The Use of Conjoint Analysis to Elicit Patient Preferences in Selecting Treatment Endpoints

F. Reed Johnson, PhD
Distinguished Fellow and Principal Economist
Research Triangle Institute

Integrating Stakeholder Preferences in Comparative Effectiveness Research
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Comparative Effectiveness Research

- Compares the benefits and harms of alternative interventions
- Assists patients, physicians, and regulators to make informed decisions

Institute of Medicine, 2009

Comparisons for whom?

- Comparing benefits and harms and making informed decisions requires identifying relevant endpoints
- Increased concern about patient involvement in protocol development
- *"When asking the public to assist in determining health priorities, we should use techniques that allow people to reveal their true preferences. If not, why bother asking them at all?"* Gafni, Social Science and Medicine, 1995

Types of Self-Reported Data

	Patient-Reported Outcomes	Health-State Utilities	Stated Preferences
Elicitation Formats	Likert Scale	Standard Gamble/Time Tradeoff	Discrete Choice
Example Instruments	SF-36	EQ-5D Tariffs	Tailored
Metrics	HRQoL Scores	QALYs	Preference Weights, HTE, MAR, MAB, WTP
Uses	CEA, licensing	CEA, reimbursement	CEA, CBA, licensing, adherence, clinical guidelines

Health-State Utility versus Preference Utility: Determinants

HEALTH-STATE UTILITY

- Clinical outcomes
- Duration

PREFERENCE UTILITY

- Clinical Outcomes
- Duration
- Treatment factors
  - **Side Effects/Tolerability**
  - **Dosage Method/Frequency**
  - **Cost**
- Process factors
  - **Health-Care Setting**
  - **Physician interactions**
- Personal factors
  - **Age, gender, education, etc.**
  - **Health history**
  - **Financial circumstances**

Labels

- Conjoint (consider jointly) analysis
- Discrete-choice experiments
- Stated-choice surveys

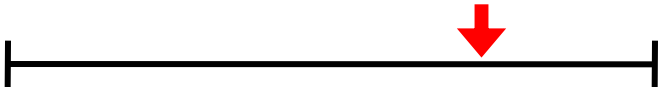
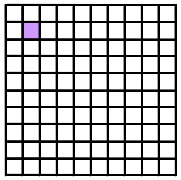
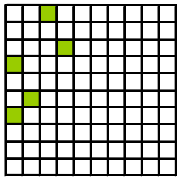
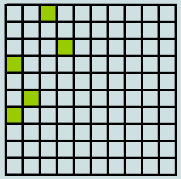
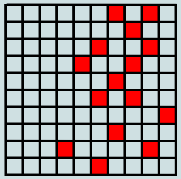
Choice-Experiment Methods

- Treatment alternatives consist of combinations of features.
- Preferences among treatment alternatives depend on the relative importance of features.
- Respondents state preferences for series of constructed, hypothetical treatment alternatives.
- Statistical model estimates preference weights consistent with observed choices.
- Preference weights quantify relative importance as the willingness to accept tradeoffs.

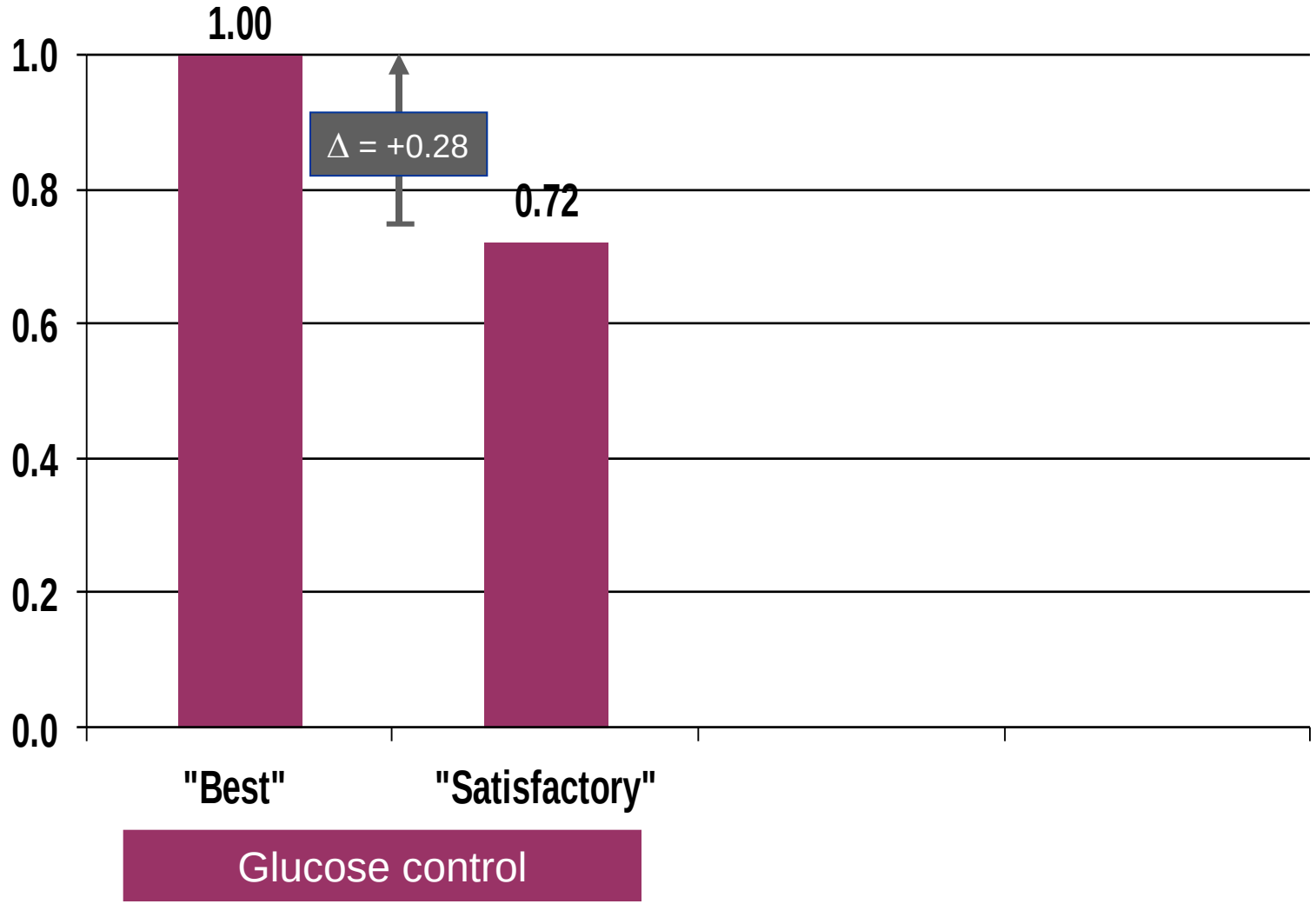
7

Example Benefit-Risk Tradeoff Question
Osteoarthritis

Which treatment would you choose if these were the only options available?

	Feature	Treatment A	Treatment B
Efficacy	PAIN		
Efficacy	STIFFNESS		
Mild-Moderate Side Effects	STOMACH PROBLEMS	 Occasional mild symptoms. Treat with over-the-counter medicines	 Frequent moderate symptoms. Treat with a prescription medicine
Serious Side-Effect Risks	RISK OF BLEEDING ULCER	 1 patient out of 100 (1 %) will have a bleeding ulcer	 5 patients out of 100 (5 %) will have a bleeding ulcer
Serious Side-Effect Risks	RISK OF HEART ATTACK or STROKE	 5 patients out of 100 (5%) will have a stroke	 15 patients out of 100 (15%) will have a heart attack

Why are T2DM patients inadherent?



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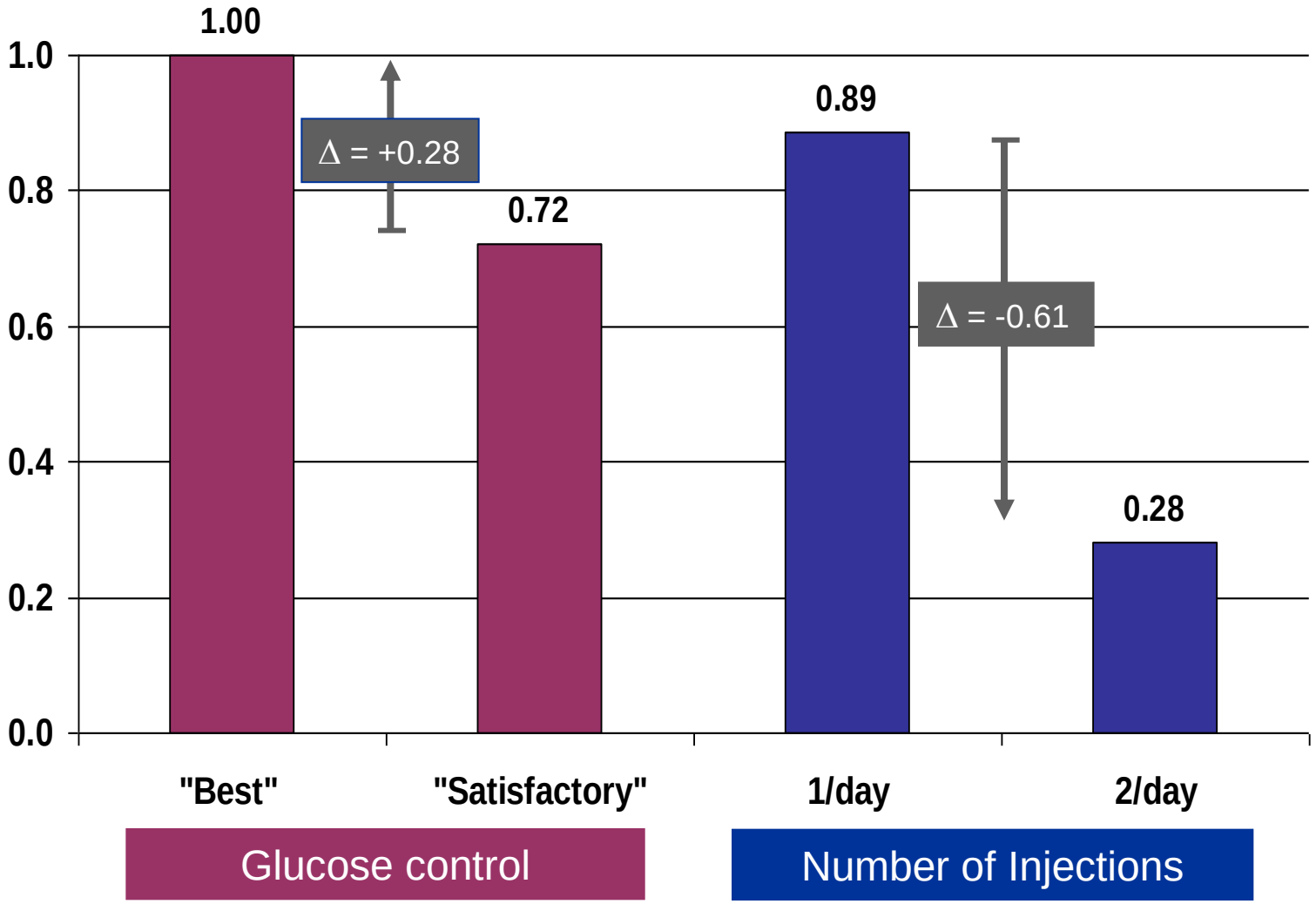
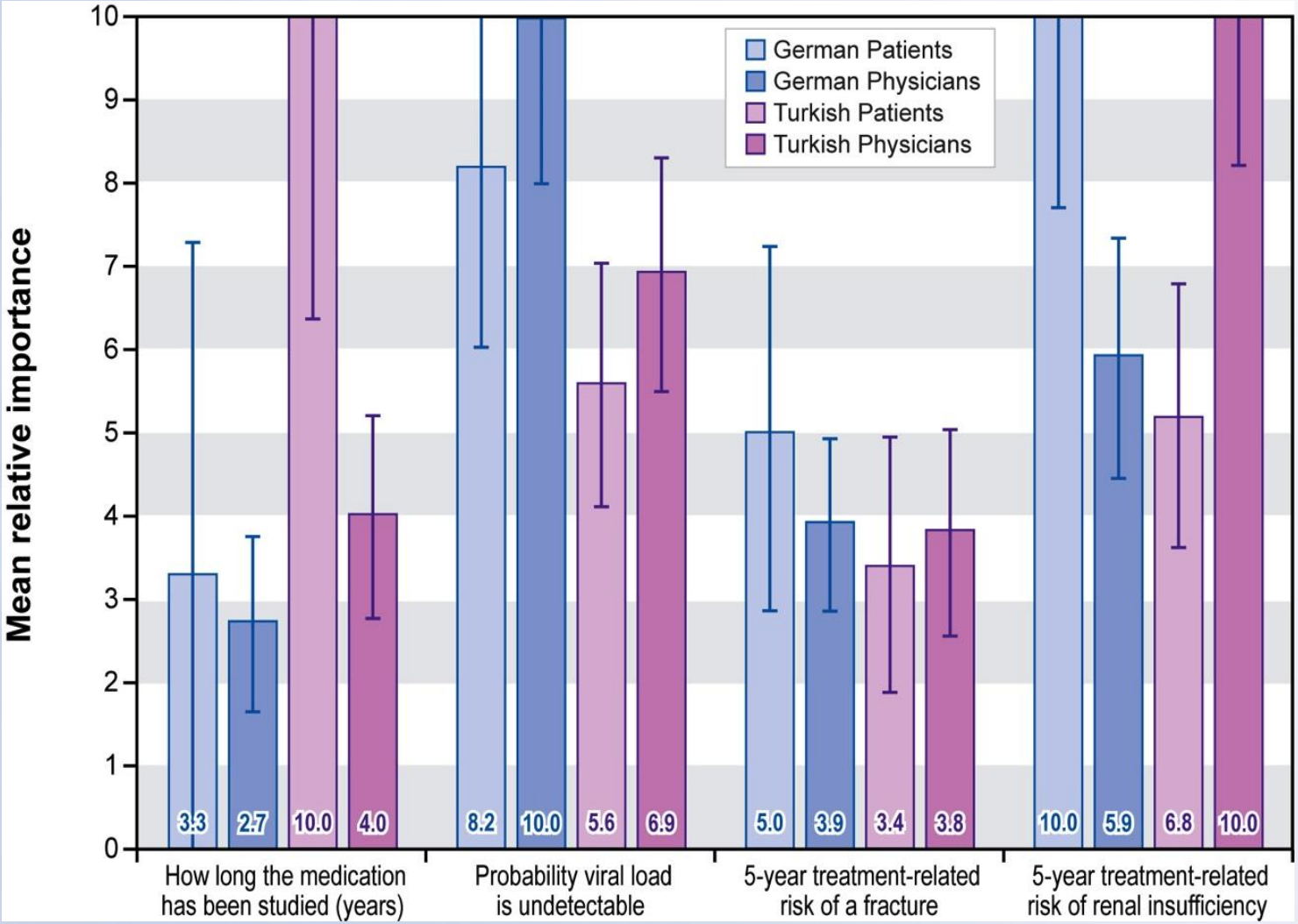


Hauber AB, Mohamed AF, Johnson FR, Falvey H. Treatment preferences and medication adherence of people with type 2 diabetes using oral glucose-lowering agents. Diabet Med. 2009;26:416-24.

10

Physician Versus Patient Preferences
Hepatitis B



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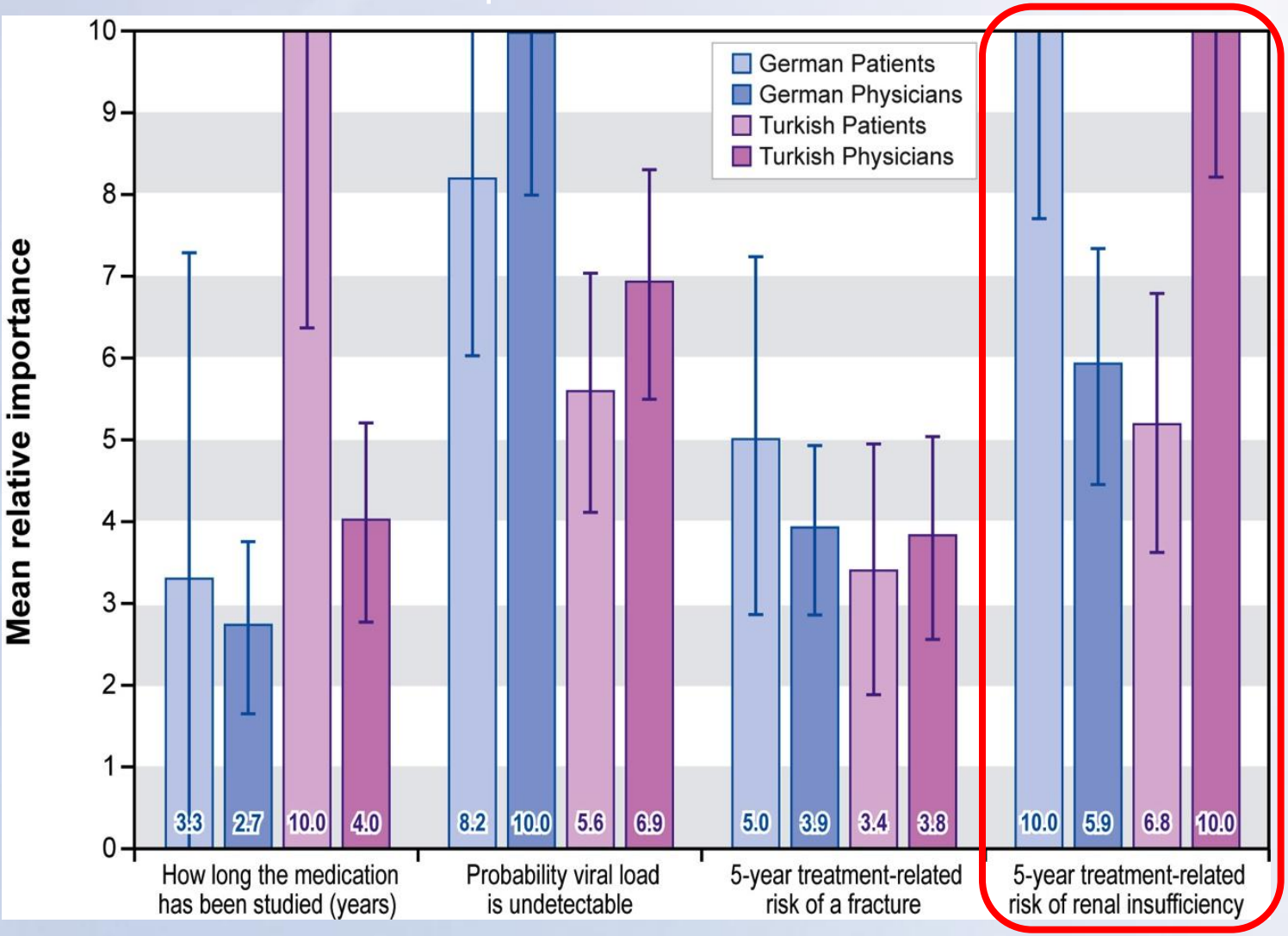

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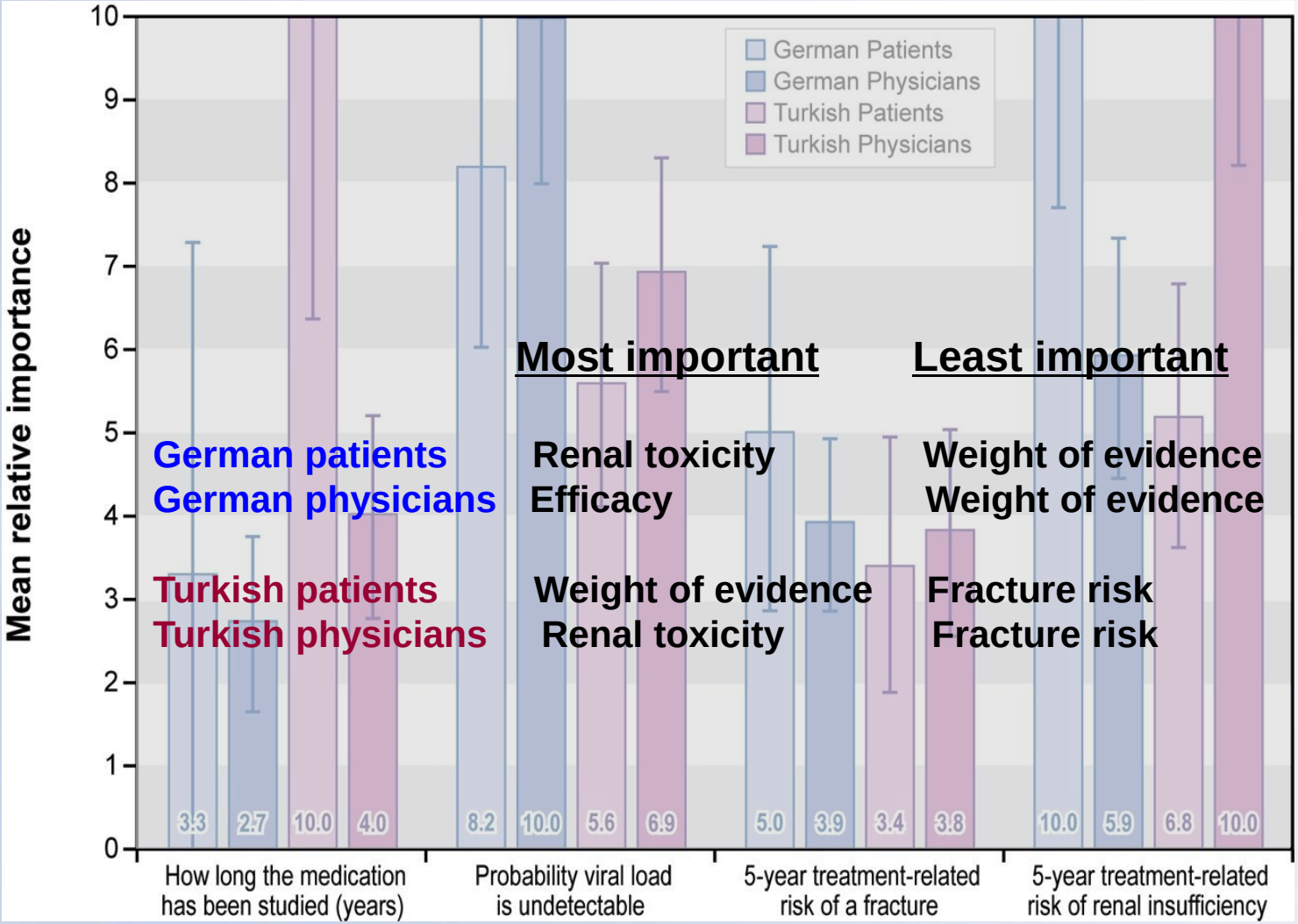

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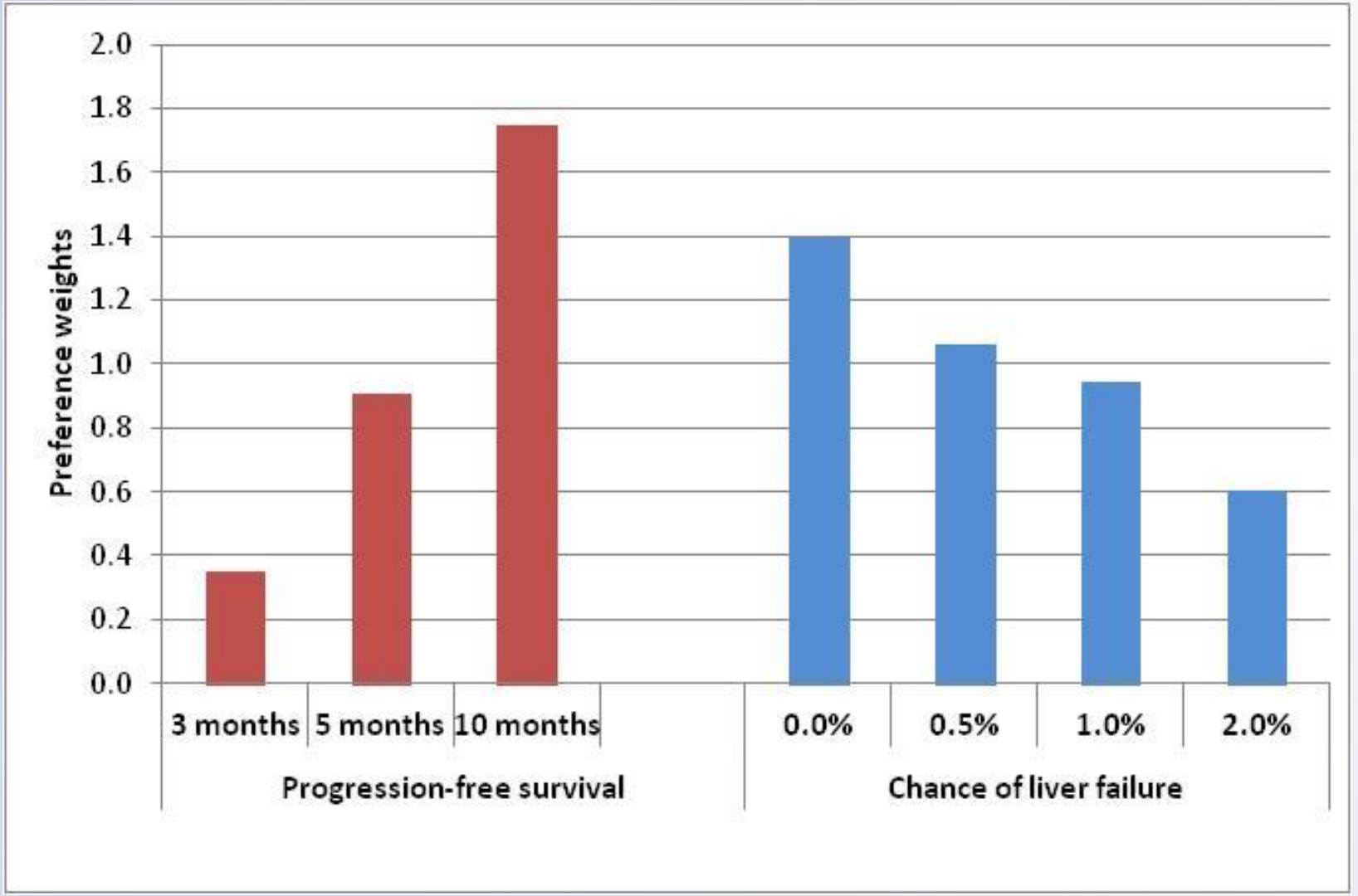
Maximum Acceptable Risk Calculation
Renal Cell Carcinoma



Wong MK, Mohamed AF, Hauber AB, Yang J-C, Liu Z, Rogerio J, et al. Patients rank toxicity against progression-free survival in second-line treatment of advanced renal cell carcinoma. J Med Econ. 2012 Jul 3. doi: 10.3111/13696998.2012.708689. [Epub ahead of print].

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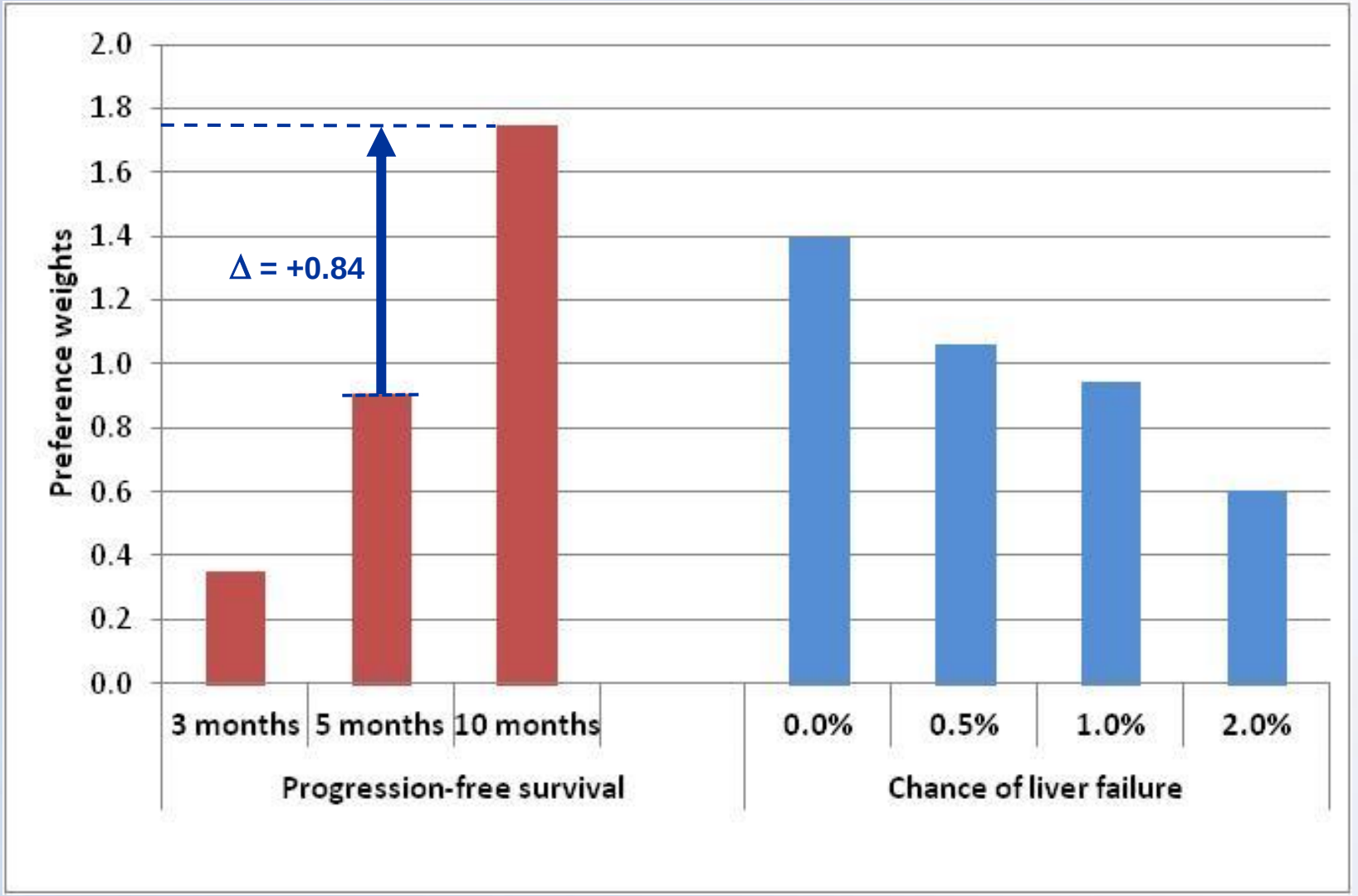

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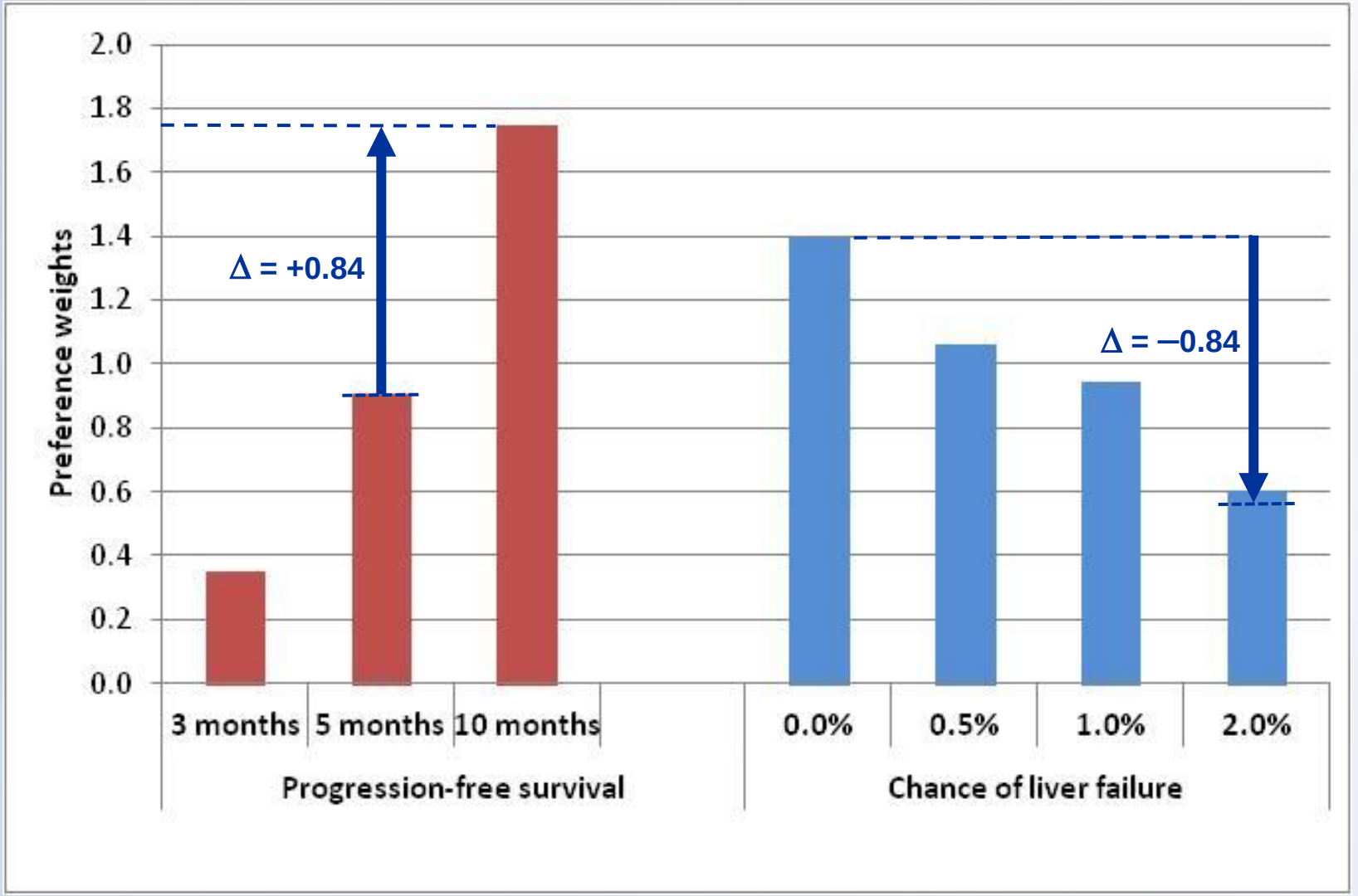

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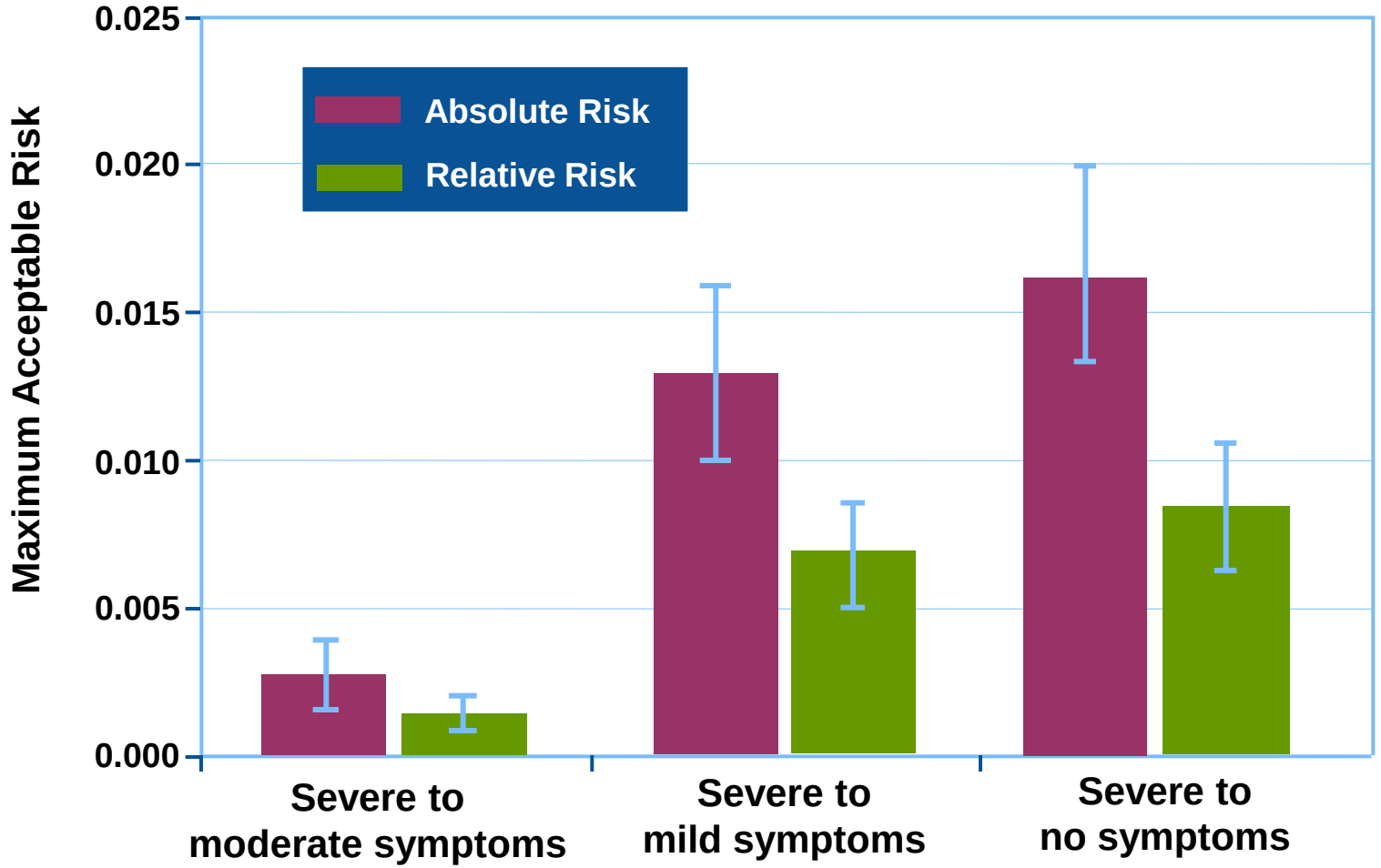
Maximum Acceptable Breast-Cancer Risk

Vasomotor Symptoms



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Maximum Acceptable Breast-Cancer Risk

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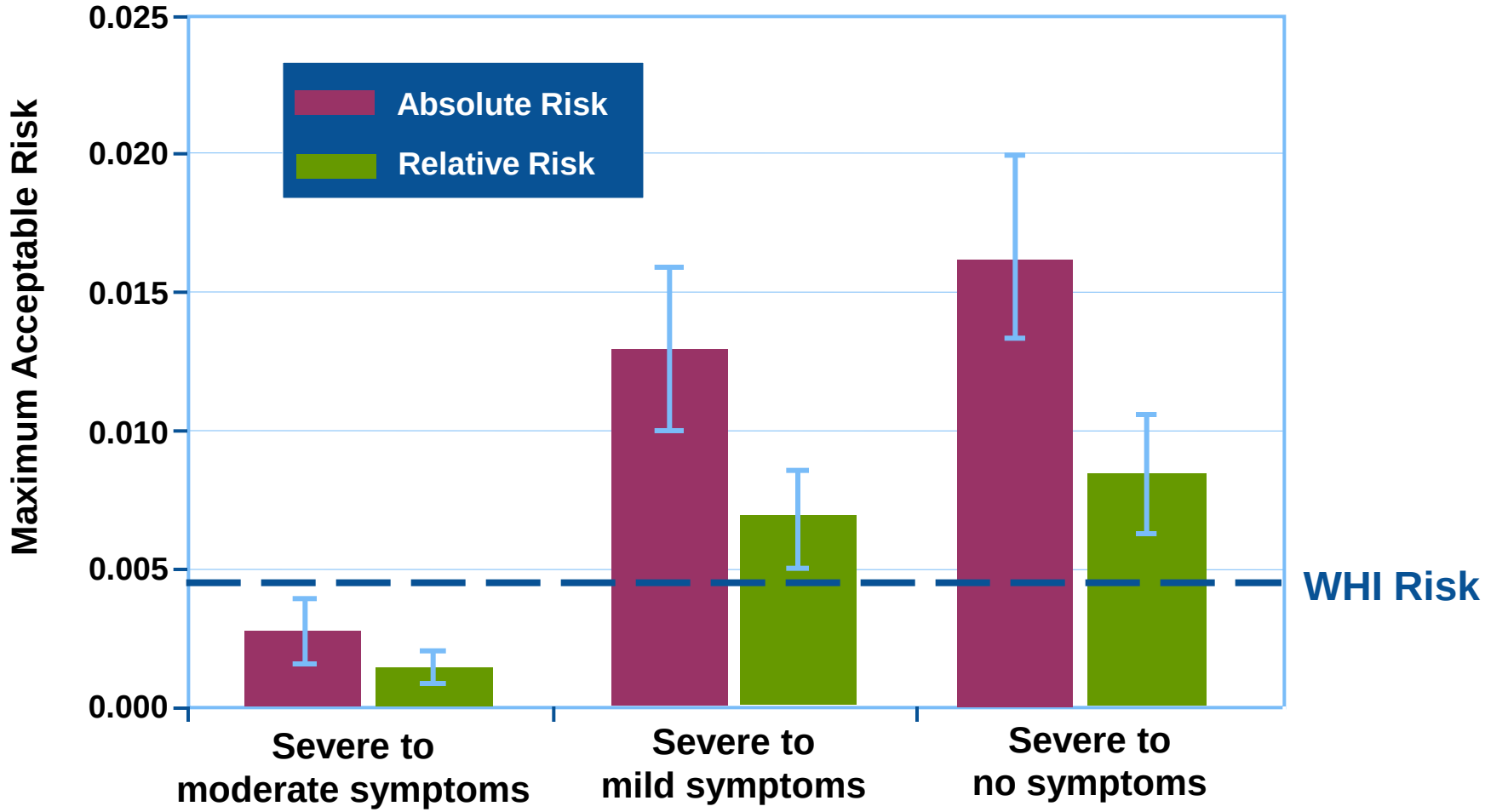

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Some Methodological Challenges

- Hypothetical bias
  - Inexperience with condition
  - Socially acceptable responses
  - Stated preference/revealed preference experiments
- Cognitive challenges
  - Effective description of clinical endpoints
  - Surrogate markers
  - Risk concepts
- Consensus among researchers
  - Experimental design
  - Statistical analysis

19

Discussion

- Effective incorporation of patient perspectives in protocol development requires quantification.
- Idea of treating patient-preference measures as evidence is novel for most clinicians.
- DCE methods offer methods for quantifying relative values of health endpoints.
- Good validity and reliability for relatively simple trade-off problems. Applications to more difficult problems is an active area of research.