

Public Health Impact of Nirsevimab for RSV Prophylaxis in Infants: Insights from the Paraguayan Healthcare System

Nicolás Armijo MSc¹, Carlos Balmaceda MSc¹, Macarena Vera MSc¹, Manuel Espinoza MD MSc PhD¹
Correspondence to: carlos.balmaceda@epsilonresearch.cl. ¹: Epsilon Research, Guardia Vieja 181, Providencia, Chile

What is the impact of Respiratory Syncytial Virus (RSV) in Paraguay?

- Globally, respiratory syncytial virus (RSV), infection is estimated to cause over 30 million cases in children aged five years or less, with less than 10% requiring hospitalization [1].
- In Paraguay, analysis of cases from sentinel centers revealed that 32% of the total cases were infants under 2 years old, with RSV being the most frequently detected pathogen, accounting for 68.9% of these cases [2].
- Several countries and scientific organizations have recommended nirsevimab for RSV prophylaxis for infants. It is essential for decision makers to evaluate the economic and health impact of RSV in Paraguay to recommend the incorporation of nirsevimab [3,4].

Objective

- This study evaluates the public health impact and related cost of nirsevimab implementation versus current clinical practice for preventing RSV in infants from the perspective of Paraguay's public healthcare system.

Methods

- Modeling:** A static decision-analytic model was used to assess monthly cohorts of infants under one year old over a one-year, capturing RSV-related health outcomes and costs of hospitalization, ICU admission, mechanical ventilation, emergency visits, and primary care visits. (Figure 1). The model accounted for the seasonal distribution of RSV cases and the age at the defined season. A one-year time horizon was considered.
- The analysis included high-risk preterm infants, preterm infants not eligible for palivizumab, and term infants, using efficacy data from the Phase 2b, MELODY, and HARMONIE studies.
- Comparators:** A universal immunization strategy with nirsevimab was compared to the standard of care (SoC), which uses palivizumab for high-risk infants.
- RSV-related events:** The risk of each health event is stratified by infant age and subgroup in months (0–11), using local epidemiological data and literature.
- Costs** were estimated by the construction of health services baskets that contemplate current management protocols established by Paraguayan public health facilities expressed as USD from 2024 (7,692.31 PYG = 1 USD).

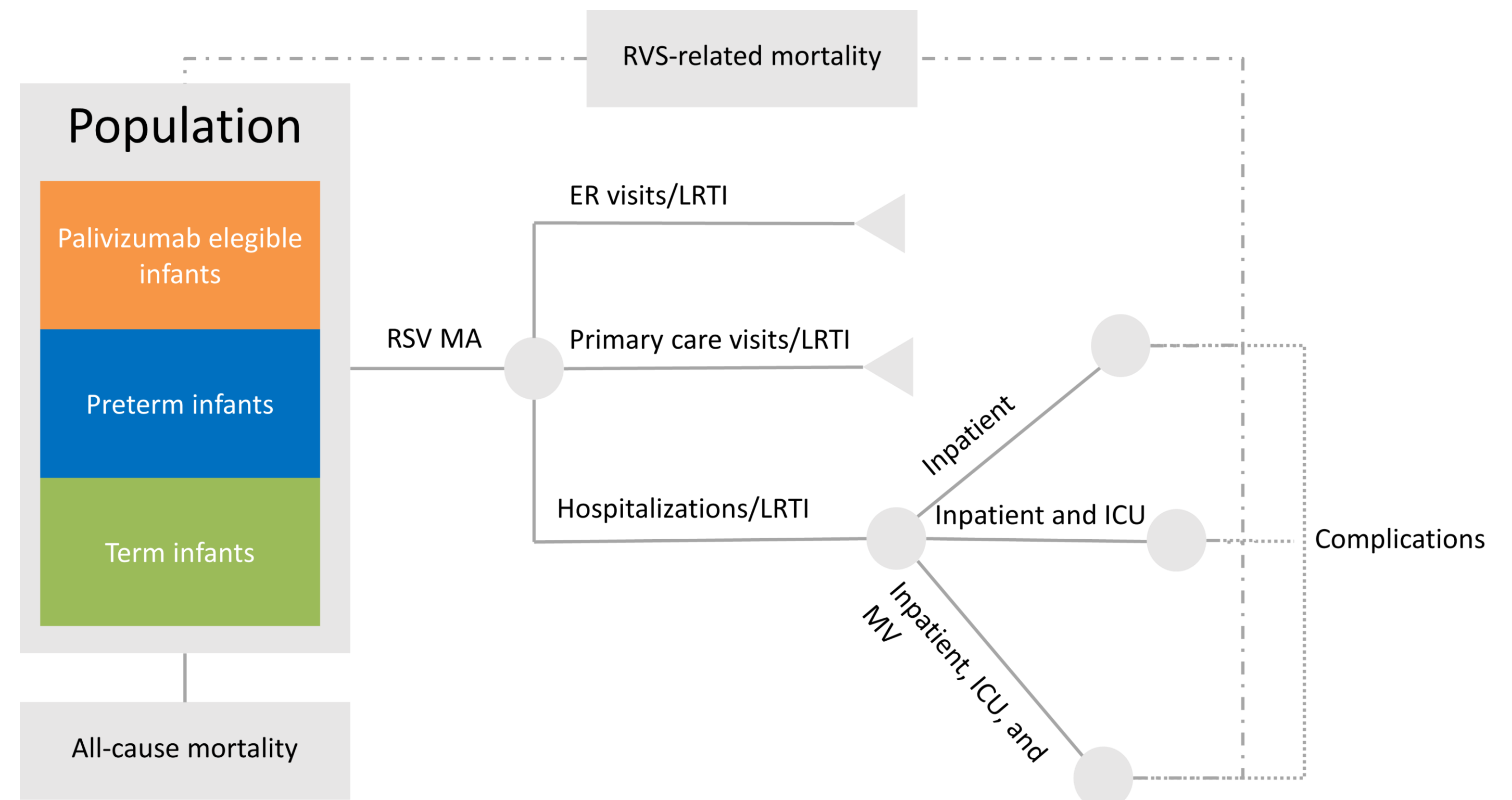


Figure 1. Decision model

RESULTS

Costs and consequences by subgroup

Table 1. Incremental costs per event avoided (USD)

	Overall population	Palivizumab-eligible	Preterm	Term
Incremental cost per hospitalization avoided	-\$435	-\$48,729	-\$1,972	\$1,847
Incremental cost per ICU avoided	-\$2,154	-\$286,695	-\$10,125	\$9,043
Incremental cost per mechanical ventilation avoided	-\$10,381	-\$1,343,044	-\$48,334	\$43,675
Incremental cost per emergency visits avoided	-\$268	-\$57,380	-\$1,861	\$1,075
Incremental cost per primary care visits avoided	-\$68	-\$7,975	-\$303	\$287

Key Messages

- Under the SoC, RSV leads to 5,333 hospitalizations, 1,338 ICU admissions, 278 cases requiring mechanical ventilation, 12,544 emergency visits, and 36,559 primary care visits, totaling USD\$34 million in costs
- Nirsevimab implementation reduces health events compared to SoC, preventing 2,330 hospitalizations, 623 ICU admissions, 129 cases requiring mechanical ventilation, 4,998 emergency visits, and 14,803 primary care visits.
- Nirsevimab results in total cost savings of USD\$14.4 million: USD\$7.5 million in hospitalizations, USD\$2 million in ICU admissions, USD\$1.4 million in mechanical ventilation, USD\$3 million in emergency visits, and USD\$700,000 in primary care visits.

Consequences and costs of overall population

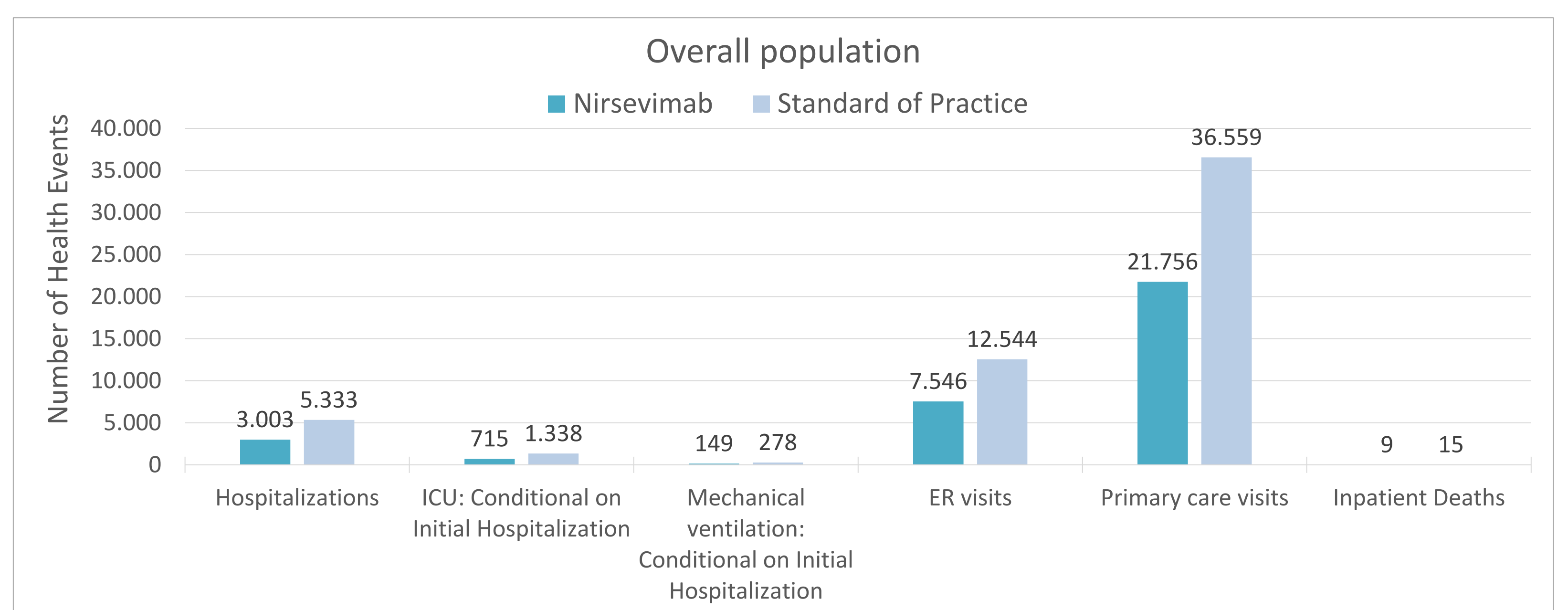


Figure 2. Number of health events

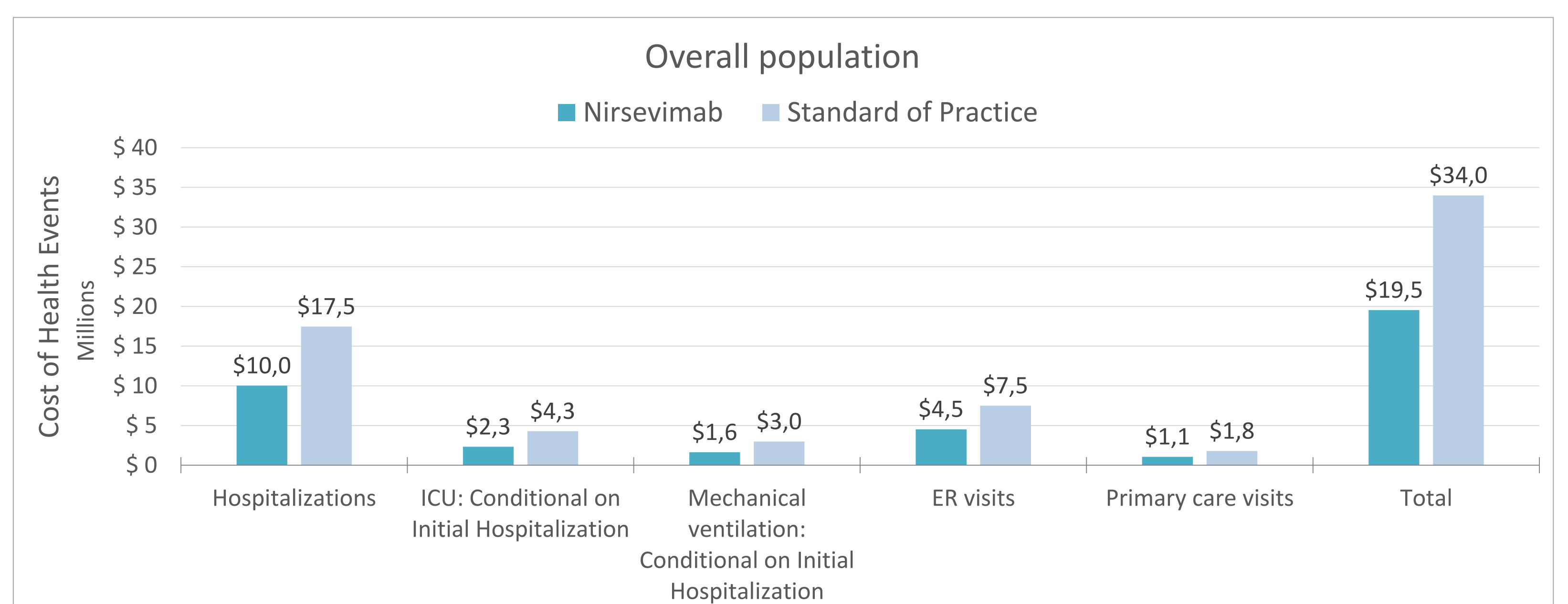


Figure 3. Costs of health events

Conclusions

The findings support including nirsevimab in the national immunization program, highlighting its potential to reduce the healthcare and economic burden of RSV in Paraguay.

References

- Jha A, Jarvis H, Fraser C, Openshaw PJM. Wellcome Trust–Funded Monographs and Book Chapters Respiratory Syncytial Virus. In: Hui DS, Rossi GA, Johnston SL, editors. SARS, MERS and other Viral Lung Infections. Sheffield (UK): European Respiratory Society © 2016.; 2016
- Dirección del Centro Nacional de Información Epidemiológica y Vigilancia de Salud. Distribución de virus respiratorios por año /s y semanas epidemiológicas Ministerio de Salud Pública y Bienestar Social: Dirección General Vigilancia de la Salud; 2024 [Available from: <https://sistemasdgs.mspbs.gov.py/sistemas/irap/#>].
- Jones JM, Fleming-Dutra KE, Prill MM, Roper LE, Brooks O, Sánchez PJ, et al. Use of Nirsevimab for the Prevention of Respiratory Syncytial Virus Disease Among Infants and Young Children: Recommendations of the Advisory Committee on Immunization Practices - United States, 2023. MMWR Morb Mortal Wkly Rep. 2023;72(34):920-5.
- Recomendación del CAVEL sobre incorporación de un anticuerpo monoclonal para inmunización pasiva contra el virus respiratorio sincitial en lactantes en el Programa Nacional de Inmunizaciones. Revista chilena de infectología. 2023;40(6):657-64.

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