Is it Possible to Obtain Willingness-to-Pay Estimates in Europe? A Validity Test of Stated Preferences for Hepatitis B Treatments

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BACKGROUND

- Because health care is highly insured in Europe, many discrete-choice experiment (DCE) researchers have concerns about the feasibility of obtaining valid estimates of monetary value to patients, often called willingness-to-pay (WTP)

OBJECTIVE

- To test the validity of WTP estimates obtained from patient DCE data in five countries

METHODS

Welfare-Theoretic Requirements for Valid WTP Estimates

- Over the range of personal medication costs shown relative to mean incomes in each country, the marginal disutility of cost should be approximately constant
- The marginal disutility of cost should be independent of cost levels evaluated
- The disutility of cost should be proportional to cost levels
- The mean marginal disutility of cost should be larger for less wealthy samples (diminishing marginal utility of income)

Patient Samples

- Inclusion criteria:
  - Aged 18 years or older
  - Resident of Germany, Spain, France, Italy, or Turkey
  - Self-reported physician-made diagnosis of hepatitis B
- Recruitment:
  - Harris Interactive Consumer Panel in Germany, Spain, France, and Italy
  - Medical centers in Turkey
  - All subjects provided informed consent

Survey Instrument

- Administered as Web-enabled survey
- Discrete-choice experiment (choice-format conjoint survey method)
  - Is the most valid and reliable technique available for quantifying preferences[1-4]
  - Elicits subject tradeoffs among alternatives with varying levels of different attributes
- Constructed medication profiles with five attributes (Table 1)
- 12 discrete-choice choice questions between pairs of medication profiles (Figure 1)
- Motivated cost levels higher than patients' customary co-pays with the following text:

"As you know, the rising cost of providing health care is a serious problem in [country]. To make sure everyone gets the care they need, someday we might have to ask people to pay a larger share of the cost of their hepatitis B medicines themselves. If everyone did not pay their share, everyone who needs hepatitis B medicines might not be able to get new and better treatments. Of course, paying higher co-pay costs would mean that you would have less money to spend on other things each month.

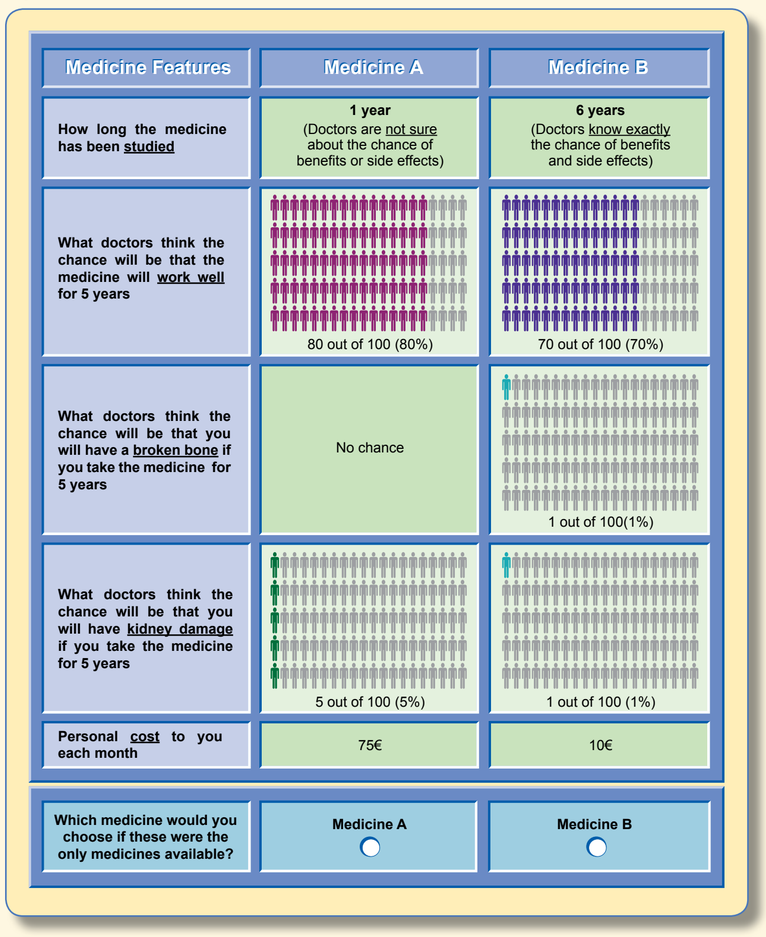
In this survey we will ask you about possible personal monthly co-pay costs to you for hepatitis B medicines."

- Split-sample validity experiment on cost levels:
  - All subjects saw cost levels of €0, €10, and €25
  - Half the subjects evaluated an additional cost level of €75, and half the subjects evaluated an additional cost level of €150 per month

Table 1. Treatment Attributes and Levels Used in the Survey Instrument

Attribute	Abbreviated Attribute Label	Levels
How long the medicine has been studied	How long the medication has been studied	6 years 3 years 1 year
What doctors think the chance will be that the medicine will work well for 5 years	Probability viral load is undetectable	95 out of 100 (95%) 80 out of 100 (80%) 70 out of 100 (70%)
What doctors think the chance will be that you will have a broken bone if you take the medicine for 5 years	5-year treatment-related risk of a fracture	None 1 out of 100 (1%) 5 out of 100 (5%) 10 out of 100 (10%)
What doctors think the chance will be that you will have a kidney damage if you take the medicine for 5 years	5-year treatment-related risk of renal insufficiency	None 1 out of 100 (1%) 5 out of 100 (5%) 10 out of 100 (10%)
Personal cost to you each month	Cost	€0 €10 €25 €75 or €150

Figure 1. Example Choice Question



ANALYSIS

- Estimated pooled and country-specific relative preference weights using scale-controlled nested-logit models
- Tested whether importance weights between the two highest cost levels in each group were the same (cost-sensitivity test)
- Tested for linearity in cost response (functional-form test)
- Calculated money value to patients or WTP as the increase in cost that would exactly offset the perceived benefit of a given improvement in efficacy or evidence

RESULTS

Sample Size

- 694 patients completed the survey
- After data-quality checks, final sample was 560 patients:
  - Germany: 118
  - Spain: 96
  - France: 100
  - Italy: 129
  - Turkey: 117

Parameter Estimates (Figure 1)

- Categorical parameter estimates were correctly ordered except that there was no significant difference between €0 and €10 cost per month
- Parameters were linear in cost above €10
- Subjects in the €150 group responded differently to the highest cost than subjects in the €75 group
- The slope estimate for the Turkish sample was about 4.5 times larger than the mean slope for the other four countries

Hypothesis Tests (Figure 1)

- Marginal disutility of cost should be constant
  FAIL TO REJECT (Figure 2)
- Marginal disutility of cost should be independent of cost levels
  FAIL TO REJECT (Figure 2)
- Disutility of cost should be proportional to cost levels
  FAIL TO REJECT (Figure 2)
- Marginal disutility of cost should be larger for less wealthy sample
  FAIL TO REJECT (Figure 3)

Figure 2. Pooled Parameter Estimates Fail To Reject Utility-Theoretic Hypotheses

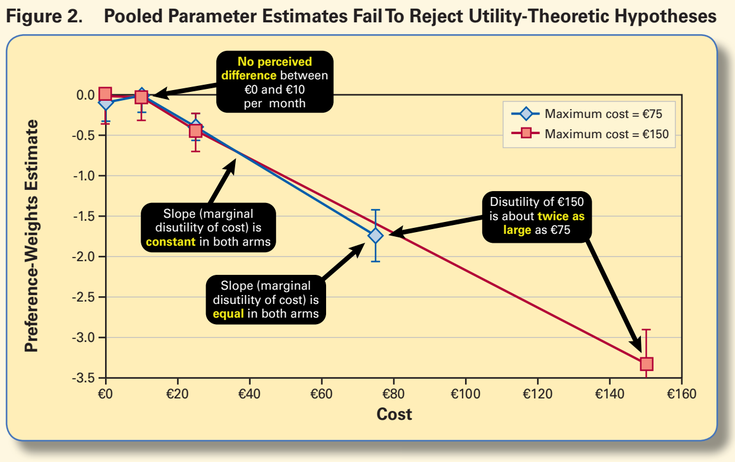
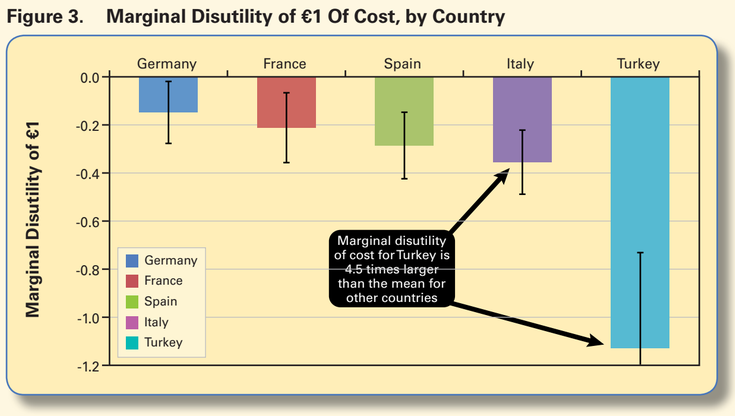


Figure 3. Marginal Disutility of €1 Of Cost, by Country



Value to Patients (Figure 4)

- For an improvement from 70% to 80% chance of undetectable viral load at 5 years, WTP ranged from €52 per month for Germany to €7 per month for Turkey (Figure 4)
- For 1 additional year of evidence, WTP ranged from €24 per month for France to €10 per month for Turkey (Figure 5)
- Although evidence is more important to Turkish patients than to patients in other countries, Turkish patients' marginal value of €1 is much higher than other countries. The marginal disutility of cost dominates the WTP estimates, resulting in a relatively small WTP[5]

Figure 4. Money Value to Patients for Improved Efficacy (Euros Per Month)

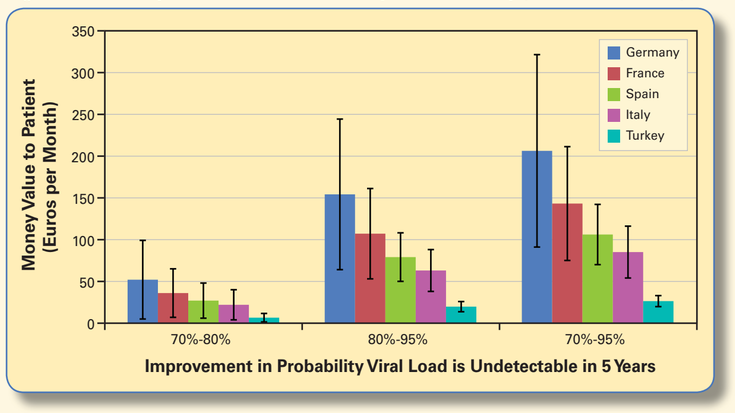
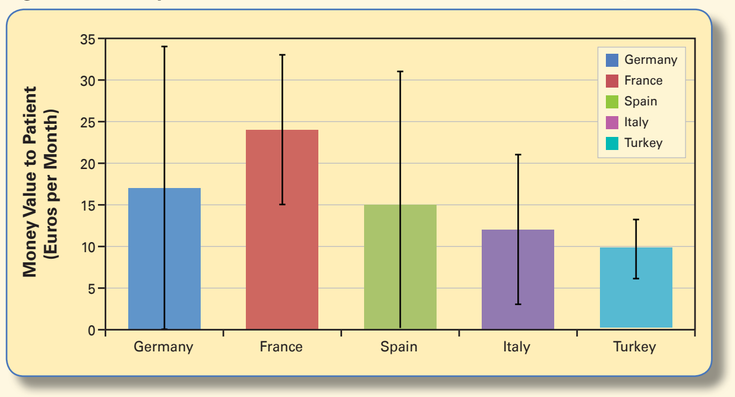


Figure 5. Money Value to Patients for 1 Additional Year of Evidence (Euros)



CONCLUSIONS

- We obtained DCE responses in a split-sample test of cost sensitivity that were consistent with theoretical requirements
- Results indicate that it is possible to obtain valid WTP estimates in a properly motivated European DCE

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DISCLOSURE

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