

COST-EFFECTIVENESS OF RALTEGRAVIR ORAL GRANULES PROPHYLAXIS IN NEONATES TO PREVENT HIV MOTHER-TO-CHILD TRANSMISSION IN BRAZIL

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BACKGROUND

- High resistance to nevirapine was previously reported in Brazil;
- Alternative antiretroviral is needed for high-risk neonates exposed to HIV mother-to-child transmission (HIV MTCT);
- Raltegravir oral granules formulation 100mg¹ was FDA-approved for this population.

OBJECTIVE

This study aimed to evaluate the cost-effectiveness of raltegravir oral granules prophylaxis compared to nevirapine to prevent HIV MTCT in Brazil in high-risk neonates with gestational age ≥ 37 weeks.

METHODS

- Scarce evidence: challenge of conducting clinical trials for this population;
- Intervention's short duration (4 weeks): decision tree model developed;
- Brazilian Unified Health System (SUS) perspective;
- Parameters: (1) purchase costs; (2) resistance to raltegravir and nevirapine obtained from published literature; (3) probabilities of HIV infection for both antiretrovirals with and without resistance assumed from expert panel information;
- RAL and NVP are components of combined antiretroviral preventive schemes: uncertainty about the impact of resistance to a specific component on the efficacy of the whole scheme;
- Gamma distributions were used for costs and beta distributions for probabilities;
- Monte Carlo probabilistic sensitivity analysis with 1000 iterations evaluated the uncertainty in the model.

Table 1. Parameter

Parameter	Base	Lower	Upper	Ref.
Costs (I\$)				
Standard NVP containing prophylaxis (AZT + NVP)	25.27	20.22	30.33	2
RAL containing prophylaxis (AZT + 3TC + RAL)	455.56	364.45	546.67	2
Probabilities				
Resistance to NVP	0.38	0.19	0.53	3-5
Resistance to RAL	0.01	0	0.16	5-8
HIV MTCT with NVP resistance	0.5	0	1	9*
HIV MTCT with RAL resistance	0.5	0	1	9*
HIV MTCT without NVP resistance	0.05	0	0.10	9*
HIV MTCT without RAL resistance	0.05	0	0.10	9*

*Assumed considering specialist's panel: Panel on Treatment of HIV During Pregnancy and Prevention of Perinatal Transmission. Recommendations for Use of Antiretroviral Drugs in Transmission in the United States (9). NVP, nevirapine; AZT, zidovudine; 3TC, lamivudine; RAL, raltegravir; MTCT, Mother-to-Child Transmission; Ref., references; I\$, international dollars. Costs = (Costs in Brazilian Reais/2.530).

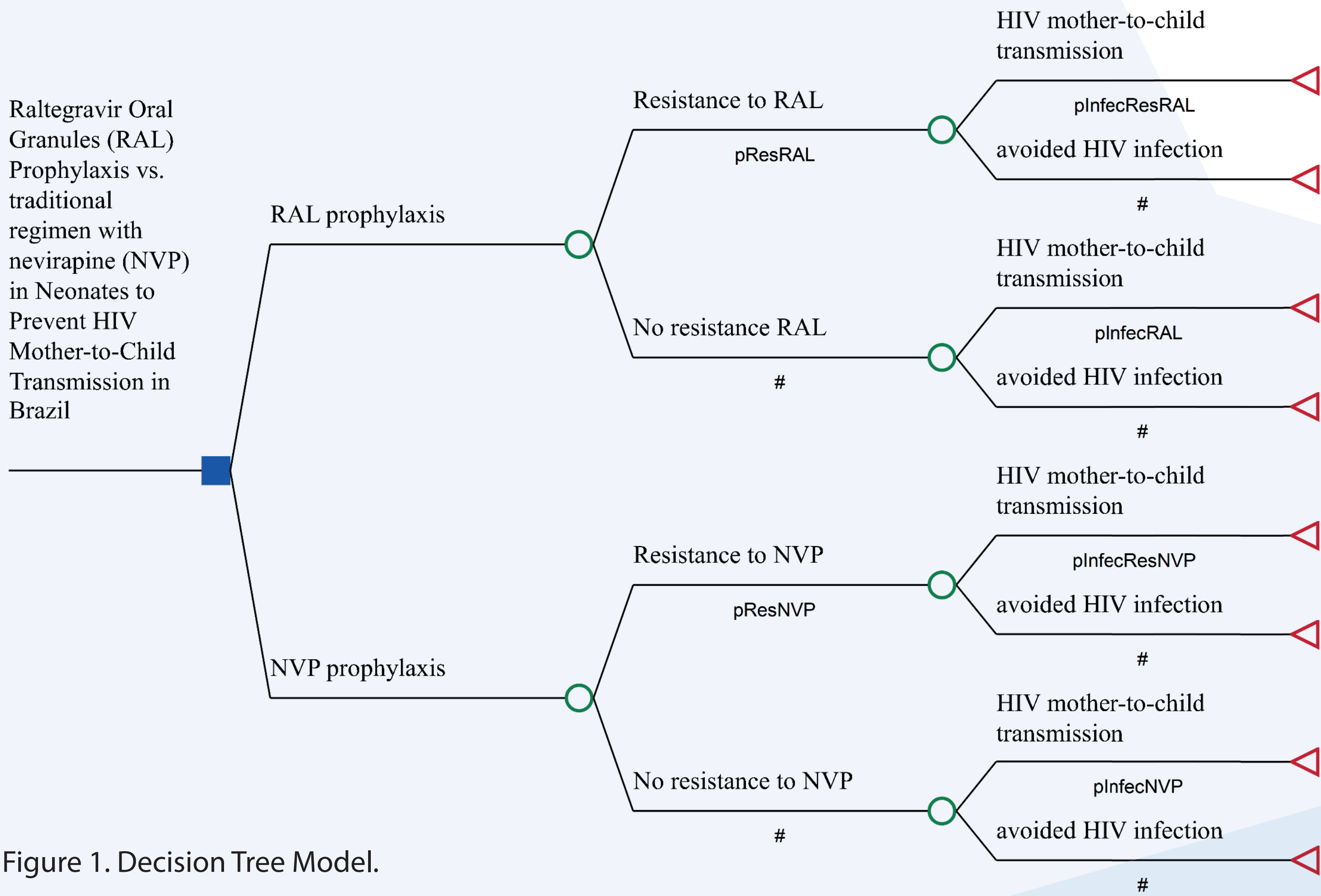


Figure 1. Decision Tree Model.

RESULTS

- The incremental cost of raltegravir prophylaxis in international dollars (I\$) was 430.29;
- Raltegravir prophylaxis was more effective than nevirapine, and the incremental cost-effectiveness ratio (ICER) resulted in I\$ 2,584.32 per avoided case of HIV infection in neonates in the base case scenario;
- Deterministic sensitivity analyses: both antiretrovirals' resistances were the most critical parameters.

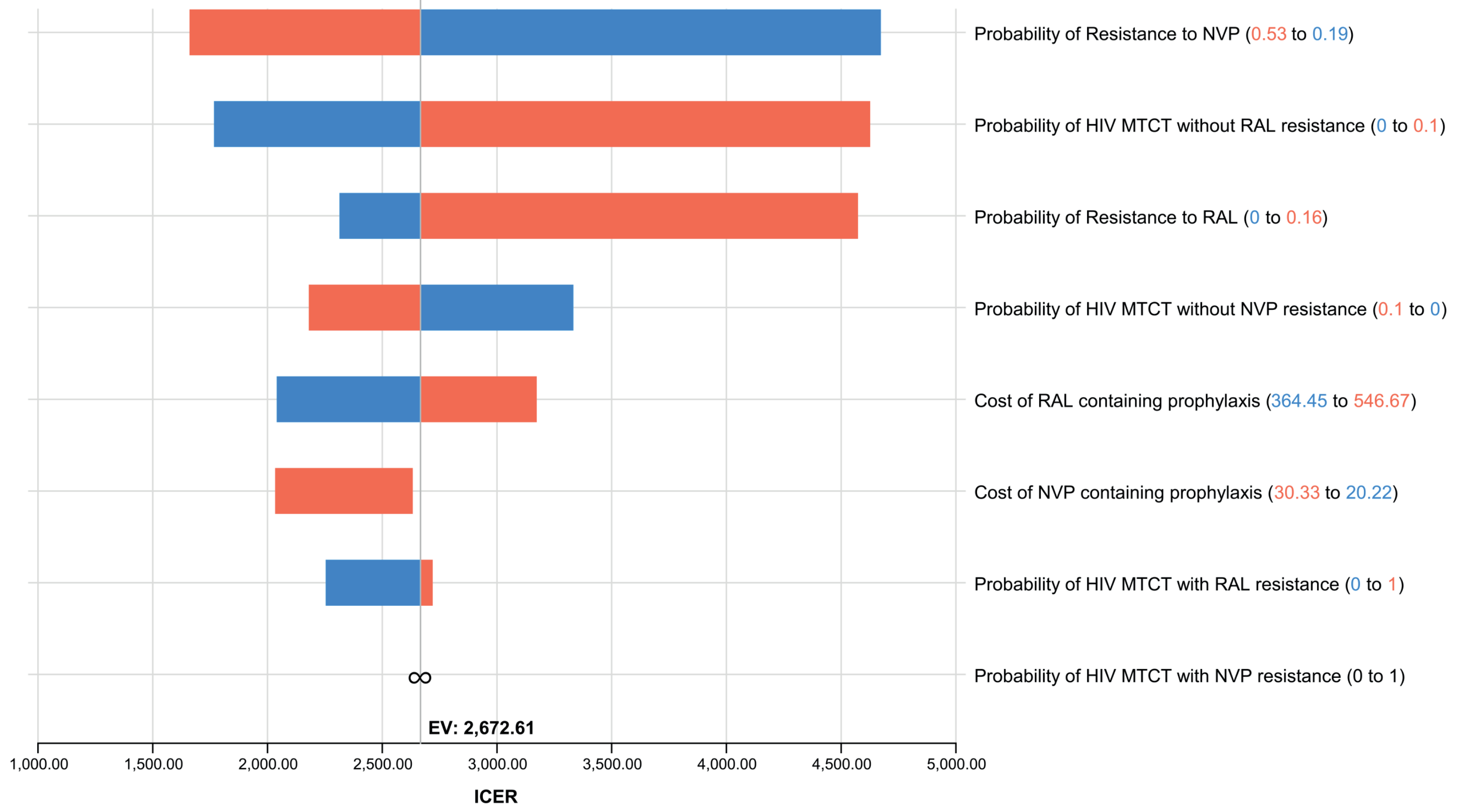


Figure 2. ICER Tornado diagram: RAL vs. NVP prophylaxis (WTP: 15,810.28)

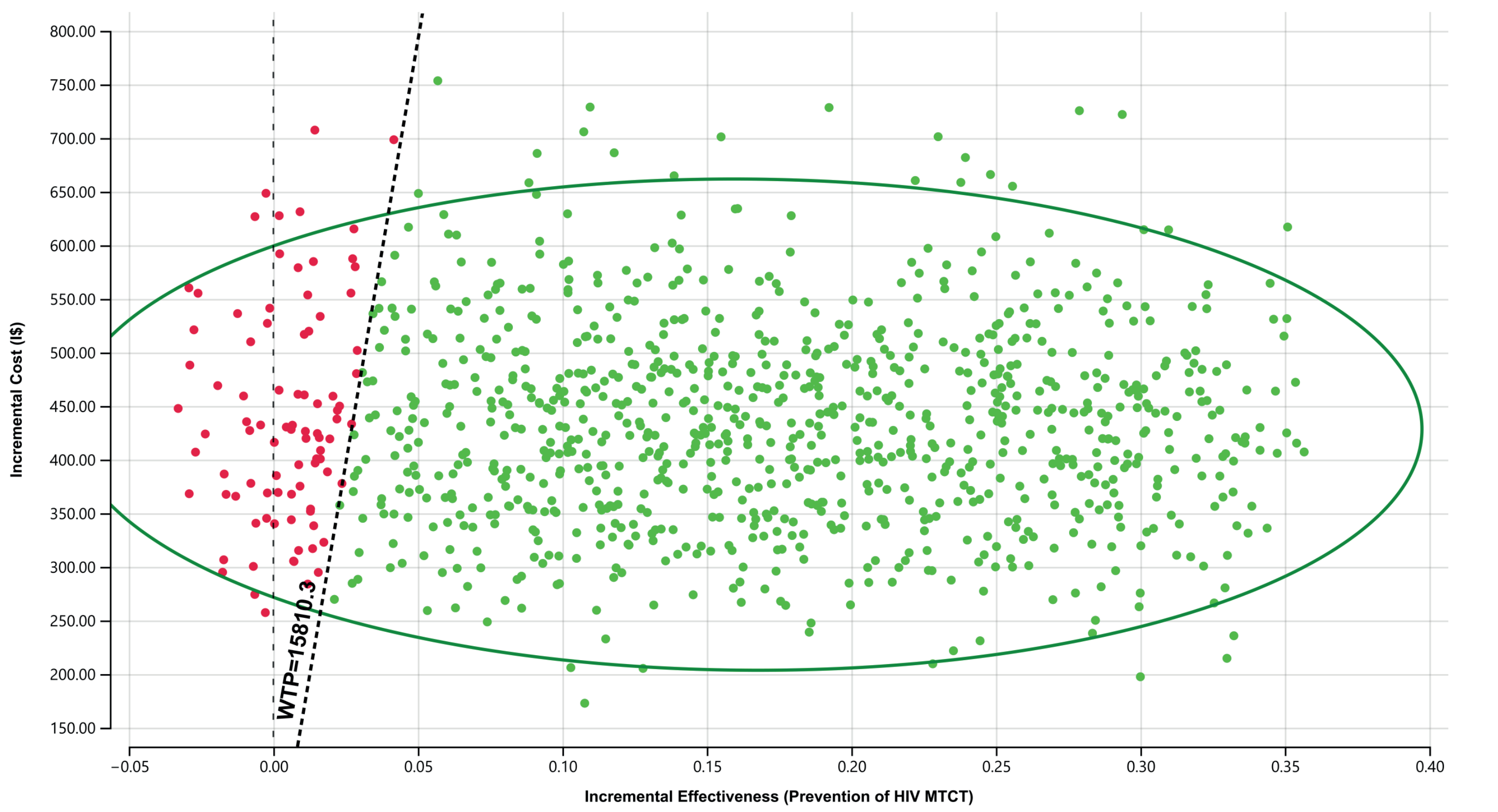


Figure 3. ICE Scatterplot: RAL vs. NVP prophylaxis.

CONCLUSIONS

From the SUS perspective, despite limitations due to parameter uncertainties for the specific population and considering the exploratory use of a willingness-to-pay threshold (I\$ 15,810.28), it would result in a 91% probability of cost-effectiveness for prophylaxis with raltegravir oral granules.

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