

Do Patients and Physicians Have Similar Preferences for Health Care Decisions Involving Uncertain Outcomes for Chronic Hepatitis B in Germany and Turkey?

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ABSTRACT

OBJECTIVE: To quantify patient and physician preferences for therapeutic tradeoffs involving long-term efficacy, side-effect risks, and evidence uncertainty in chronic hepatitis B (CHB) treatments.

METHODS: Physicians who treat patients with CHB and adult patients with a self-reported physician diagnosis of CHB completed a Web-enabled, discrete-choice experiment survey in Germany and Turkey. Patients and physicians answered 12 treatment-choice questions. Each question required evaluating a pair of hypothetical CHB medication profiles defined by years the medicine has been studied, probability that patient's viral load remains undetectable for 5 years with possible reversal of disease progression, 5-year treatment-related risks of a fracture and renal insufficiency, and monthly medication cost. Nested-logit and random-parameters logit models were used to estimate preference weights for all attribute levels and the mean relative importance of each attribute.

RESULTS: 158 physicians and 118 patients completed the survey in Germany. 159 physicians and 117 patients completed the survey in Turkey. German patients ranked risk of renal insufficiency as most important, while German physicians ranked efficacy as most important. Turkish physicians and patients disagreed on the relative importance of all treatment attributes. Turkish patients ranked years of evidence as the most important attribute, while Turkish physicians ranked risk of renal insufficiency as most important. German physicians were willing to accept a 0.4% greater increase in fracture risk than patients in return for an additional year of evidence, while Turkish physicians were willing to accept a 3.2% smaller increase in fracture risk than patients for an additional year of evidence.

CONCLUSIONS: This is the first study to quantify patient and physician preferences for CHB treatment attributes and the first study to elicit physician and patient preferences for years of evidence. We observe different discrepancies between physician and patient preferences in Germany and Turkey. Such discrepancies may interfere with optimal outcomes if not considered in patient-physician interactions.

BACKGROUND

- Evidence-based medicine (EBM) integrates clinical expertise, patient preferences, and the best research evidence into the decision-making process for patient care.¹
- Preferences represent the desirability of a health-related outcome, process, or treatment choice.²
 - Some evidence has shown that patient preferences and motivation for treatment positively affect treatment outcomes.³
- The current trend to patient-centered medicine comes with an increased emphasis on patient experience and active patient involvement in health decision making.
 - Preferences and values are considered important in this context of patient-physician shared decision making.⁴
 - Best choice for an individual incorporates personal preferences.
 - Best choice for a specific population is represented in treatment recommendations by clinical practice guidelines (CPGs).
 - Dissonance may arise between considering patient preferences when making treatment choices versus suggesting a treatment recommended by CPGs.²
- CHB practice guidelines highlight the importance of patient and physician preferences amidst treatment-related safety, efficacy, risk of resistance, and costs when choosing which antiviral agent to use as first-line therapy.⁵
 - However, evidence on preference for CHB treatment outcomes is currently lacking and thus not incorporated in CPGs.
- Because more than one effective CHB treatment exists and patients and physicians may vary in their preferences, we aimed to generate evidence on preferences to better understand if the choice of a CHB treatment is a preference-sensitive decision.⁴

OBJECTIVE

- To quantify patient and physician preferences for tradeoffs between treatment outcomes involving long-term efficacy, side-effect risks, and evidence uncertainty associated with CHB treatments.

METHODS

Subjects

- Patient inclusion criteria:
 - Aged 18 years or older
 - Resident of Germany or Turkey
 - Self-reported physician-made diagnosis of CHB
- Physician inclusion criteria:
 - Board-certified (or eligible) physicians
 - Currently treating CHB patients
- Patient recruitment occurred through:
 - Germany: Harris Interactive consumer panel
 - Turkey: Clinics and physician referrals
- Physician recruitment occurred through:
 - Germany: Harris Interactive online physician panel
 - Turkey: Clinics
- All participants provided online informed consent

Survey Instrument

- A Web-enabled survey instrument was developed for the purpose of this study.
- The survey applied a discrete-choice experiment (choice-format conjoint survey method) which:
 - Elicits subject tradeoffs among alternatives with varying levels of different attributes
 - Is the most valid and reliable technique available for quantifying preferences.⁶⁻⁹
- Subjects responded to 12 treatment-choice questions from among constructed medication profiles.
 - Each medicine profile was described by five attributes described in Table 1. The treatment attributes were described in lay language for the patient study and clinical language for the physician study.
 - Patients and physicians were asked to choose the option they would prefer if these were the only medications available to them (Figures 1 and 2).
 - Physicians answered the 12 treatment-choice questions for 3 hypothetical patients.
- The experimental design included:
 - Combinations of attribute levels in each treatment-choice question
 - A statistically efficient experimental design with known statistical properties.¹⁰⁻¹²
 - Three survey versions with different combinations of 12 treatment-choice questions (36 treatment-choice questions in total), randomly assigned to subjects.

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

Patient Attribute	Physician Attribute	Abbreviated Attribute Label	Level
How long the medicine has been studied (weight of evidence)	How long the medicine has been studied (weight of evidence)	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 (long-term efficacy)	Probability that the patient's viral load remains undetectable for 5 years, with possible histological improvement or reversal of disease progression	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 fracture risk)	5-year treatment-related risk of a fracture	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 risk of kidney disease)	5-year treatment-related risk of renal insufficiency, where a fracture has not been detected yet	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	Personal cost to the patient each month	Cost	€0 €10 €25 €75 or €150

Figure 1. Example of a Treatment-Choice Question (Patient Version)

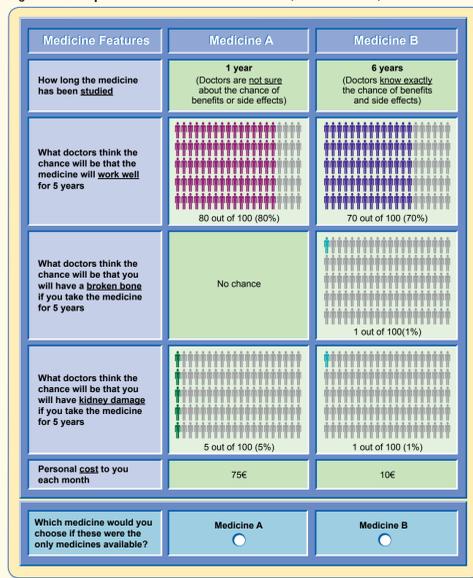
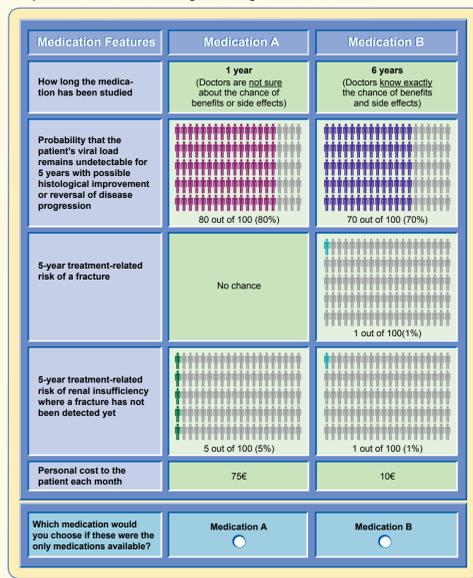


Figure 2. Example of a Treatment-Choice Question (Physician Version)

Patient 1: A 55-year-old female with CHB. She is HBeAg(-), with HBV DNA at 2,500 IU/mL and ALT at 2 x ULN. A liver biopsy showed severe active necroinflammation. The patient's health is otherwise good (no significant comorbidities).



Analyses Performed

- Relative preference estimates using nested-logit estimation (patient analysis) and random-parameters logit estimation (physician analysis)
- Relative importance weight estimates:
 - The distance between the preference weight for the best and worst levels of an attribute can be interpreted as the overall relative importance of the attribute over the specific ranges presented in the survey.
 - The overall relative importance weight for each attribute was estimated for each sample.
 - To facilitate the interpretation of the results, we assigned an importance score of 10 to the most important attribute and calculated the importance score for each of the other attributes relative to the importance of the most important attribute.
- Maximum acceptable risk (MAR) estimate that patients and physicians require to compensate for the uncertainty of an additional year of evidence

RESULTS

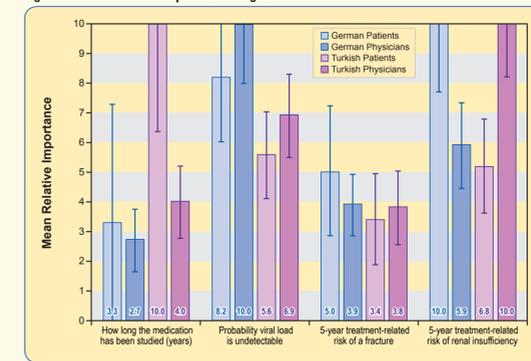
Population Samples

- Final patient samples:
 - Germany: 118
 - Turkey: 117
- Final physician samples:
 - Germany: 158
 - Turkey: 159

Relative Importance Weights (Figure 3)

- In Germany, the two most valued attributes were 5-year risk of renal insufficiency and long-term efficacy (probability undetectable viral load). However, German patients ranked risk of renal insufficiency as most important (10.0) and long-term efficacy as second most important (8.2), while German physicians ranked long-term efficacy as most important (10.0) and risk of renal insufficiency as second most important (5.9).
- German patients attributed a significantly higher preference to avoidance of renal insufficiency compared with German physicians.
- Weight of evidence was ranked as least important by both German physicians (3.3) and patients (2.7).
- Turkish physicians and patients disagreed on the relative importance of all treatment attributes.
 - Turkish patients ranked years of evidence as the most important attribute (10.0), while Turkish physicians ranked risk of renal insufficiency as most important (10.0).
 - Turkish patients attributed a significantly higher preference to weight of evidence (10.0) compared with Turkish physicians (4.0), while Turkish physicians attributed a significantly higher preference for avoidance of renal insufficiency (10.0) compared with Turkish patients (6.8).
- The absolute scale of the relative importance weights was arbitrary.
 - Only relative differences among attribute levels were meaningful.

Figure 3. Mean Relative Importance Weights*



*The vertical bars surrounding each mean preference weight denote the 95% confidence interval (CI) about the point estimate.

MAR Estimates (Table 2)

- German physicians were willing to accept a 1.0% greater increase in renal insufficiency risk than patients in return for an additional year of evidence.
- German physicians were willing to accept a 0.4% greater increase in fracture risk than patients in return for an additional year of evidence.
- Turkish physicians were willing to accept a 0.5% smaller increase in renal insufficiency risk than patients for an additional year of evidence.
- Turkish physicians were willing to accept a 3.2% smaller increase in fracture risk than patients for an additional year of evidence.
- Turkish physicians seemed more risk averse compared with their patients, while German patients seemed to be more risk averse compared with their physicians.

Table 2. MAR Estimates for an Additional Year of Evidence

Risk	Mean MAR (95% CI)			
	German Patients	German Physicians	Turkish Patients	Turkish Physicians
5-year treatment-related risk of a fracture	1.2% (0.1%-5.1%)	1.6% (1.2%-2.4%)	5.3% (1.7%-10.1%)	2.1% (1.5%-3.1%)
5-year treatment-related risk of renal insufficiency	0.2% (0.0%-0.8%)	1.2% (0.4%-3.7%)	0.9% (0.5%-3.8%)	0.4% (0.3%-1.0%)

LIMITATIONS

- Subjects were asked to evaluate hypothetical treatments:
 - These simulated clinical decisions may not have the same clinical, financial, and emotional consequences of actual decisions.
 - Differences can arise between stated and actual choices.
- We provided numeric and graphical representations of treatment outcomes and adverse-event risks; however:
 - Numeracy skills in the general population are poorly developed.
 - Subjects may have applied simplifying heuristics in comparing probabilities that are inconsistent with actual numeric magnitudes.

CONCLUSIONS

- This is the first study to quantify patient and physician preferences for CHB treatment attributes and the first study to elicit physician and patient preferences for years of evidence.
- We observed different discrepancies between physician and patient preferences in Germany and Turkey.
 - Such discrepancies may interfere with optimal outcomes if not considered in patient-physician interactions.
- Patients and physicians may have varying preferences for health decisions involving uncertain outcomes, which may indicate that optimal treatment choice is a preference-sensitive decision.
- Research on how differences between physician and patient preferences may affect treatment adherence and health outcomes is warranted. Such evidence can indicate the importance of interventions to integrate different views on treatment preferences.

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