

EE637 - ECONOMIC IMPACT OF MANAGING INVASIVE MOLD DISEASE WITH ISAVUCONAZOLE COMPARED WITH LIPOSOMAL AMPHOTERICIN B IN SPAIN

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INTRODUCTION

- Invasive mold diseases (IMDs) are associated with significant morbidity and mortality¹.
- Isavuconazole (ISAV) is a preferred treatment for certain patient profiles².
- European guidelines recommend ISAV and voriconazole as drugs of choice for pulmonary aspergillosis in neutropenic or allo-HSCT patients and in COVID-19-associated pulmonary aspergillosis (CAPA), and amphotericin B as an alternative treatment for pulmonary aspergillosis^{3,4}.
- In mucormycosis, liposomal amphotericin B (L-AMB) in high doses is recommended in the first line, with alternative treatments being ISAV and posaconazole (POSA)⁵.

OBJECTIVES

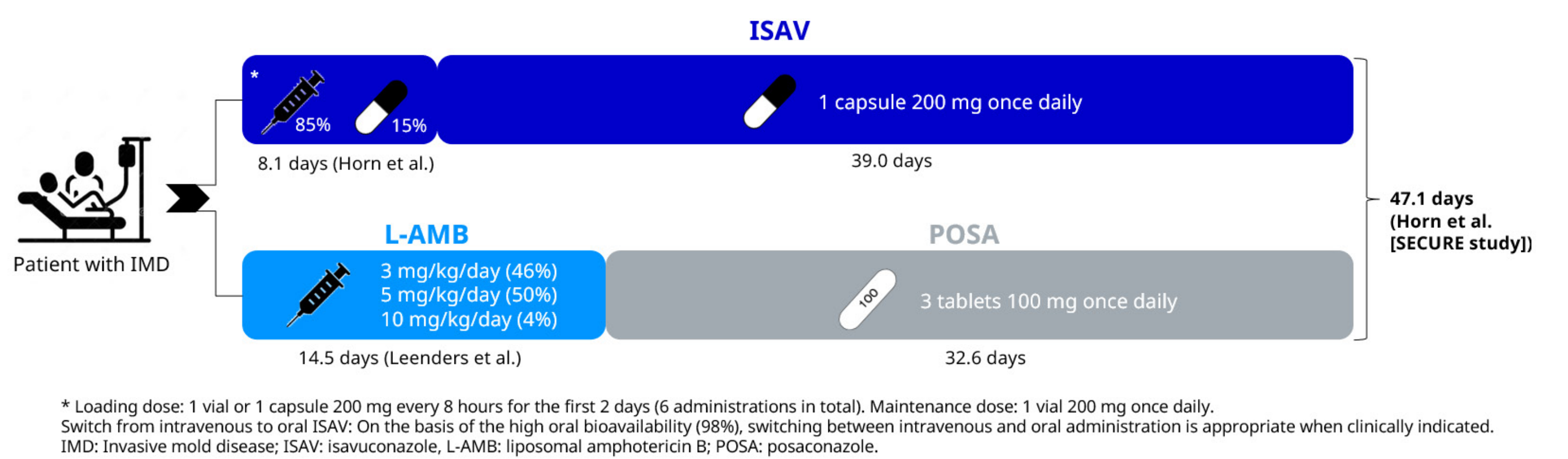
- An economic model was developed to help inform treatment decisions for adult IMD patients for whom voriconazole is considered unsuitable, to explore the cost with ISAV versus L-AMB followed by POSA (L-AMB → POSA) in Spain.

METHODS

Design

- As indirect comparisons have demonstrated similar efficacy between the comparators^{6,7}, a cost-minimization approach was taken from the Spanish National Healthcare System (SNHS) perspective.
- The drug administration regimens for each treatment are presented in Figure 1.
- The use of ISAV initial formulation and dosage of L-AMB were based on expert opinion.
- Dosage for ISAV and POSA was based on labels. Duration of treatment (DoT) was based on clinical trials^{8,9} and expert opinion.

Figure 1. Drug administration regimens



Use of resources and Costs

- Drug acquisition, intravenous (IV) administration, laboratory tests, hospitalization and adverse events (AEs) costs were included in the analysis (Table 1).
- L-AMB dosing was calculated with a mean weight of 68.6 kg in the SECURE study⁹, not including unused vial contents¹⁰.
- IV administration and laboratory testing were based on expert opinion¹⁰.
- Time on IV infusion preparation of L-AMB and ISAV was 30 and 10 min, respectively¹⁰.

Table 1. Use of resources and unit costs

Drug	Costs (€2023)	ISAV	L-AMB	POSA
Pack (€)	-	200 mg 1 vial / 100 mg 14 tablets	50 mg 10 vials	100 mg 24 tablets
List Price per pack	-	400.00€ / 700.00 €	1,300.61 €	266.02 €
Intravenous (IV) administration (min)				
IV administration	1.07	121	435	NA
Hospitalization (days)				
Emergency room	1,760.00	3.1	3.1	0.0
General ward	653.91	16.6	16.6	0.0
Laboratory tests (per week)				
Urinalysis	3.00	0.0		7.0
Serum creatinine test	3.00	0.0		7.0
Magnesium test	17.00	0.0		6.0
Liver function test	3.00	7.0		7.0
Adverse events (%)				
Vision impaired or blurred	59.91	0.40%	0.00%	1.00%
Photopsia	59.91	0.00%	0.00%	0.70%
Hyperbilirubinemia	153.90	0.40%	0.00%	3.00%
Abnormal hepatic function	153.90	0.80%	0.00%	1.40%
Increased GGT	181.82	2.30%	0.00%	3.80%
Increased ALP	181.82	1.90%	0.00%	2.40%
Increased AST	181.82	1.90%	15.70%	6.30%
Increased ALT	181.82	1.60%	0.00%	7.60%
QT prolonged	181.82	0.40%	0.00%	4.00%
Hallucination	180.13	0.40%	0.00%	1.40%
Dyspnoea	146.90	3.10%	0.00%	0.00%
Nephrotoxicity	853.66	0.00%	10.60%	0.00%
Hypokalaemia	237.33	17.50%	60.80%	28.50%
Hypomagnesemia	780.00	5.40%	28.10%	0.00%
Infusion reaction	76.17	4.30%	9.50%	0.00%
Dialysis following treatment	196.46	0.00%	3.80%	0.00%

- L-AMB → POSA patients required urinalysis, serum creatinine tests and liver-function tests once weekly (7 in total), plus 6 magnesium tests; while ISAV patients required 7 liver-function tests¹⁰.
- Total hospital stay was 19.7 days⁸ and included 15.6% days of treatment in the emergency rooms¹¹.
- AEs for ISAV and POSA were obtained from their EMA Assessment Reports and L-AMB in Wade et al¹².
- Drug costs were consulted in Botplus 2.0 and costs for resource use were obtained from e-Salud database and adjusted for inflation (€2023).

RESULTS

Base case analysis

- ISAV treatment cost compared to L-AMB → POSA showed a saving of € 4,029.25 (€ 8,195.50 versus € 12,224.75), representing a saving of 33.0%.

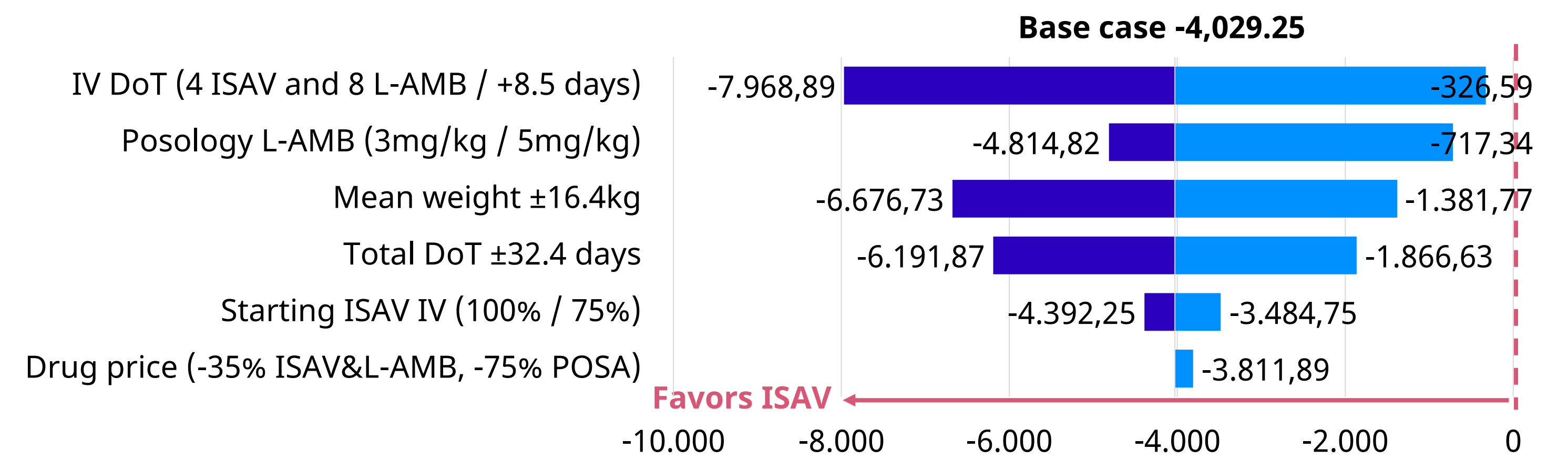
Table 2. Deterministic base case results

	ISAV		L-AMB → POSA		ISAV vs L-AMB → POSA	
	Use resources	Cost (€)	Resource use	Cost (€)	Cost difference (€ and %)	
IV formulation	8.1 days	4,295.50	14.5 days	11,074.22	-6,778.72	-61.2%
Oral formulation	39 days	3,900.00	32.6 days	1,150.54	2,749.46	239.0%
Total Treatment	47.1 days	8,195.50	47.1 days	12,224.75	-4,029.25	-33.0%
IV administration	121 min	109.67	435 min	463.84	-354.17	-76.4%
Hospital stay	19.7 days	16,281.26	19.7 days	16,281.26	0.00	0.0%
Laboratory tests	7 tests	21.00	27 tests	165.00	-144.00	-87.3%
Adverse Events	39.8%	108.11	188.8%	618.67	-510.56	-82.5%
Total Use of resources		16,520.04		17,528.78	-1,008.74	-5.8%
TOTAL		24,715.54		29,753.53	-5,037.99	-16.9%

Sensitivity analysis

- All the variables analyzed showed savings in the cost of treatment with ISAV compared to L-AMB/POSA (Figure2).
- Savings ranged from € 326.59 to € 7,968.89 with ISAV.
- The most influential parameter in the outcome was IV administration time and the least influential was drug price.

Figure 2. One way sensitivity analysis on cost difference ISAV vs L-AMB → POSA (€)



- After 1,000 second-order Monte Carlo simulations, a mean total savings per patient treated with ISAV versus L-AMB → POSA of € 5,029 were obtained, with a 95% confidence interval (CI) of € -4,088 and € -6,107 (Table 3).

- The probability of savings with ISAV was 100%.

Table 3. Probabilistic analysis results

	ISA	L-AMB → POSA	Diference	Probability of savings
Mean	24,671 €	29,700 €	-5,029 €	
SD	2,602 €	3,132 €	-	
Inferior Lim CI95%	20,057 €	24,145 €	-4,088 €	100%
Superior Lim CI95%	29,961 €	36,068 €	-6,107 €	

CONCLUSIONS

ISAV has the potential to substantial save costs on the IMD management relative to L-AMB → POSA.

ISAV maintains the same efficacy and tolerability during the whole treatment duration without switching to another therapeutic class.

This analysis would enable healthcare professionals to make informed therapeutic decisions based on most efficient therapy.

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DISCLOSURE

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