

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 $\lambda << k$ 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 scare 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!