DO NEW CANCER DRUGS OFFER GOOD VALUE FOR MONEY? THE PERSPECTIVE OF ONCOLOGISTS, PAYERS, PATIENTS, AND GENERAL POPULATION.

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Cancer is one of the leading causes of mortality and morbidity worldwide.

Up to 170 million years of healthy life lost\textsuperscript{1} and 8.2 million deaths in 2012.\textsuperscript{2}

New cancer drugs

Prolong survival

Improve Quality of life
Can the National Health System afford these new cancer drugs?

Cost-effectiveness of new cancer treatments
BACKGROUND

Ratio per QALY gained most frequently used

£20,000-£30,000/QALY for the UK

$50,000/QALY for the US

Some economists as well the World Health Organization have argued for a threshold of two to three times the per capita annual income

$110,000-160,000/QALY for the US

Others have proposed a threshold on the basis of increases in health care pending over time and the health gains associated with those increases

$200,000-300,000/QALY for the US

It is challenging to establish a single threshold to represent society’s willingness to pay for QALYs gained.

Previous studies have established the implicit ICERs that ONCOLOGISTS considered to determine if new treatments were efficient:

- $300,000/QALY (Nadler 2006, US\textsuperscript{1})
- $245,972/QALY for the life-prolonging scenario and $119,082/QALY for treatments that improve QoL but do not prolong survival (Kozminski 2011, US\textsuperscript{2})
- $100,000/QALY to $192,308/QALY (Ubel 2012, US and Canada\textsuperscript{3})
- $150,000/QALY for the life-prolonging scenario and $60,000/QALY for the QoL-enhancing scenario (Greenberg 2013, Israel\textsuperscript{4})

None included the perspective of other agents, that may have some influence in the decision-making process and that also represent the interests of the society as a whole.

\textsuperscript{1} Nadler E, Eckert B, Neumann P. Do oncologists believe new cancer drugs offer good value? Oncologist. 2006;11(2):90-5.
\textsuperscript{3} Ubel PA, Berry SR; Nadler E, Bell CM, Kozminski MA, et al. In a Survey, marked inconsistency in how oncologists judged value of high-cost cancer drugs in relation to gains in survival. Health Aff (Millwood). 2012;31(4):709-17
AIM

To determine the value of the life-prolonging versus the QoL-enhancing outcomes attributable to new cancer drugs

To analyze oncologists’, health policy makers’, patients’, and general population’s point of view
Study participants

Oncologists and health policy makers were identified amongst hospital departments and national health organizations web sites directories.

Contact with patients was made through local cancer associations and the Spanish cancer federation.

For the general population, a convenience sample was used. Employees in technological companies, research institutes, universities and governmental institutions were invited to take part in the study, assuring that participants were able to understand the questionnaire.

A total of 425 oncologists, 140 health policy makers, 210 patients and 420 individuals from the general population were invited to participate.
Imagine that a new treatment for lung metastasis has an additional cost of €50,000 per year compared to standard treatment, having both of them the same safety profile. Standard treatment would provide a 1-year survival without changing the health related quality of life. Indicate the minimum survival benefit that the new treatment should provide in order to be funded by the National Health System.
Imagine that a new treatment for lung metastasis improves the quality of life by two fold compared with standard treatment, but both of them provide the same survival (1 year). Indicate the additional cost that the new treatment should have in order to be funded by the National Health System.

**STANDARD TREATMENT**
- Quality of life (in a scale that ranged from 0 to 100): 40
- Survival: 1 year
- Cost: €25,000/year

**NEW TREATMENT**
- Double improvement of quality of life
- Quality of life (in a scale that ranged from 0 to 100): 40
- Survival: 1 year
- Additional cost: €/year?

€0, To €2,000/year, To €4,000/year, To €6,000/year, To €10,000/year, To €20,000/year, To €50,000/year, More than €50,000/year
## RESULTS

### Sociodemographic characteristics

<table>
<thead>
<tr>
<th></th>
<th>Oncologists (n=53)</th>
<th>Health policy makers (n=25)</th>
<th>Patients (n=60)</th>
<th>General population (n=50)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response rate</td>
<td>12.5%</td>
<td>17.9%</td>
<td>28.6%</td>
<td>11.9%</td>
</tr>
<tr>
<td>Age (year ± SD)</td>
<td>46 ± 9</td>
<td>43 ± 11</td>
<td>49 ± 9</td>
<td>37 ± 10</td>
</tr>
<tr>
<td>Gender (female)</td>
<td>47%</td>
<td>56%</td>
<td>95%</td>
<td>52%</td>
</tr>
<tr>
<td>Employment status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>---</td>
<td>---</td>
<td>56.7%</td>
<td>88.0%</td>
</tr>
<tr>
<td>Unemployed</td>
<td>---</td>
<td>---</td>
<td>18.3%</td>
<td>10.0%</td>
</tr>
<tr>
<td>Retired</td>
<td>---</td>
<td>---</td>
<td>6.7%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Disabled</td>
<td>---</td>
<td>---</td>
<td>6.7%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Housewife</td>
<td>---</td>
<td>---</td>
<td>8.3%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Student</td>
<td>---</td>
<td>---</td>
<td>0.0%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Others</td>
<td>---</td>
<td>---</td>
<td>3.3%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Estimated per capita annual income</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;€9,500/year</td>
<td>---</td>
<td>---</td>
<td>21.6%</td>
<td>18.0%</td>
</tr>
<tr>
<td>€9,500-16,000/year</td>
<td>---</td>
<td>---</td>
<td>30.0%</td>
<td>38.0%</td>
</tr>
<tr>
<td>€16,000-30,000/year</td>
<td>---</td>
<td>---</td>
<td>36.6%</td>
<td>34.0%</td>
</tr>
<tr>
<td>&gt;30,000/year</td>
<td>---</td>
<td>---</td>
<td>11.8%</td>
<td>10.0%</td>
</tr>
<tr>
<td>Time since beginning of practice (oncologist, health ...)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-5 years</td>
<td>0.0%</td>
<td>36.0%</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>6-10 years</td>
<td>0.0%</td>
<td>12.0%</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>11-15 years</td>
<td>35.8%</td>
<td>16.0%</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>16-20 years</td>
<td>22.6%</td>
<td>8.0%</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>21-25 years</td>
<td>20.7%</td>
<td>8.0%</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>26-30 years</td>
<td>17.0%</td>
<td>16.0%</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>&gt; 30 years</td>
<td>3.8%</td>
<td>4.0%</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>
RESULTS

Life prolonging

Indicate the minimum survival benefit that the new treatment should provide in order to be funded by the National Health System.

<table>
<thead>
<tr>
<th></th>
<th>STANDARD TREATMENT</th>
<th>NEW TREATMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost:</td>
<td>€25,000</td>
<td>€75,000</td>
</tr>
<tr>
<td>Survival:</td>
<td>1 year</td>
<td></td>
</tr>
<tr>
<td>Additional cost:</td>
<td>+€50,000</td>
<td></td>
</tr>
</tbody>
</table>

Mean survival benefit (months)

- Oncologists: 5.7±3.6
- Health policy makers: 10.4±2.2
- Patients: 8.2±4.3
- General population: 9.1±4.1
RESULTS

Life prolonging

ICER = \frac{\Delta \text{cost of drug} \times 12}{\text{Number of months of additional survival}}

- €106,000/QALY
- €73,520/QALY
- €66,074/QALY
- €57,471/QALY

Oncologists: SD: €169,265
Health policy makers: SD: €269,272
Patients: SD: €137,127
General population: SD: €145,123
RESULTS

Life prolonging

\[
\text{ICER} = \frac{\Delta \text{cost of drug} \times 12}{\text{Number of months of additional survival}}
\]

Oncologists were the ones that valued the most the gains in survival

- Oncologists: €106,000/QALY, SD: €169,265
- Health policy makers: €73,520/QALY, SD: €269,272
- Patients: €66,074/QALY, SD: €137,127
- General population: €57,471/QALY, SD: €145,123
RESULTS

Life prolonging

Health policy makers were less prone to pay for survival gains

ICER = \( \frac{\Delta \text{cost of drug} \times 12}{\text{Number of months of additional survival}} \)

Oncologists: €106,000/QALY (SD: €169,265)

Health policy makers: €73,520/QALY (SD: €269,272)

Patients: €66,074/QALY (SD: €137,127)

General population: €57,471/QALY (SD: €145,123)
# RESULTS

## Quality of life-enhancing

**STANDARD TREATMENT**
- Quality of life (in a scale that ranged from 0 to 100): 40
- Survival: 1 year
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**NEW TREATMENT**
- Double improvement of quality of life
- Quality of life (in a scale that ranged from 0 to 100): 40
- Survival: 1 year
- Additional cost: €/year?

### Indicate the additional cost that the new treatment should have in order to be funded by the National Health System.

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Mean Additional Cost (€)</th>
<th>SD (€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oncologists</td>
<td>€26,000 (SD 18,876)</td>
<td></td>
</tr>
<tr>
<td>Health policy makers</td>
<td>€17,040 (SD 12,016)</td>
<td></td>
</tr>
<tr>
<td>Patients</td>
<td>€33,167 (SD 20,589)</td>
<td></td>
</tr>
<tr>
<td>General population</td>
<td>€30,200 (SD 20,652)</td>
<td></td>
</tr>
</tbody>
</table>
RESULTS

Quality of life-enhancing

ICER = $\frac{\Delta \text{cost of drug}}{\Delta \text{QALY}}$

- Oncologists: €65,000/QALY, SD: €47,190
- Health policy makers: €82,917/QALY, SD: €51,472
- Patients: €75,500/QALY, SD: €30,039
- General population: €42,600/QALY, SD: €51,629
**RESULTS**

Quality of life-enhancing

Patients assigned a higher value for money to the treatment that enhanced the quality of life

\[
\text{ICER} = \frac{\Delta \text{cost of drug}}{\Delta \text{QALY}}
\]

Oncologists: \(€65,000/\text{QALY}\)  
Health policy makers: \(€42,600/\text{QALY}\)  
Patients: \(€82,917/\text{QALY}\)  
General population: \(€75,500/\text{QALY}\)

SD: €47,190  SD: €51,472  SD: €30,039  SD: €51,629
Quality of life-enhancing

Health policy makers were less prone to pay for improvements on quality of life

\[ \text{ICER} = \frac{\Delta \text{cost of drug}}{\Delta \text{QALY}} \]

\[ \text{ICER: } €65,000/\text{QALY}, \text{ ICER: } €82,917/\text{QALY}, \text{ ICER: } €75,500/\text{QALY}, \text{ ICER: } €42,600/\text{QALY} \]

- Oncologists: $€47,190 \pm 30,039$
- Health policy makers: $€51,472 \pm 51,629$
- Patients: $€51,472 \pm 51,629$
- General population: $€51,472 \pm 51,629$
Conclusions

1. This study explored the implicit ICER suggested by oncologists, health policy makers, patients and general population attributable to new treatments for cancer.

2. The greater ICERs obtained may indicate that actual reimbursement and access decisions may not be properly reflecting the society’s willingness to pay for health benefits.

3. Oncologists and health policy makers placed higher value per QALY on survival gains versus quality of life improvements.

4. Patients and general population valued the most an improvement in the quality of life than a survival gain.

5. Health policy makers were less willing to pay for therapeutic improvements compared to the rest of the participants.
Thank you for your attention

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