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BACKGROUND:

- Invasive aspergillosis (IA) is a fungal infection linked to significant morbidity and mortality in severely ill immunocompromised patients.
- To reduce the mortality, prophylactic and empirical treatments with antifungals are administered (1).
- The gold standards for diagnosing IA, culture and microscopy, have limited sensitivity (2).
- The galactomannan (GM) test may influence the prognosis of patients with suspected IA by enabling early diagnosis.
- This study's aim was to evaluate the clinical and economic effects of integrating the GM test into the Brazilian Public Health System (SUS).

METHODS:

- A Markov model compared five strategies using two different sample: bronchoalveolar lavage (BAL) or serum.
- Measure of effectiveness: life years gained (LYG) and “needless therapies avoided”.
- The accuracy of these strategies was based on systematic reviews.
- All costs were obtained from the Brazilian official open data (2) on a SUS perspective.

RESULTS:

- When compared to culture, all GM test simulations revealed an increase in LYG and expenses (Figure 1).
- No matter the sample or cutoff, all demonstrated an incremental cost-effectiveness ratio of under USD 650. (Figure 2).
- The cutoff 0.5 was associated with a marginal improvement in LYG, but it was also associated with a rise in expenses and in the proportion of patients receiving needless treatment (Table 1).
- The parameters with the greatest impact on the deterministic analysis were “disease prevalence” and “early diagnosis lethality” (Figure 3).

DISCUSSION:

- The findings demonstrate that adding the GM test to the SUS would be cost-effective and improve survival rates.

Cost-Effectiveness analysis of the *Aspergillus* Galactomannan Enzyme Immunoassay in the Brazilian Public Health System

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The use of the galactomannan test associated with culture for Aspergillus can diagnose patients with invasive aspergillosis more quickly and efficiently, reducing the percentage of unnecessary treatments as well as mortality of the disease.

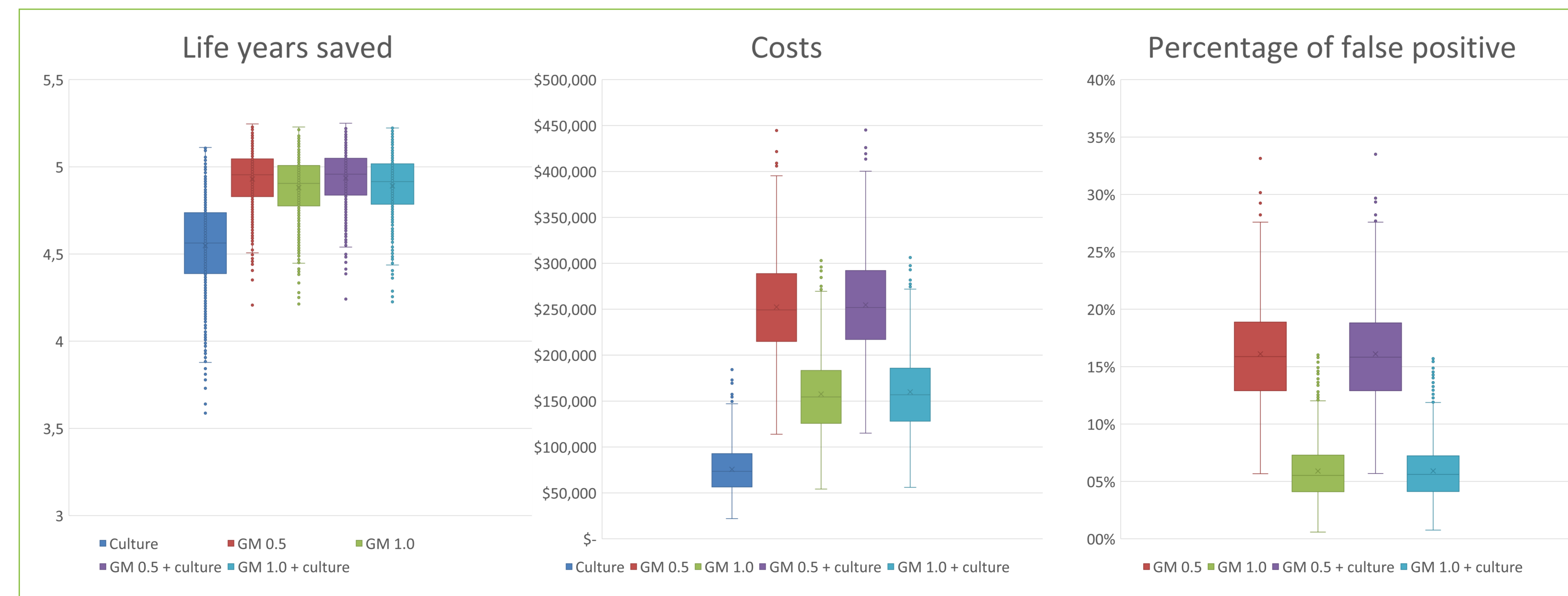


Figure 1. Boxplot of 1,000 simulations of years of life gained, costs and percentage of false positives, according to each diagnostic strategy for invasive aspergillosis with bronchoalveolar lavage

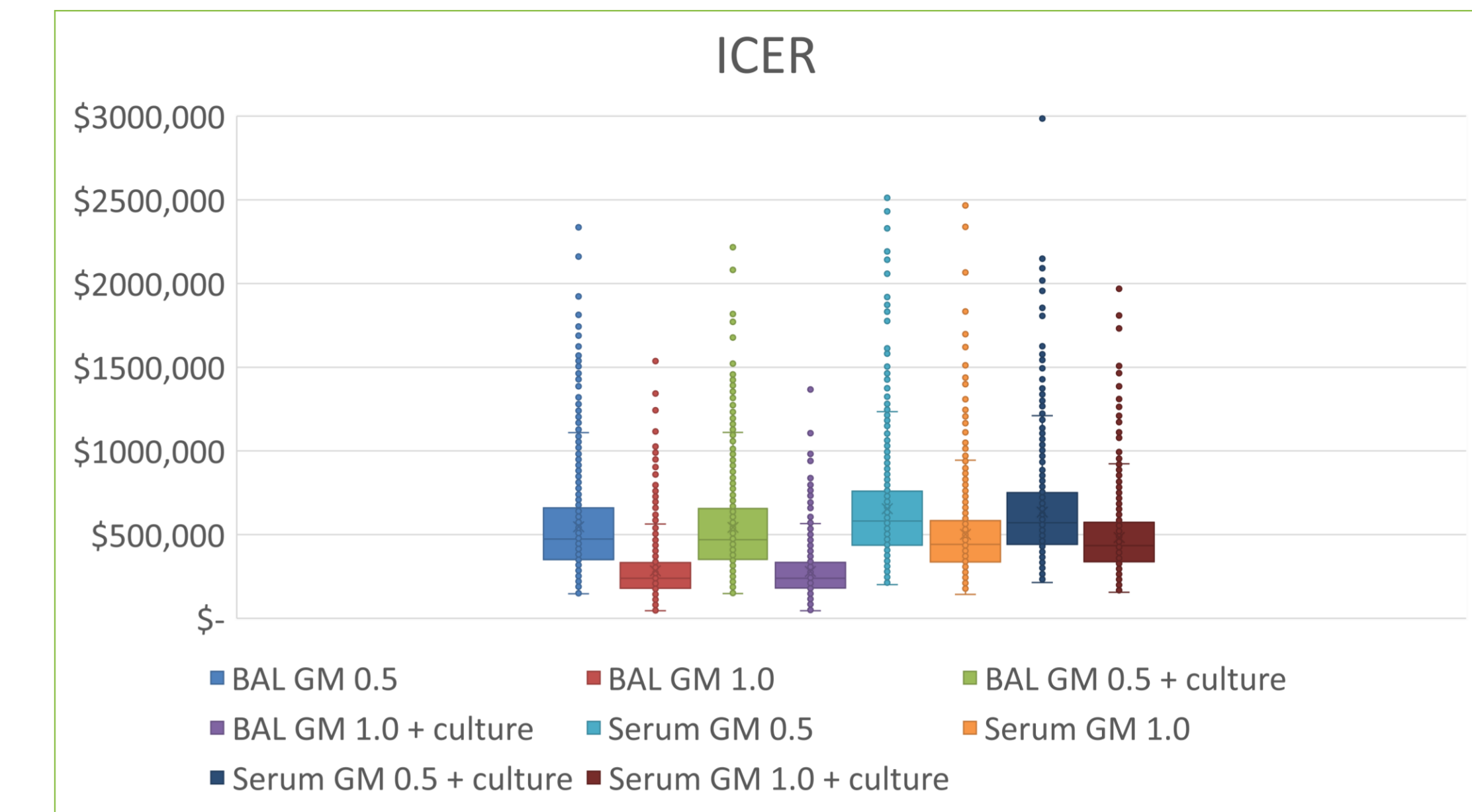


Figure 2. Incremental cost-effectiveness ratio of diagnostic strategies

Bronchoalveolar lavage	Culture	GM 0.5	GM 1.0	GM 0.5 + culture	GM 1.0 + culture
Cost (US\$)	\$ 76.00	\$ 254.53	\$ 157.69	\$ 256.87	\$ 160.03
Life years gained	4.54	4.92	4.88	4.93	4.89
Unnecessarily treated	0.0%	16.0%	5.9%	16.0%	5.9%
Serum	Culture	GM 0.5	GM 1.0	GM 0.5 + culture	GM 1.0 + culture
Cost (US\$)	\$ 53.79	\$ 188.75	\$ 145.49	\$ 191.09	\$ 147.83
Life years gained	4.77	5.01	4.99	5.02	5.00
Unnecessarily treated	0.0%	13.4%	8.9%	13.4%	8.9%

Table 1. Results of costs, years of life gained, percentage of patients unnecessarily treated and ICER of the galactomannan test

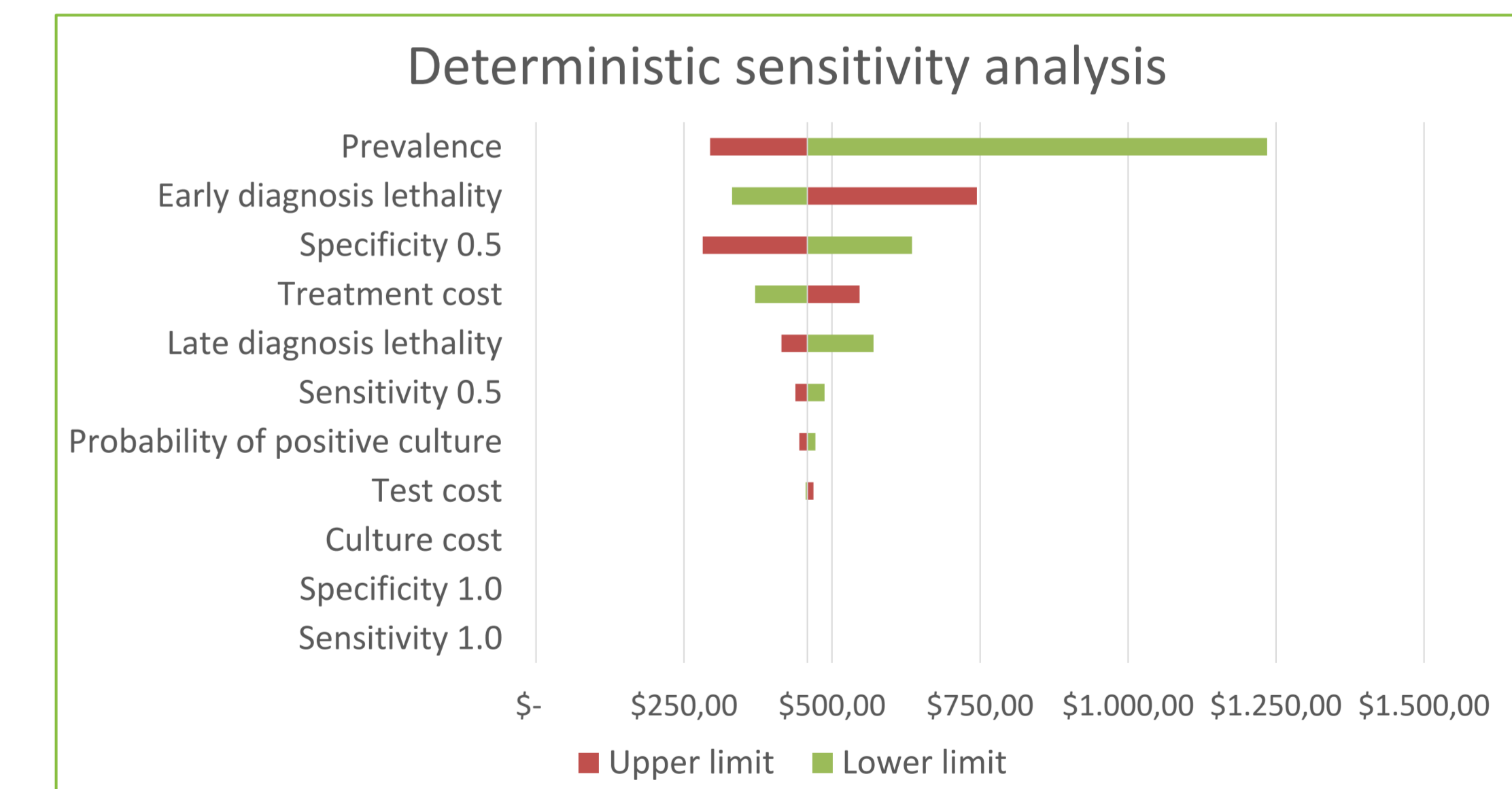


Figure 3. Tornado diagram of the deterministic sensitivity analysis of the parameters used in the analysis of the GM 0.5 strategy and culture, examination performed in bronchoalveolar lavage.

References

1. Walker BS, Schmidt RL, Tantravahi S, Kim K, Hanson KE. Cost-effectiveness of antifungal prophylaxis, preemptive therapy, or empiric treatment following allogeneic hematopoietic stem cell transplant. *Transpl Infect Dis.* 2019;21(5).
2. Mycoses Study Group. Detection of Galactomannan in Broncho-Alveolar Lavage Fluids by Platelia *Aspergillus* Enzyme Immunoassay (BioRad Laboratories, USA and Sanofi Diagnostics, France). 2011 Jan.

