

IMPACT OF DISCOUNTING IN PHARMACOECONOMIC MODELING. A CASE STUDY

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■ Would you prefer €100 now?

OR

■ €150 five years from now?

Discounting

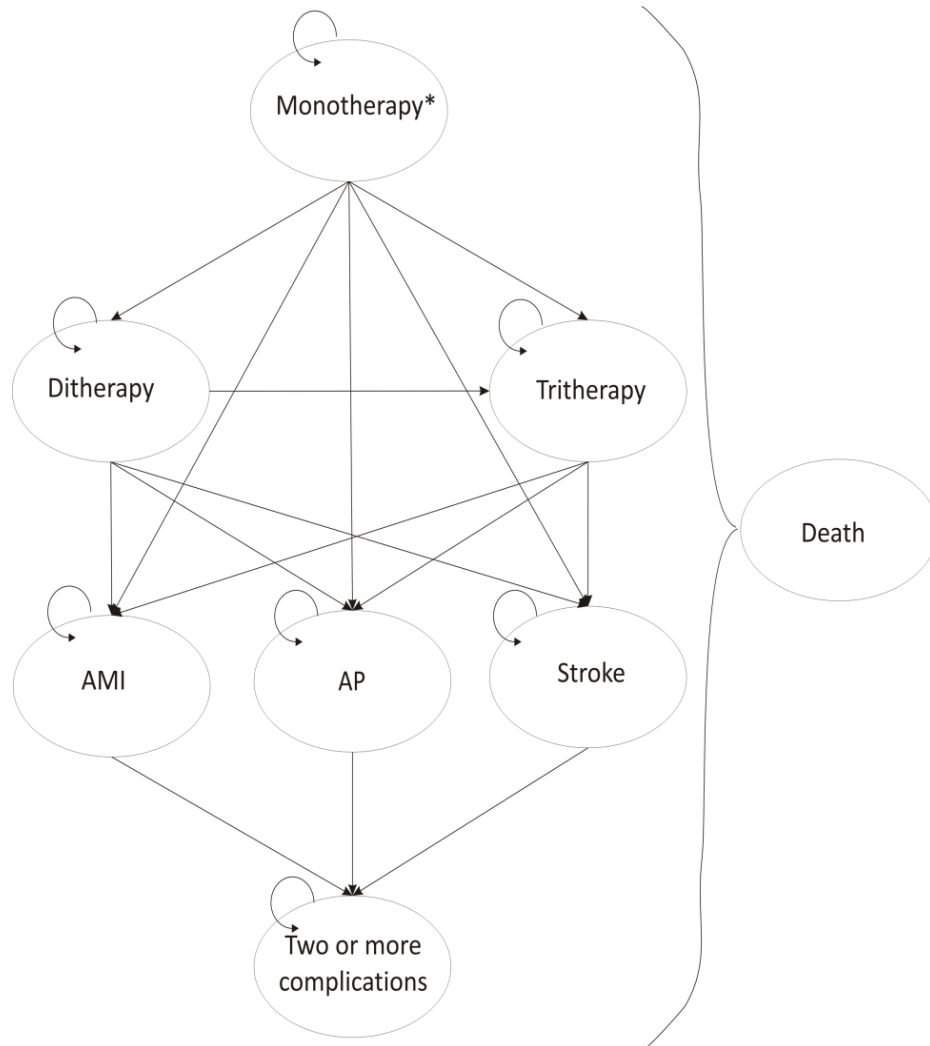
- Discounting adjusts future costs/benefits and expresses all costs and monetary benefits in terms of their present value
- $PV = FV / (1+r)^t$

Case

- Markov model for the cost-effectiveness evaluation of the different antihypertensive treatments in the prevention of CVD complications
- What is the impact of discounting on the choice of cost-effective therapeutic strategy?

Methodology 1/3

- Hypothetical cohort: 55 years old patients with HT without other CVD complications or risk factors
- Comparator strategies: antihypertensive groups of medicines present in clinical practice (diuretic, beta blocker, Ca channel antagonist and ACE inhibitors)
- All therapeutic strategies were compared with strategy “no intervention”



Methodology 2/3

- Complications of HT (AMI, AP, stroke and their combinations) and total mortality were observed as outcomes.
- Only direct costs were considered (costs of medications, office visits to physicians, hospitalizations, surgical interventions, etc)
- Utility measure included in the analysis was quality-adjusted life years (QALY).

Methodology 3/3

- Analyses were performed from the third-party payer perspective
- Results are presented as ICER (€/QALY)
- **Annual discount rate of 5%** was applied at all future costs and effects.

Results 1/3

- Undiscounted costs and effects

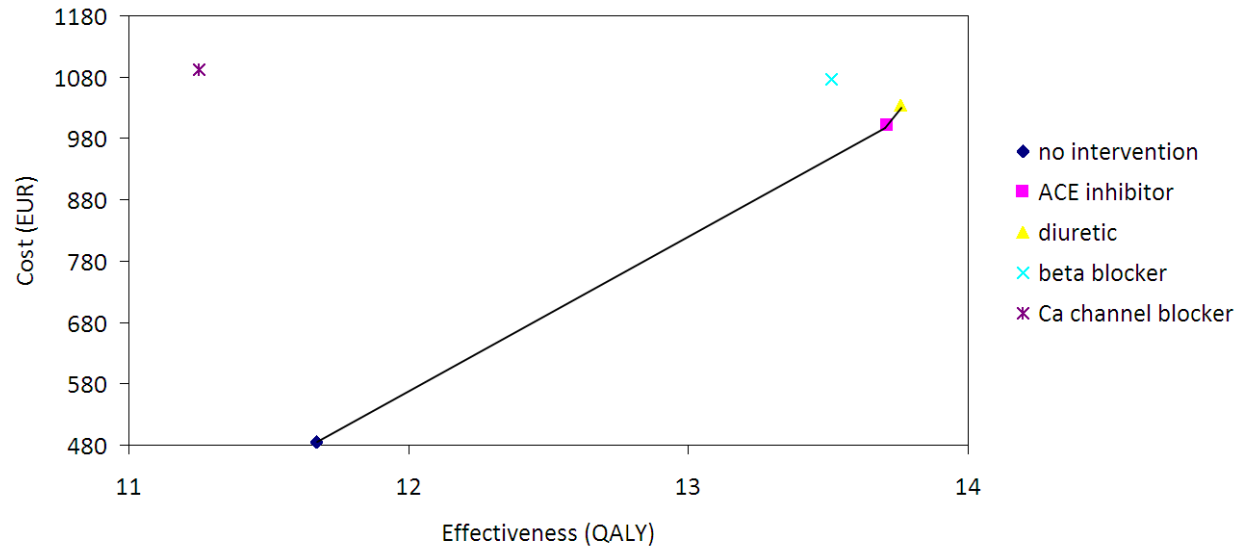
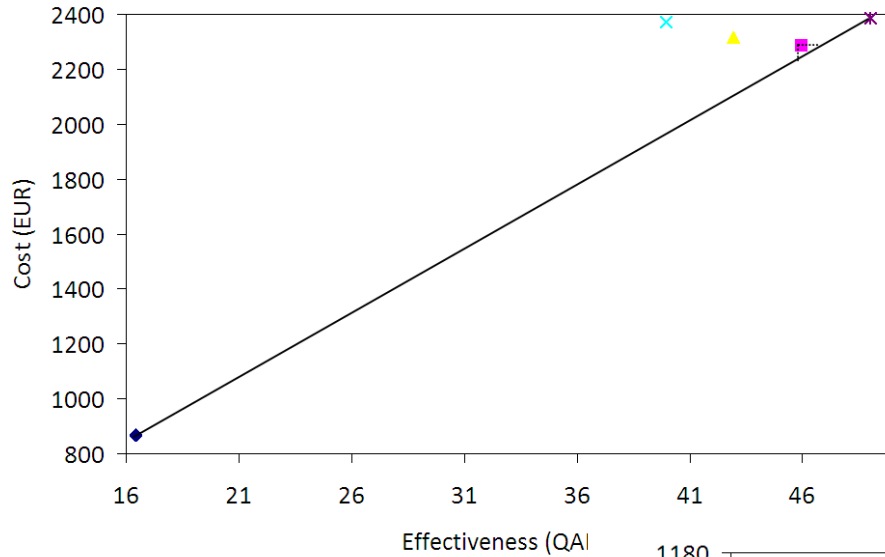
Comparator	Cost (€)	Δ cost (€)	Effective. (QALY)	Δ effectiv. (QALY)	C/E (€/QALY)	ICER (€/QALY)
No intervention	867.7		16.42		52.85	
ACE inhib.	2284.2	1416.5	45.98	29.86	49.68	47.92
Diuretic	2315.1	30.9	42.94	- 3.04	53.91	dominated
Ca channel blocker	2372.0	87.8	39.95	- 6.03	59.37	dominated
Beta blocker	2386.8	102.6	49.00	3.02	48.72	33.97

Results 2/3

- Discounted costs and effects (discount rate: 5%/year)

Comparator	Cost (€)	Δ cost (€)	Effective. (QALY)	Δ effectiv. (QALY)	C/E (€/QALY)	ICER (€/QALY)
No intervention	484.7		11.67		41.53	
ACE inhib.	1000.6	515.8	13.71	2.03	72.98	253.68
Diuretic	1033.4	32.8	13.76	0.05	75.13	680.66
Beta blocker	1076.9	76.3	13.51	- 0.25	79.68	dominated
Ca channel blocker	1092.1	15.3	11.25	- 2.51	97.10	dominated

Results 3/3



Effect of discounting

- Higher discount rates increases cost/QALYs regardless of the intervention considered
- The ranking of the strategies were changed after the discounting. Discounting dampens the relative importance of costs and benefits occurring in future.

Conclusion

- Discounting change the choice of cost-effectiveness therapeutic strategy and change the order in ranking of the antihypertensive strategies in the prevention of CVD complications.

Thank you

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