

Cost-Effectiveness of Screening Strategies for cCMV: The U.S. Healthcare Perspective

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Introduction

- Screening programs to identify newborns with cCMV offers opportunities to initiate antiviral therapy to decrease risk of hearing loss
- Previous cost-effectiveness analysis lack key sensitivity analyses

Methods

1. Decision analytic model comparing the 3 screening strategies for a theoretical cohort of 1000 newborns over 2 time horizons
2. Costs (2022 \$U.S) discounted at 3%/year
3. Effectiveness (quality-adjusted life year, QALY) for moderate-severe hearing loss
4. Incremental cost-effectiveness ratio (ICER) using a willingness-to-pay threshold of \$100,000/QALY gained to evaluate cost-effectiveness

Results

Time Horizon	Screening Strategy	ICER (\$/QALY)
Life Expectancy	No screen	
	Targeted	11,578.25
	Universal	160,828.34
Childhood	No screen	
	Targeted	41,541.39
	Universal	490,688.22

- Targeted screening was optimal in 74% of Monte Carlo simulations
- Cost to prevent 1 case of moderate-severe CMV-related HL ranged \$218,780 (targeted) to \$1,791,021 (universal)

Discussion

- Decision supporting **targeted screening is robust** to uncertainty in model parameters.
- Cost-effectiveness of newborn cCMV screening is largely **dependent on efficacy of valganciclovir**.
- Our analysis complements findings of previous economic analysis from U.S societal perspective.

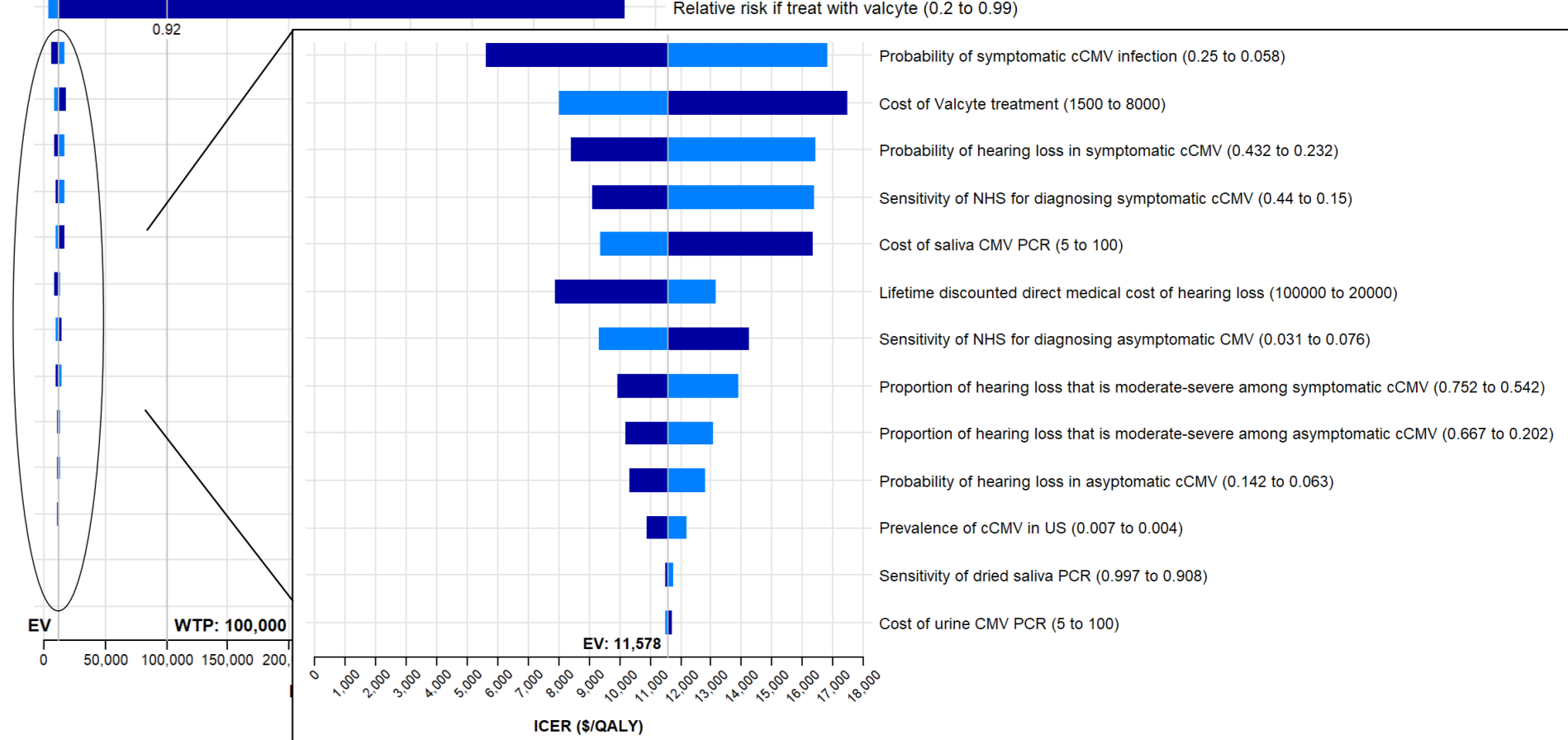
Targeted saliva CMV PCR screening triggered by failed newborn hearing screening is a cost-effective strategy from the U.S. healthcare system perspective.



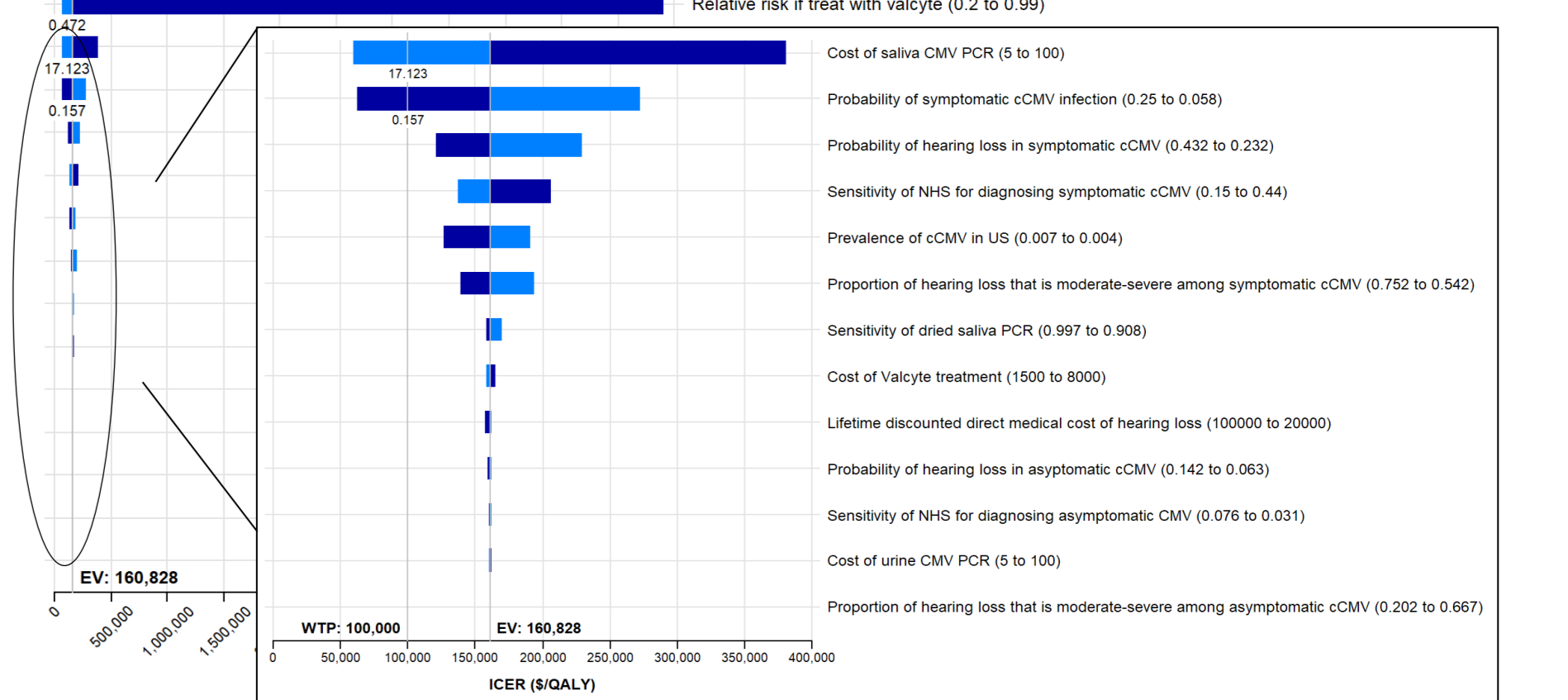
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Key Figures

Tornado Diagrams for 1-Way Sensitivity Analysis (Lifetime Horizon)

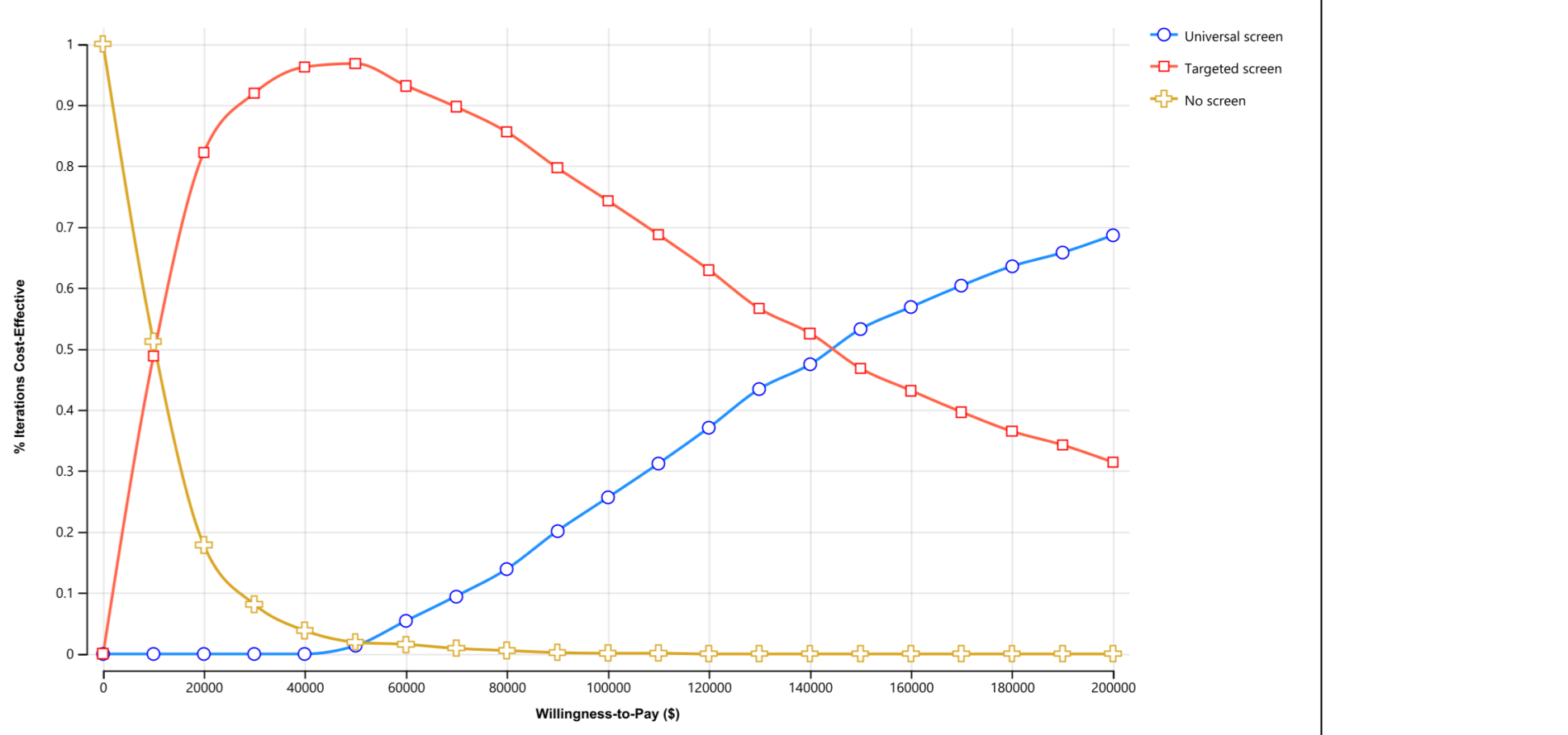


Targeted screening vs. No screening

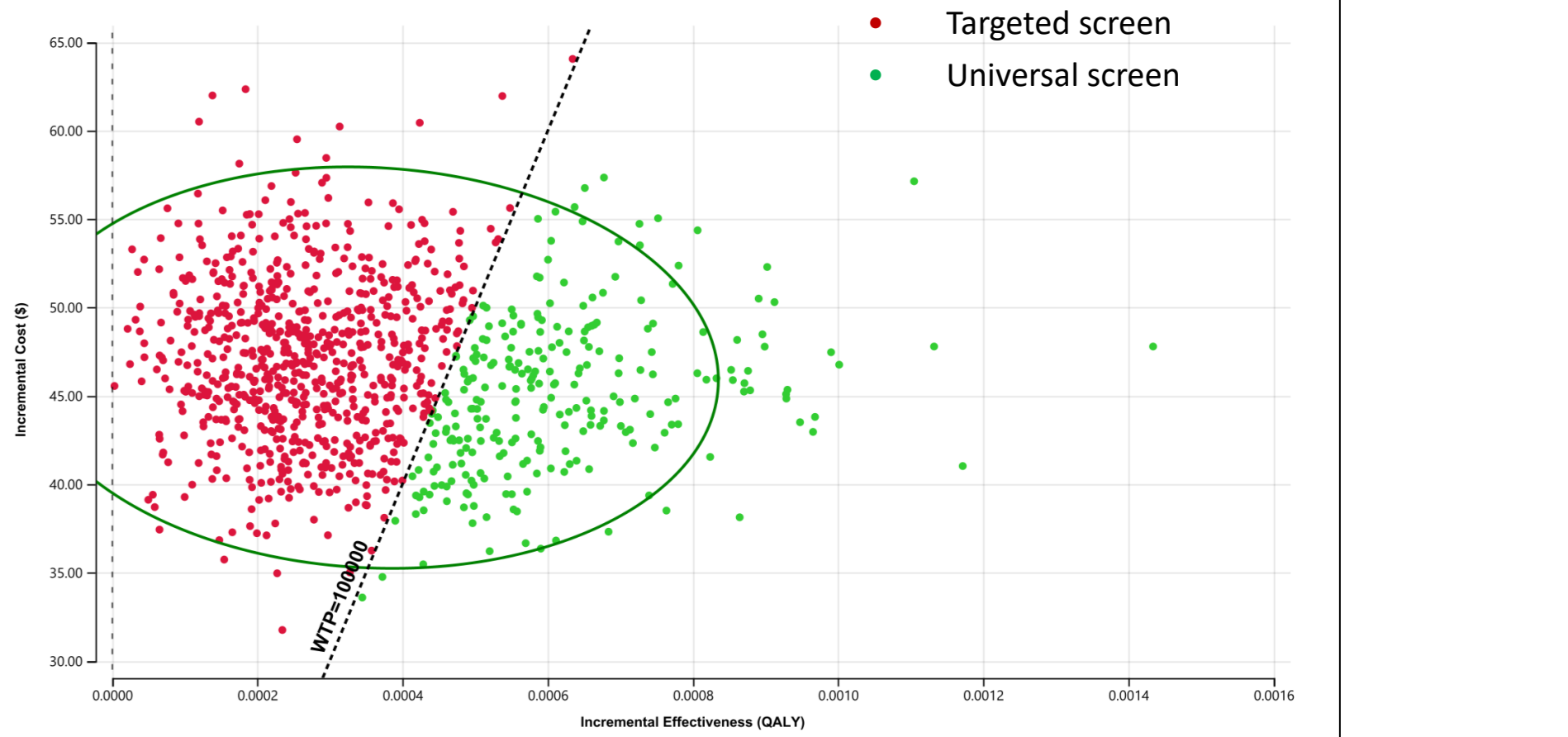


Universal screening vs. Targeted screening

Monte Carlo Simulations (Lifetime Horizon)



Optimal strategy based on WTP (1000 simulations)



ICER scatterplot: Universal vs. Targeted screening (1000 simulations)