

COST-EFFECTIVENESS ANALYSIS OF ISAVUCONAZOLE VERSUS VORICONAZOLE

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BACKGROUND

To insert a drug in the Hospital Pharmaceutical Formulary (HPF) it is necessary to carry out a drug-economic analysis. The health economics study offers analysis tools such as Net Monetary Benefit (NMB) and Incremental Cost-Effectiveness Ratio (ICER) useful to make decisions.

Nowadays, the prescription medication for the treatment of aspergillosis is Voriconazole with consolidated effectiveness and safety.

PURPOSE

Evaluate cost/effectiveness of Isavuconazole versus Voriconazole, according to Italian costs, in order to introduce Isavuconazole into the HPF, in place of Voriconazole.

ISAVUCONAZOLE

OUTCOME	COST (€)	ODDS	COST x ODDS (€)
Success + No EA	3610,00	0,75	2696,16
Failure + No EA	3610,00	0,12	448,63
Success + EA	3617,40	0,10	368,76
Failure + EA	3617,40	0,02	61,36
Failure + NO EA + Death	3610,00	0,01	31,65
Failure + EA + Death	3617,40	0,001	4,33
TOTAL		1	3610,89

VORICONAZOLE

OUTCOME	COST (€)	ODDS	COST x ODDS (€)
Success + No EA	2248,20	0,64	1448,61
Failure + No EA	2248,20	0,14	310,31
Success + EA	2255,34	0,17	375,65
Failure + EA	2255,34	0,03	80,47
Failure + NO EA + Death	2248,20	0,01	27,50
Failure + EA + Death	2255,34	0,003	7,13
TOTAL		1	2249,67

ICER

Δ Price	1361,22
Δ Success	3,79
Δ Price / Δ Success	359,16

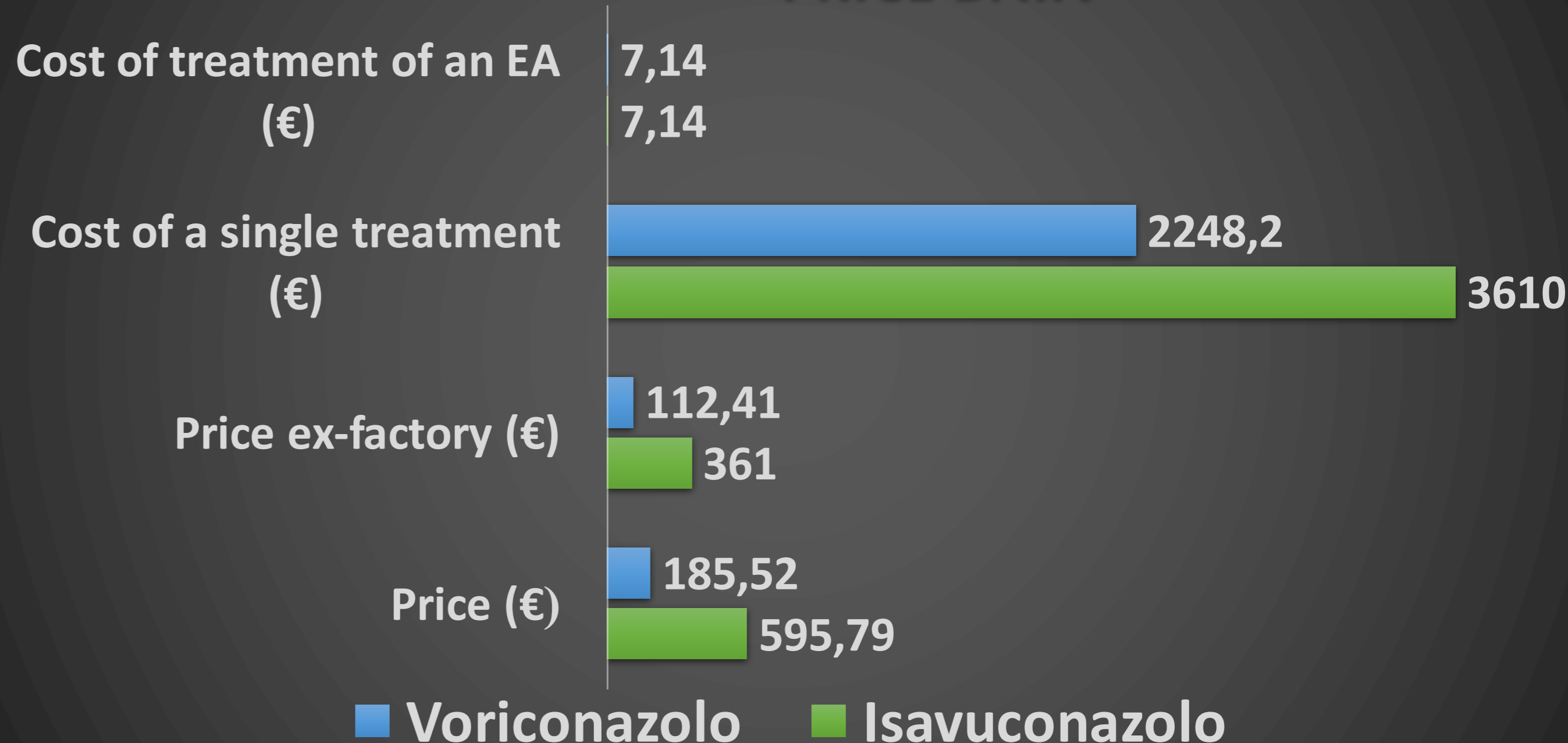
MATERIAL AND METHODS

We analyzed data from "SECURE" trial, a non-inferiority study of isavuconazole versus voriconazole, from which we extrapolated success rates of the two drugs after a short time-horizon (42 days). According to our analysis, none of the two treatments dominates the other, making it necessary to evaluate ICER and NMB, through a budget impact analysis.

We built up a decision tree, considering success and both deaths from therapeutic failure and other causes. Hospitalization, cost of drugs and adverse events (AE) costs came from rate-tables of Italian hospital care. To calculate NMB (difference in effectiveness multiplied by willingness to pay (WTP), less difference in costs) and to value the ICER obtained, we selected two different WTP thresholds, from NICE guidelines:

30.000€ and 50.000€.

PRICE DATA

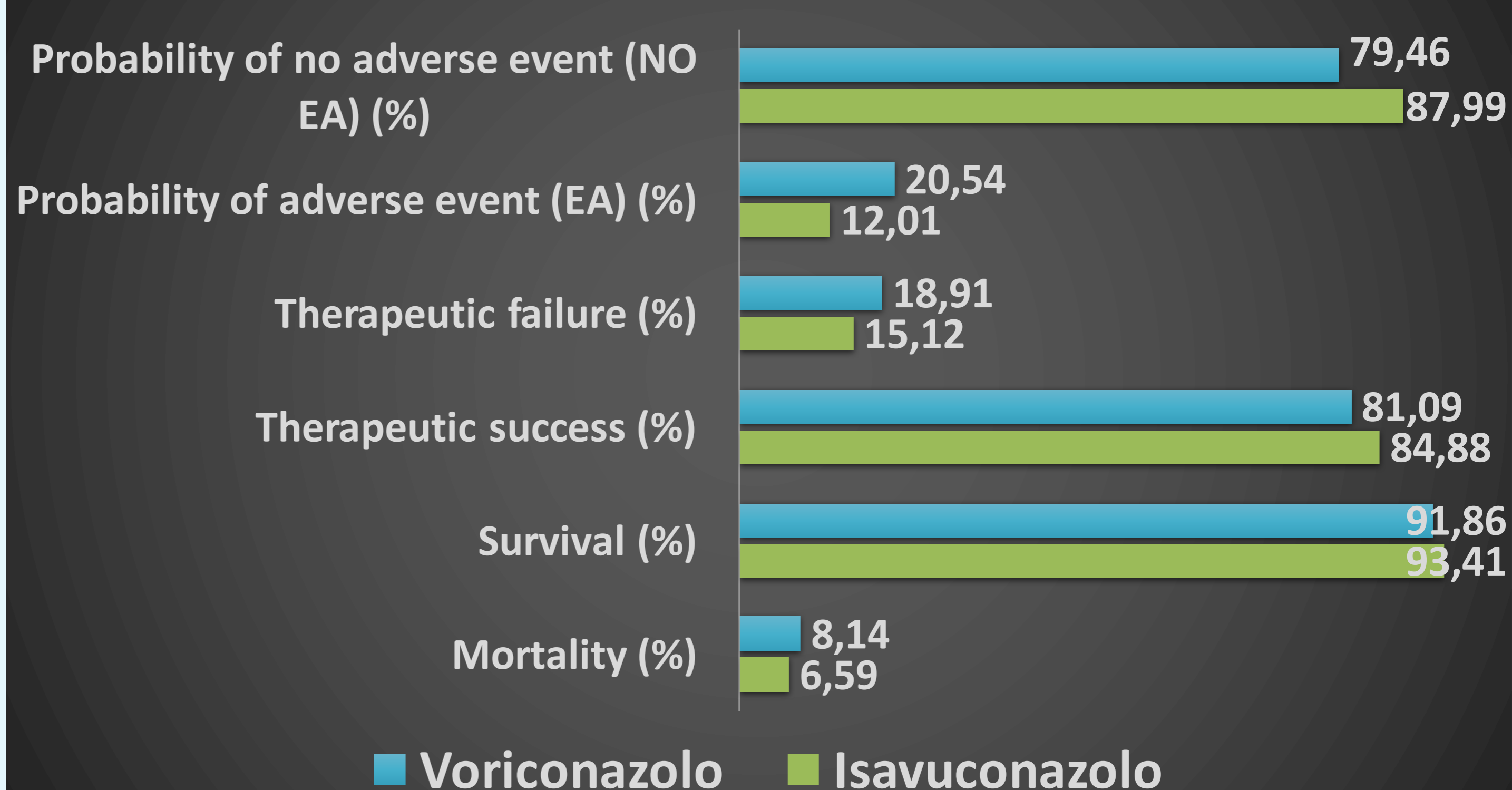


RESULTS

According to our analysis, none of the two treatments dominates the other, making it necessary to evaluate ICER and NMB. Success rates of Isavuconazole and Voriconazole were 84,88% and 81,09% respectively.

Considering all success and failure probabilities we calculated a cost of 3.610,89€ for Isavuconazole and 2.249,67€ for Voriconazole, resulting in an ICER ratio of 35.925,07€. Considering the second threshold value (50.000€), which is above ICER value, we obtained a positive NMB (533,78€) which allows to introduce Isavuconazole in HPF. The 30.000€ thresholds, on the contrary, results in a negative and unfavorable NMB (-224.22€).

EFFICACY DATA



CONCLUSION

According to our analysis, to NMB and ICER values, introduction of Isavuconazole in HPF is cost-effective if we consider a 50.000€ WTP threshold.

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REFERENCES AND ACKNOWLEDGEMENTS

Isavuconazole versus Voriconazole for primary treatment of invasive mould disease caused by Aspergillus and other filamentous fungi (SECURE): a phase 3, randomised-controlled, non-inferiority trial, Maertens et al., 2016.