



**PROTECT**



Pharmacoepidemiological Research on Outcomes of Therapeutics by a European Consortium

## **ELICITING PATIENT PREFERENCES: APPLYING DECISION THEORY TO HEALTH RESEARCH**

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IMI-PROTECT Symposium  
Benefit-Risk Integration and Representation Workshop  
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# Disclaimer

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“The processes described and conclusions drawn from the work presented herein relate solely to the testing of methodologies and representations for the evaluation of benefit and risk of medicines.

This report neither replaces nor is intended to replace or comment on any regulatory decisions made by national regulatory agencies, nor the European Medicines Agency.”

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- Decision Analysis
- Visualize Sub-study: eliciting patient preferences
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# Importance of Patients' Perception for Treatment Decisions

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## *Regulators' view:*

*An increased cure rate in cancer, a potentially life-saving treatment will always outweigh a grade 1 or 2 AE (e.g. (permanent hair loss) - positive regulatory decision*

## *Some patients' view:*

*This permanent hair loss is important, severe enough for me to decline the potentially curative and life-saving adjuvant therapy – negative treatment decision*

*“The mastectomy and loss of breast are NOTHING compared to the loss of my hair.”*

*“Not a day goes by that I don't regret doing the NN (therapy). Oh, if we could only turn back the hands of time!”*

*“I **never, never, never** would have agreed to take NN if I was informed of this 6.3% risk; even a 3% risk...or any risk...”*

## How to bring patient preferences/values into BR decisions?

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- Patients with the specific disease condition know which outcomes and symptoms matter most to them
- Patients enrolled in regulatory drug trial are (ideally) the target group for treatment once a drug is licensed, yet we do not explore their values and preferences in a systematic way
- In terms of listening to the patients' voice, trial patients are an underutilized source

G. Rasi, AIFA, 2013

## Can Decision Analysis Help?

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“The spirit of decision analysis is divide and conquer:

decompose a complex problem into simpler problems, get one’s thinking straight on these simpler problems, paste these analyses together with logical glue, and come out with a program of action for the complex problem”

(Howard Raiffa 1968, p. 271)

# Visualizing Uncertainty Among Laypersons and Experts (VISUALizE)

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- Objective:

To evaluate the use of the MACBETH (**M**easuring **A**tractiveness through a **C**ategorical **B**ased **E**valuation) software for the elicitation of patient preferences using a simple pair-wise comparison between treatment outcomes

- determine value functions for disease attributes
- assess weights between disease attributes (trade-offs)

- Design

- Web-based study among patients with diabetes, atrial fibrillation
- Supported by the NICR UK, Dutch hospitals, and Laser who recruited patients and healthcare professionals

# Participant recruitment

- Target for MACBETH:1800
- Study population:
  - Patients
  - Healthcare professionals
  - Regulators supporting CHMP & PRAC
- 3 countries
  - United Kingdom
  - The Netherlands
  - France



**We need your feedback!**

To understand how information on the benefits and risks of medicines to patients and healthcare professionals could be improved.



**VISUALize**  
Better communication of medicines for better health.



## Steps to building an elicitation procedure\*

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- Determine the outcomes of interest
- For each outcome determine levels, ranging from best case to worst case
- Create the value elicitation section of the questionnaire
- Create the weighting elicitation section
- Collect data from patients and convert the qualitative responses of patients to quantitative scores
- \* Seek patient input/confirmation for steps 1-4

# Examples of Treatment Outcomes and Levels for Atrial Fibrillation

<b>Treatment outcome</b>	<b>Levels</b>
Ischemic Stroke	No patients developing ischemic stroke
	1% of patients developing ischemic stroke
	2% of patients developing ischemic stroke
	3% of patients developing ischemic stroke
	4% of patients developing ischemic stroke
Myocardial Infarction	No patients developing myocardial infarction
	1% of patients developing myocardial infarction
	2% of patients developing myocardial infarction
	3% of patients developing myocardial infarction
	4% of patients developing myocardial infarction
Major bleeding	No patients developing a major bleed
	2% of patients developing a major bleed
	4% of patients developing a major bleed
	6% of patients developing a major bleed
	8% of patients developing a major bleed
Minor bleeding	15% of patients developing a minor bleed
	20% of patients developing a minor bleed
	25% of patients developing a minor bleed
	30% of patients developing a minor bleed
	35% of patients developing a minor bleed

## Building a value scale for “Minor bleeding”

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15% of patients with minor bleeding

20 % of patients with minor bleeding

25 % of patients with minor bleeding

30 % of patients with minor bleeding

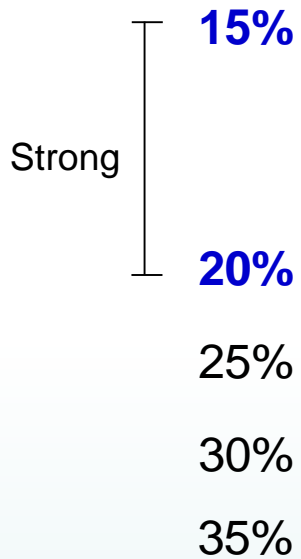
35% of patients with minor bleeding

What is the difference in value  
between

**15% of patients** and **20% of patients**  
with a minor bleeding?

extreme
v. strong
strong
moderate
weak
very weak
no

# Building a value scale for “Minor bleeding”

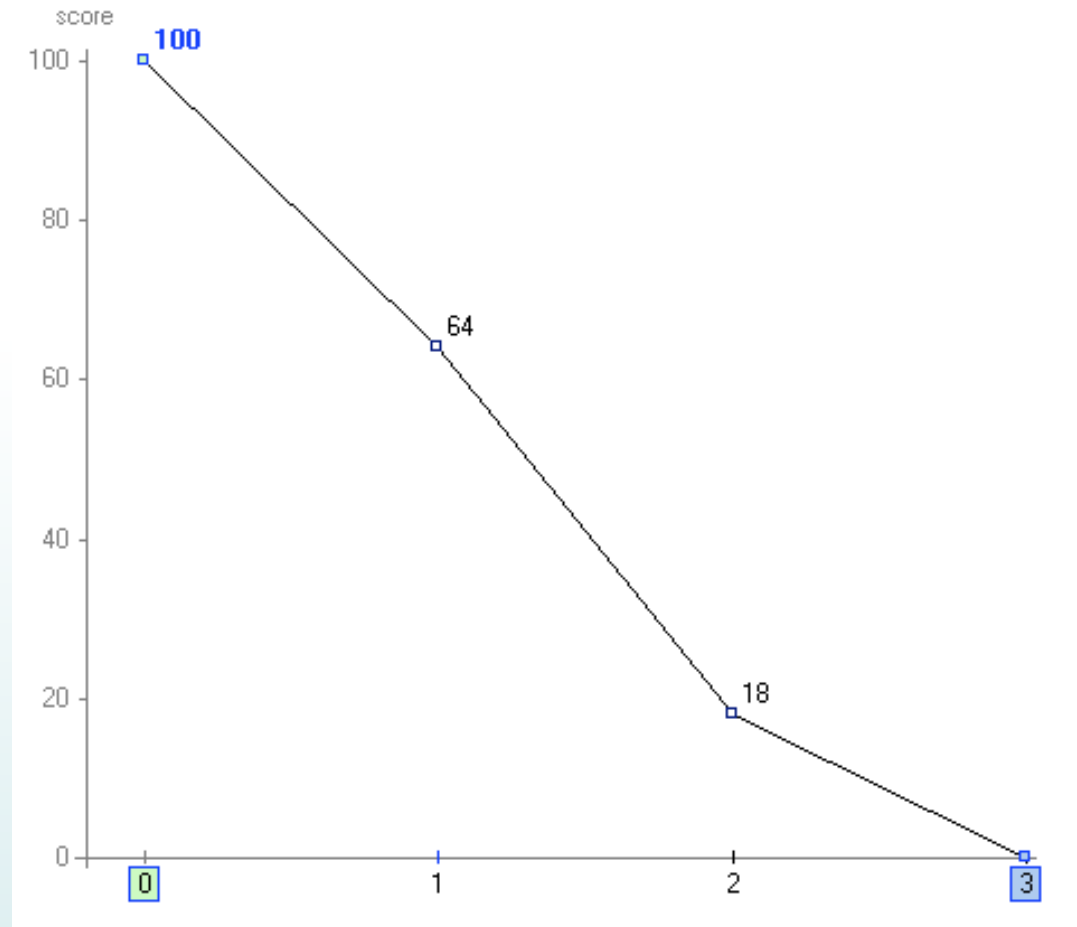
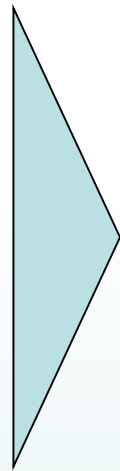
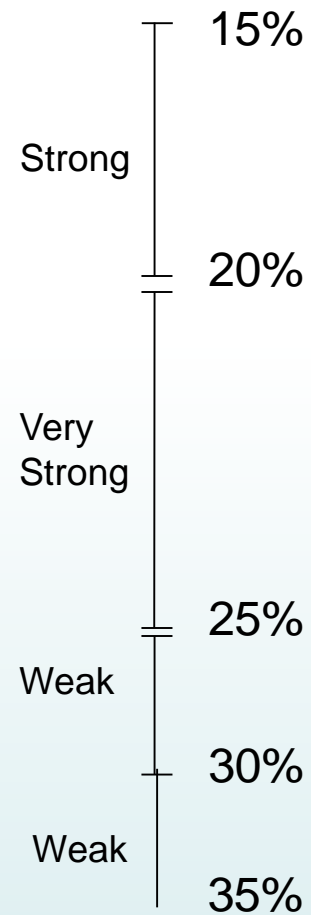


What is the difference in value between

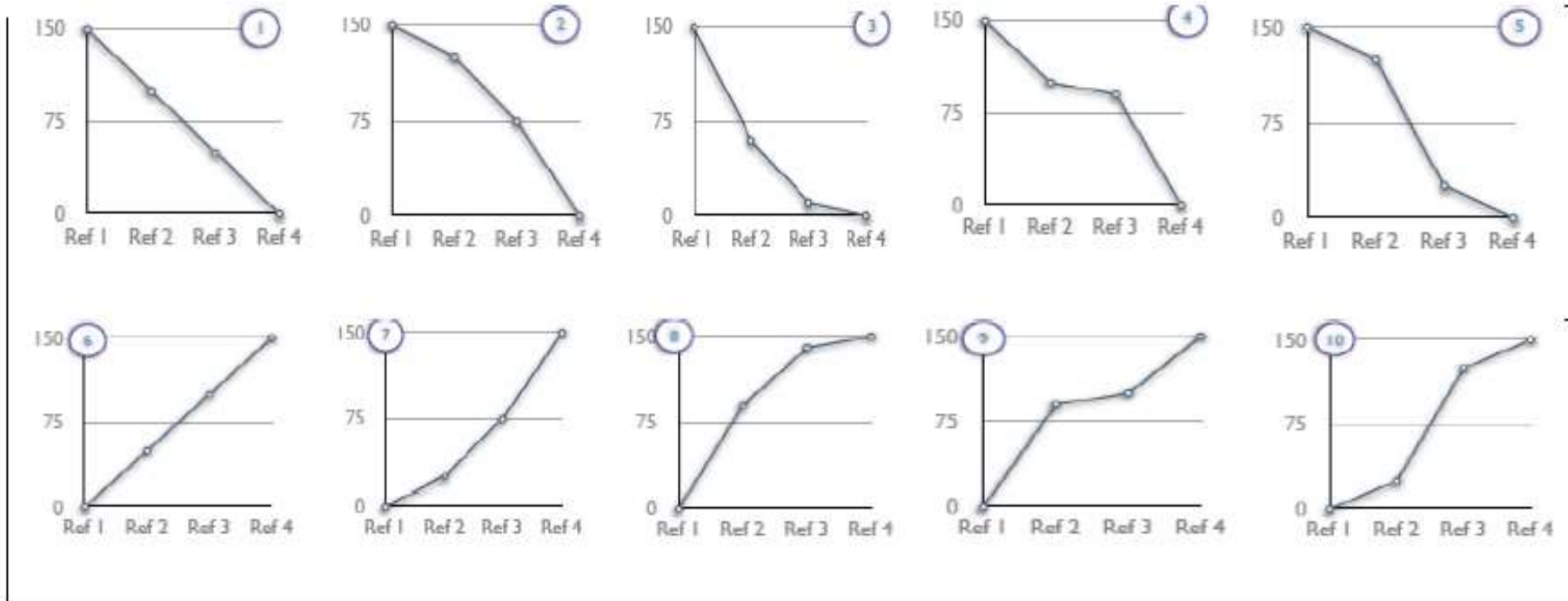
**15% of patients** and **20% of patients** with a minor bleeding?

extreme
v. strong
<b>strong</b>
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# Building a value scale for "Minor bleeding"

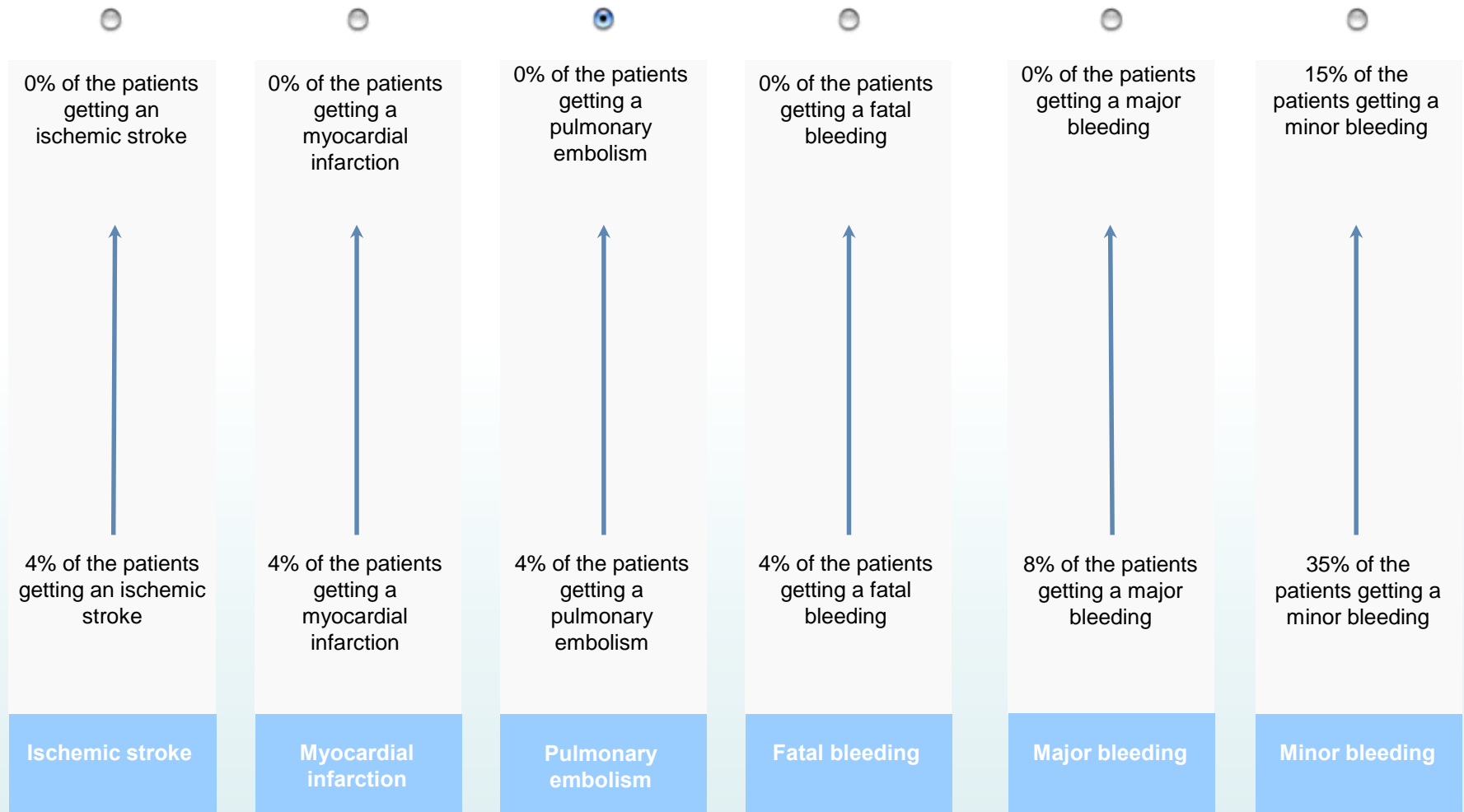


# Value Function Profiles

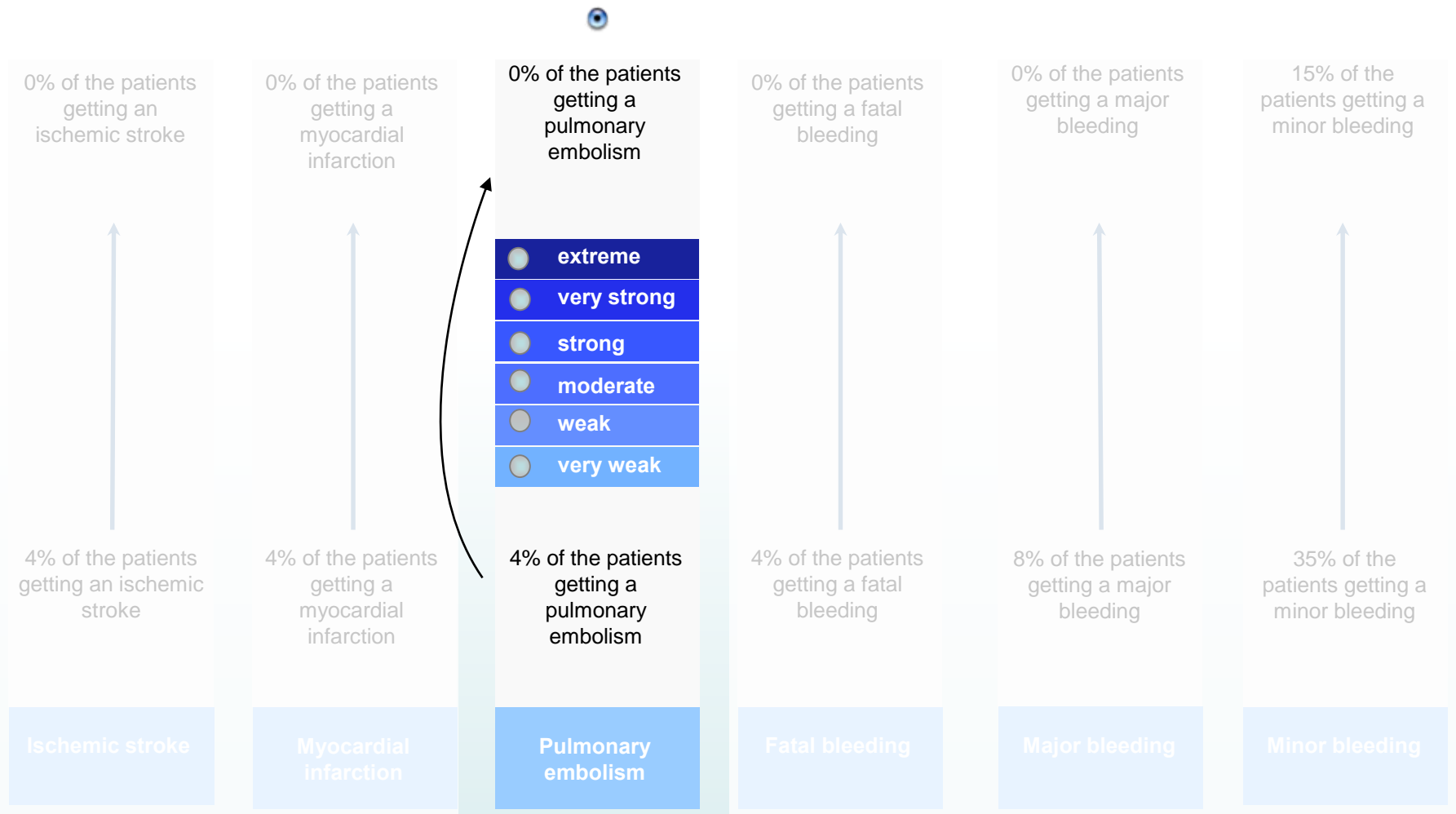


Value functions will fit one of these 10 profiles

If you could increase one treatment effect from its worst value (on the bottom) to its best value (on the top), which one would you increase?

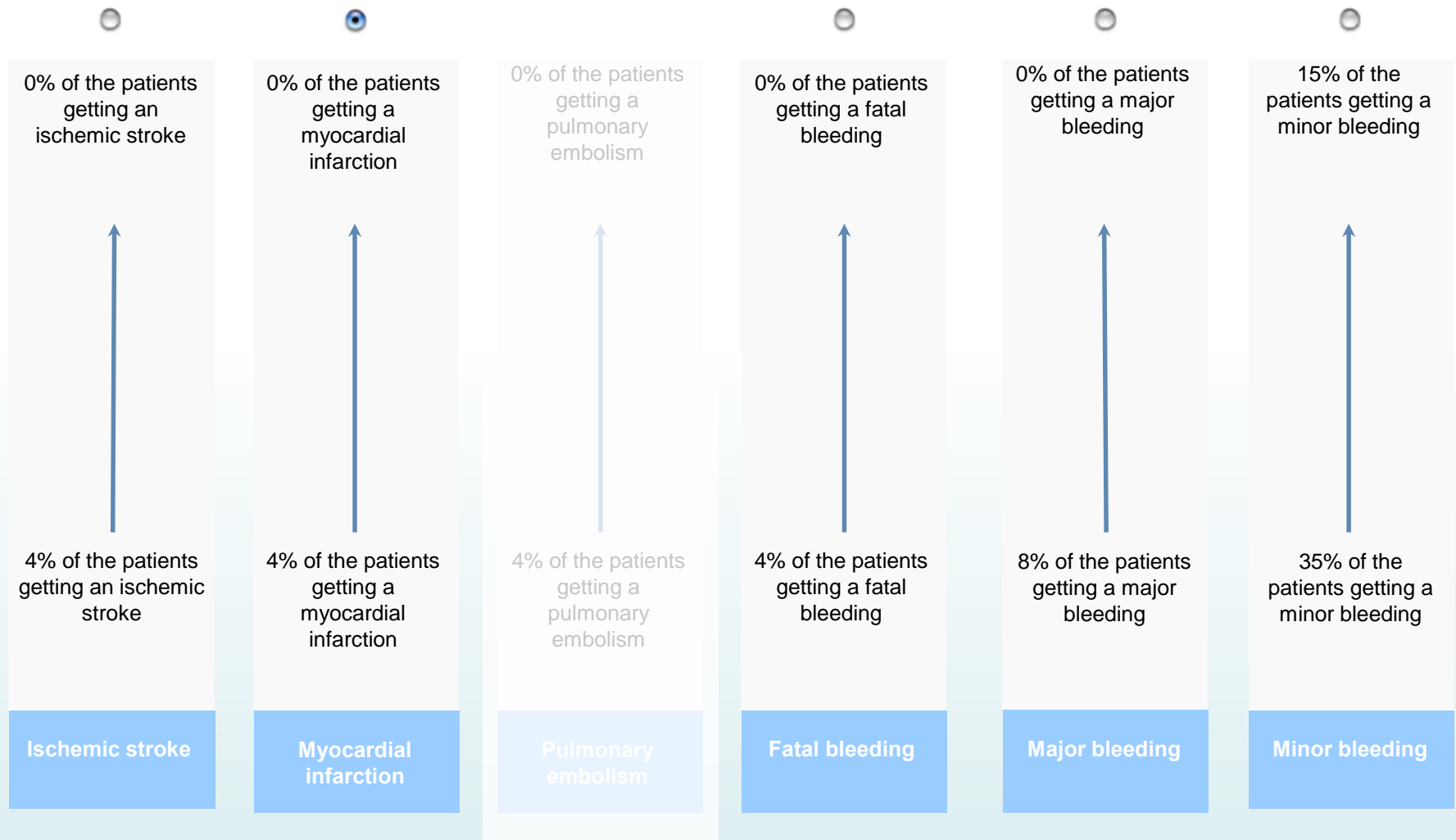


## How desirable is this improvement?





If you could increase one treatment effect from its worst value (on the bottom) to its best value (on the top), which one would you increase?

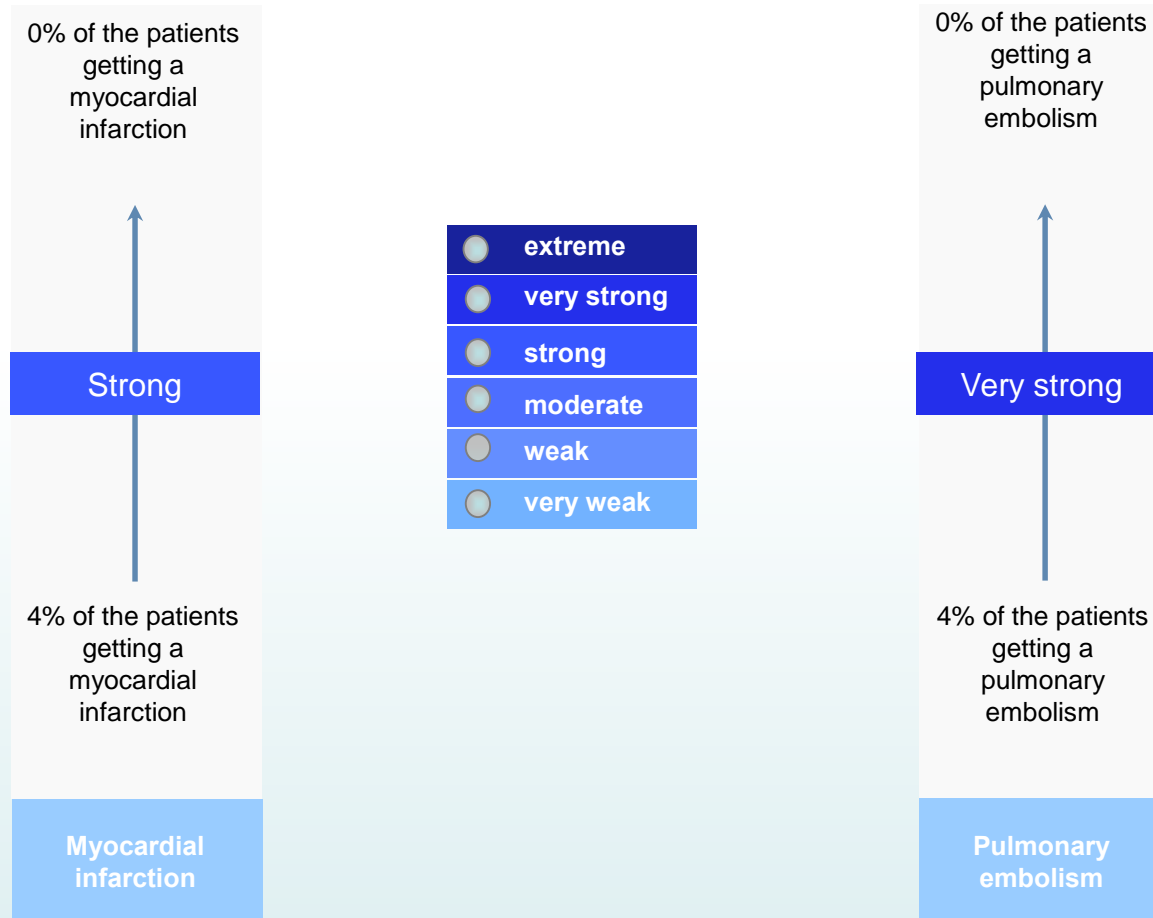


## How desirable is this improvement?



How much more desirable is the improvement on the right when compared to the one on the left?

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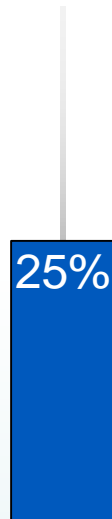
# Qualitative swing weighting

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Ischemic stroke



Myocardial Infarction



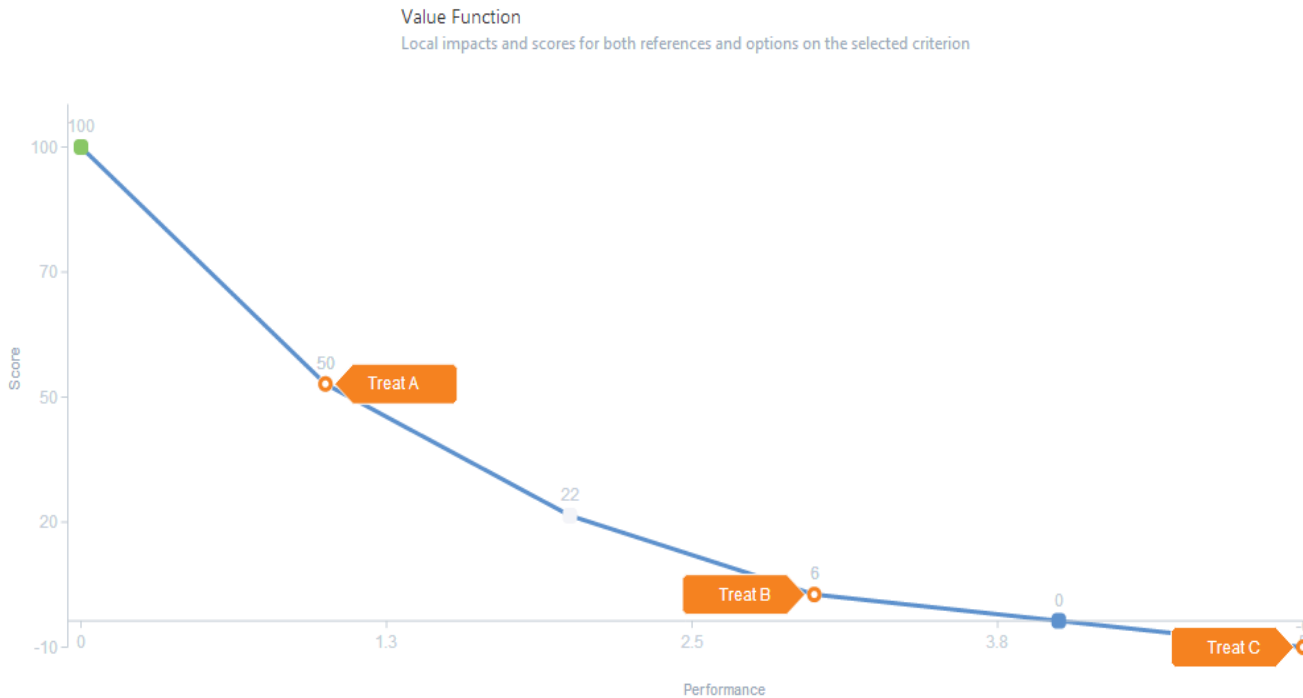
Major bleeding



Minor bleeding



# Evaluation of actual clinical data using patient values



Performance in criterion

Please insert the performance of each option in the text boxes on the right

Treat A

Treat B

Treat C

Save

# Building a decision model

## Global Results

Table of global and partial scores for each option in each criteria

	Number of relapses	Time to disease prog	Disease progr...	Total
Good	100	100	100	100
Treat A	50	92	86	72
Treat B	6	89	100	52
Treat C	-6	11	29	6
Neutral	0	0	0	0
Weights	46%	38%	15%	



## Results

### Global results

Tabela de pontuações globais e parciais para cada opção em cada fator de avaliação

### Analysis

#### Profile Analysis

Pontuações das opções em todos os fatores. Selecione a opção pretendida para ver o seu perfil. A seleção de duas opções permite ver a comparação entre as duas

#### Sensitivity Analysis

Análise da sensibilidade dos resultados a variações nos pesos dos fatores

## Summary

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- Method can be used to collect patient preferences in a remote setting
- Can be easily extended to patients within clinical trials (advanced PRO)
- Complies with decision theoretic principles
- Further research is needed to assess aggregation of the data

# ACKNOWLEDGEMENT



# Support



- The research leading to these results was conducted as part of the PROTECT consortium (Pharmacoepidemiological Research on Outcomes of Therapeutics by a European ConsorTium, [www.imi-protect.eu](http://www.imi-protect.eu)) which is a public-private partnership coordinated by the European Medicines Agency.
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# Eliciting Patient Preferences team

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- Hans-Georg Eichler
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