

Comparative Cost-Effectiveness Analysis of Isavuconazole Versus Liposomal Amphotericin B for the Treatment of Invasive Mucormycosis in Algerian hospital setting

Nassima Achour, MD¹, Mourad OUALI, MD², Rihab Al-Homsi, Pharm.D³, YACINE HAMMAS, Pharm.D⁴,Nimer Alkhatib, PhD⁵, Ahmad Aburmilah, M.Sc³, Jalal Kamel Atieh, BSc Pharm³.

¹Infectious Diseases Department at El Hadi FLICI Hospital, Algiers, Algeria, ²Medical ICU at Mustapha BACHA Hospital, Algiers, Algeria, ³HikmaPharmaceuticals, Amman, Jordan, ⁴Hikma Pharmaceuticals, Algiers, Algeria, ⁵Path Economics, Amman, Jordan

Introduction

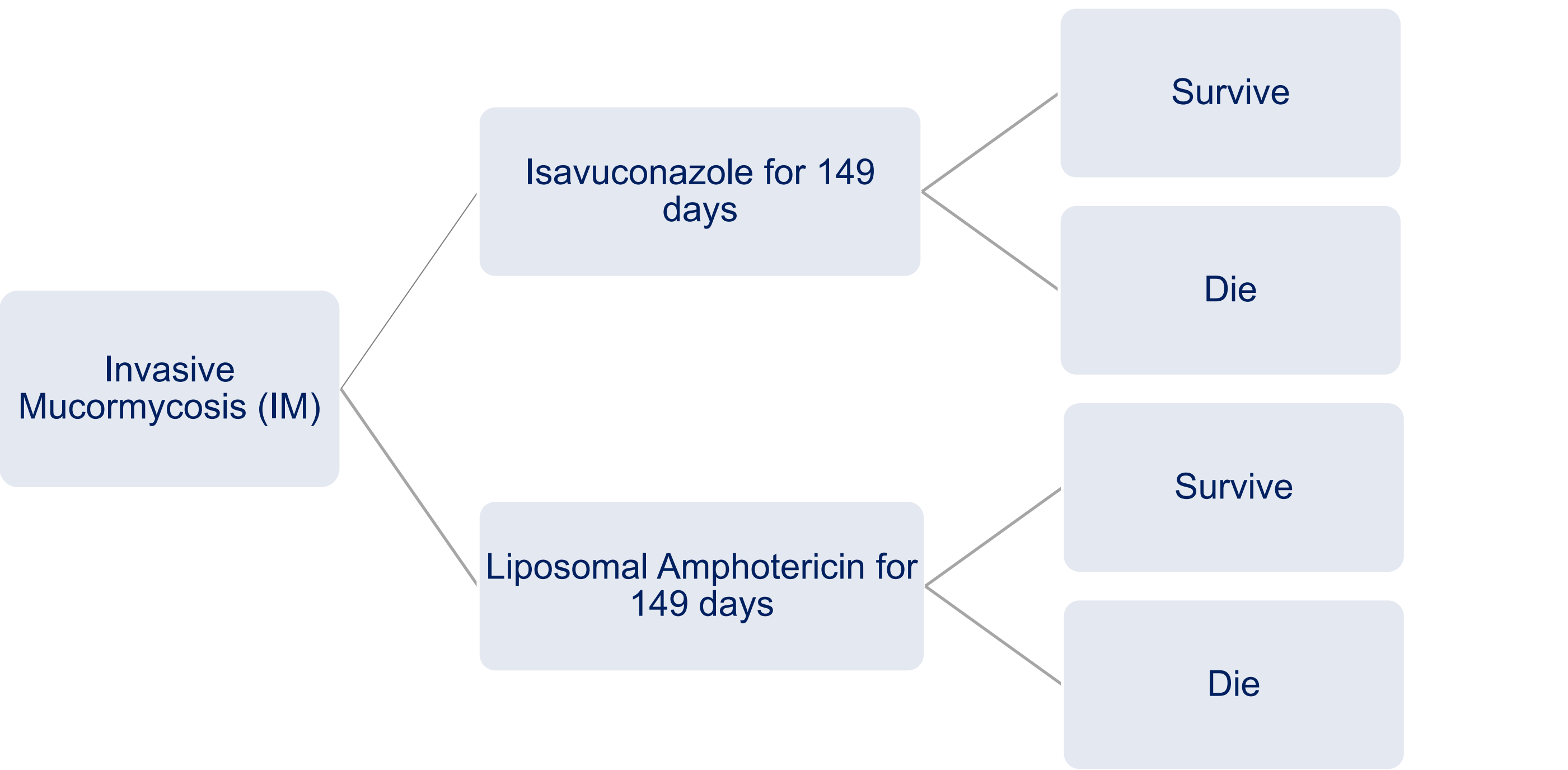
Mucormycosis is a serious opportunistic fungal infection affecting immunocompromised patients, often associated with high mortality and limited treatment options. Amphotericin B-based regimens, typically combined with surgical debridement, remain the most frequently used approach but carry a significant risk of nephrotoxicity. Isavuconazole has emerged as an alternative option for the primary treatment of mucormycosis, offering comparable efficacy to standard of care with better tolerability.

Objective

This study aims to evaluate the cost-effectiveness of Isavuconazole compared to liposomal amphotericin B for the treatment of mucormycosis from Algerian hospital payer perspective

Method

A cost-utility analysis was conducted using a decision tree model from Algerian payer perspective.



*Data and clinical definitions were sourced from the VITAL study

Direct medical costs were only considered including the cost of drug acquisition, intravenous administration, laboratory monitoring, and hospitalization.

Medication	Strength	Presentation	Public Price
Ambisome™ IV Liposomal Amphotericin	50mg	1 vial	USD 59.61
Noxafil™ extended release oral Posaconazole	100mg	24 tablets	USD 578.29
Cresemba™ Capsules Isavuconazole	100mg	14 capsules	USD 495.27
Cresemba™ Vial Isavuconazole	200mg	1 vial	USD 297.82

Both deterministic and probabilistic sensitivity analyses (PSA) were performed to test the robustness of model assumptions and parameter uncertainties.

Results

Results were extrapolated to the lifetime horizon of patients with hematological malignancies.

	Cost				Effectiveness	
	Drug	Hospital	Infusion	Monitoring	LYG	QALY
Isavuconazole						
IM	USD 15,068.71	USD 845.25	USD 762.77	USD 264.96	6.84	5.60
Total (USD)	USD 16,941.70					
Total (DZD)	DZD 2,321,013.27					

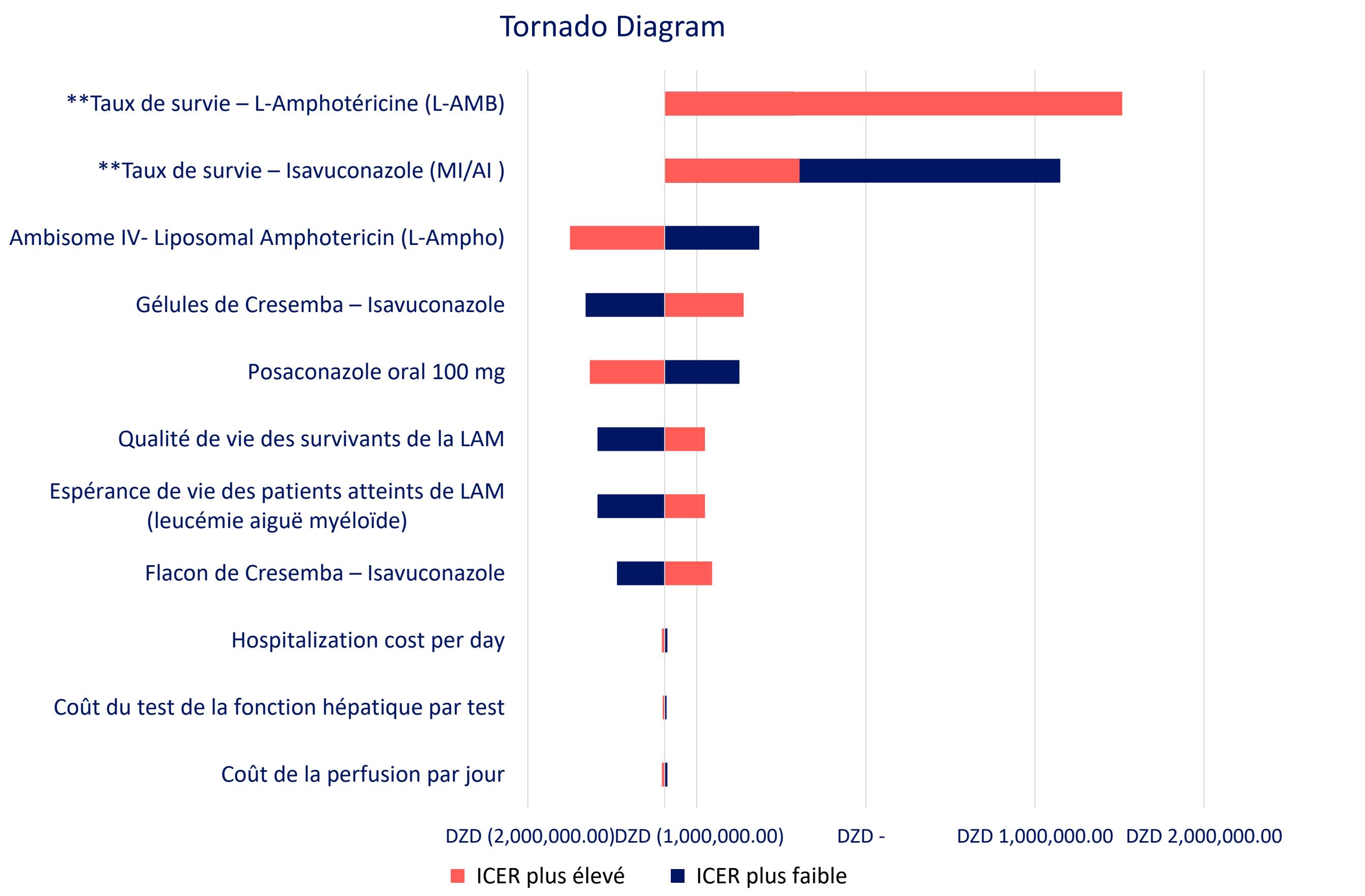
	Cost				Effectiveness	
	Drug	Hospital	Infusion	Monitoring	LYG	QALY
Liposomal Amphotericin						
IM	USD 20,156.74	USD 1,182.48	USD 1,083.941	USD 505.83	6.0	4.92
Total (USD)	USD 22,929.00					
Total (DZD)	DZD 3,141,273.75					

Exchange Rate (1 USD = 137 DZD)

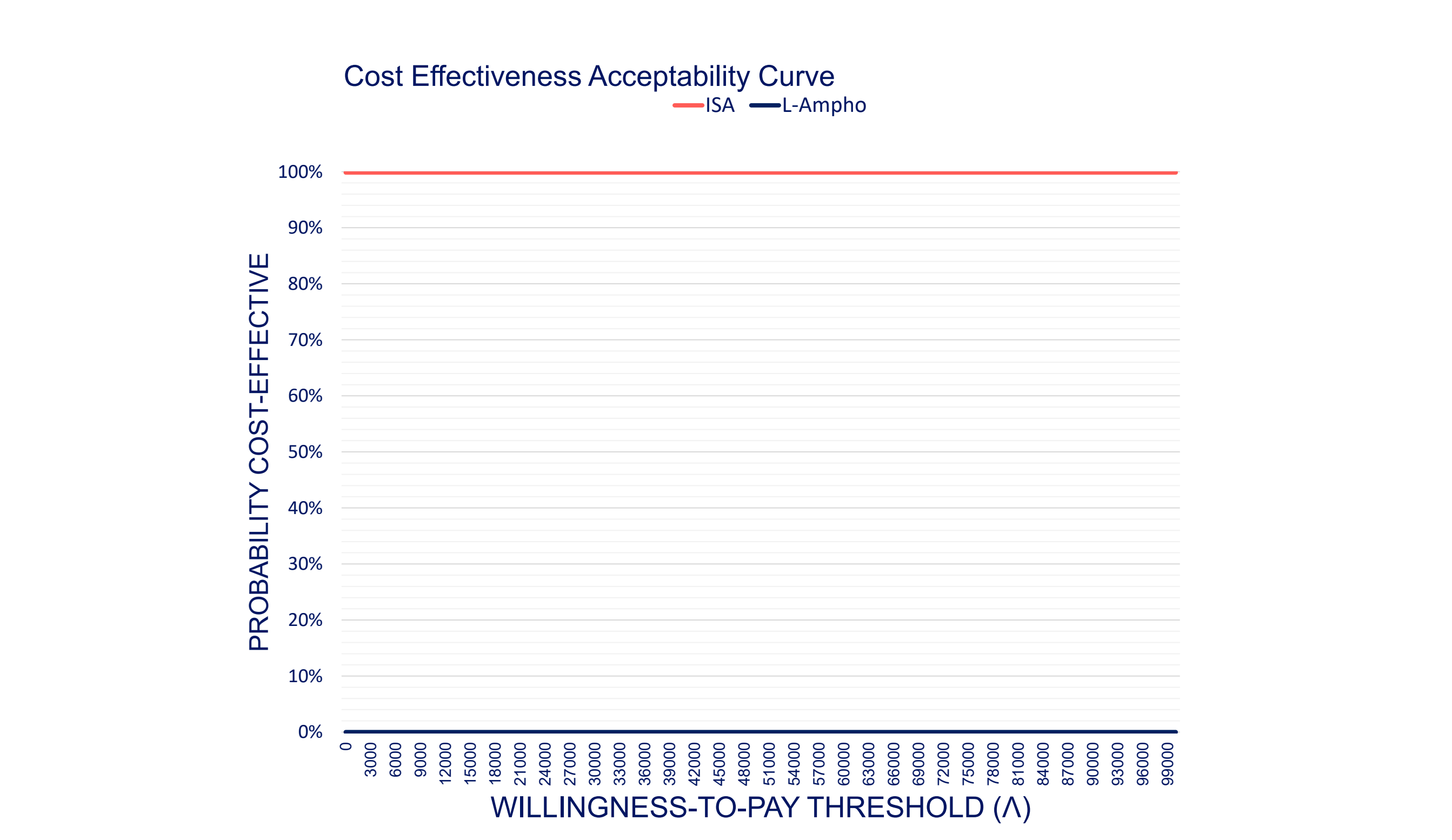
The incremental cost-effectiveness ratio (ICER) for Isavuconazole versus liposomal amphotericin B -8,244.86 USD per QALY gained indicating a dominant strategy.

Isavuconazole Versus L-Ampho for the treatment of Invasive Mucormycosis (IM) in Algeria		
Difference in Cost (USD)	DZD	-5,987.48
Difference in QALYs		0.688
ICER (USD/QALY)	USD	- 8,692.36
ICER (DZD/QALY)	DZD	-1,190,854.35

Model sensitivity was highest to the price of liposomal Amphotericin vial and survival rates in mucormycosis.



PSA confirmed Isavuconazole as 100% cost-effective at zero willingness-to-pay



Conclusion

Isavuconazole is a dominant treatment option for Mucormycosis in Algerian hospital setting. These findings may support its introduction strategy to Algerian market.

References Roden MM, Zaoutis TE, Buchanan WL, Knudsen TA, Sarkisova TA, Schaufele RL, et al. Epidemiology and outcome of zygomycosis: a review of 929 reported casesexternal icon. Clin Infect Dis. 2005 Sep 1;41(5):634-53. 2. Floros L, Kuesner D, Posthumus J, Bagshaw E, Sjölin J. Cost-effectiveness analysis of isavuconazole versus voriconazole for the treatment of patients with possible invasive aspergillosis in Sweden. BMC Infect Dis. 2019 Feb 11;19(1):134. doi: 10.1186/s12879-019-3683-2. PMID: 30744663; PMCID: PMC6337439. 3. Marty FM, Ostrosky-Zachner L, Conely OA, Mullane KM, Perfect JR, Thompson GR 3rd, Alangaden GJ, Brown JM, Fredricks DN, Heinz WJ, Herbrecht R, Klimko N, Kjaasova G, Maertens JA, Meinelken SR, Oren I, Pappas PG, Ráclí Z, Rahav G, Santos R, Schwartz S, Vehreschild JJ, Young JH, Chetcholsakdi P, Januratanasirikul S, Kanj SS, Engelhardt M, Kauffhold A, Ito M, Lee M, Sasse C, Maher RM, Zeiler B, Vehreschild MJGT; VITAL and FungiScope Mucormycosis Investigators. Isavuconazole treatment for mucormycosis: a single-arm open-label trial and casecontrol analysis. Lancet Infect Dis. 2016 Jul;16(7):828-837. doi: 10.1016/S1473-3099(16)00071-2. Epub 2016 Mar 9. PMID: 26969258