Economic Impact of RSV Maternal Immunization [RSVpreF] in the Dominican Republic: A Cost-Utility Analysis

EE408

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OBJECTIVE

- To evaluate the cost-utility of maternal RSVpreF vaccination versus no intervention for the prevention of RSV infection in infants from the Dominican Republic from the perspective of the national healthcare system.

METHODS

Model Description

- A decision-analytic Markov model is developed based on Averin et al (2025)[1] and Huerta et al (2025)[2], to simulate the clinical and economic outcomes of RSV-LRTI among infants, and estimate the impact of introducing maternal RSVpreF vaccination against no vaccination.
- Clinical outcomes included outpatient, emergency department (ED), and hospital visits related to RSV infection, as well as RSV-attributable deaths.

Model Inputs

- **Population:** 137,946 newborns according to the National Office of Statistics[3].
- **RSV rates:** RSV hospitalizations rates are derived from Colomé-Hidalgo et al. (2025)[4]. To estimate the incidence in the outpatient and emergency settings, the systematic review by Heemskerk et al. (2024)[5] was used. Mortality was extracted from a study conducted in the Dominican Republic[6].
- **Vaccine efficacy:** Extracted from MATISSE study[7] with a linear wanning assumption to 0% after the first year.
- **Vaccine uptake:** 57% based on the average coverage rate for maternal Influenza vaccination in Dominican Republic reported by WHO, between 2021 and 2024[8].
- **Medical costs:** Medical care costs (2025, USD) were estimated based on expert's consensus from the following centers: CEDIMAT, Hospital General de la Plaza de la Salud and Hospital Metropolitano de Santiago. Length of stay for RSV is extracted from Packnett et al. (2023)[9] and McLaurin et al. (2016)[10]. As costs were derived in 2025, no adjustment for inflation was required. An exchange rate of 63.5 DOP = 1 USD was applied[11] (Table 1).

Table 1. Cost of RSV Infection by Age and Subgroup of Interest (USD)

Group of interest	Age in months			
	<1	1 - <2	2 - <6	6 - <12
Full Term (≥37 wGA)	$ 4,323	$ 4,323	$ 4,323	$ 4,323
Late preterm (32 - 36 wGA)	$ 11,313	$ 8,305	$ 8,059	$ 8,059
Early preterm (28 - 31 wGA)	$ 12,103	$ 12,429	$ 12,184	$ 12,034
Extreme preterm (≤27 wGA)	$ 14,701	$ 15,098	$ 13,888	$ 13,156

- **Vaccine price:** Extracted from the PAHO Revolving Fund public vaccine price list[12].

Analyses

Base case

- Cost-effectiveness was conducted from the healthcare system perspective. A 5% annual discount rate was applied to both costs and health outcomes, and the modeling horizon was set to life-expectancy.
- Willingness-to-pay (WTP) threshold was set at USD 10,875 per QALY (equivalent to the GDP per capita in the Dominican Republic).[13]

Sensitivity

- One-way sensitivity analysis (OWSA) was performed using ±25% variations in model parameters, and probabilistic sensitivity analysis (PSA) was conducted using Monte Carlo simulations.
- Scenario analysis explored the impact of vaccination coverage using minimum and maximum maternal Influenza coverage data reported by WHO.

RESULTS

Base-case results

- At an uptake of 57%, maternal RSVpreF vaccination would avert 4,707 (23.5%) of RSV cases, including 532 (30.7%) hospitalizations, 1,521 (22.6%) emergency visits and 2,654 (22.9%) from Outpatient visits (Table 2).
- RSV vaccination decreased medical expenditures by $2.75 million (28.9%), compared to no intervention. The cost of implementing a maternal vaccination strategy with RSVpreF would amount to USD $3.87 million, with a net incremental cost of $1.13 million compared to no intervention.
- Maternal vaccination with the bivalent RSVpreF vaccine showed to be cost-effective with an ICER of $4,890 per QALY gained, being 45% of the WTP threshold.

Table 2. Summary of Clinical and Economic Outcomes: Maternal RSVpreF Vaccination vs. No Intervention

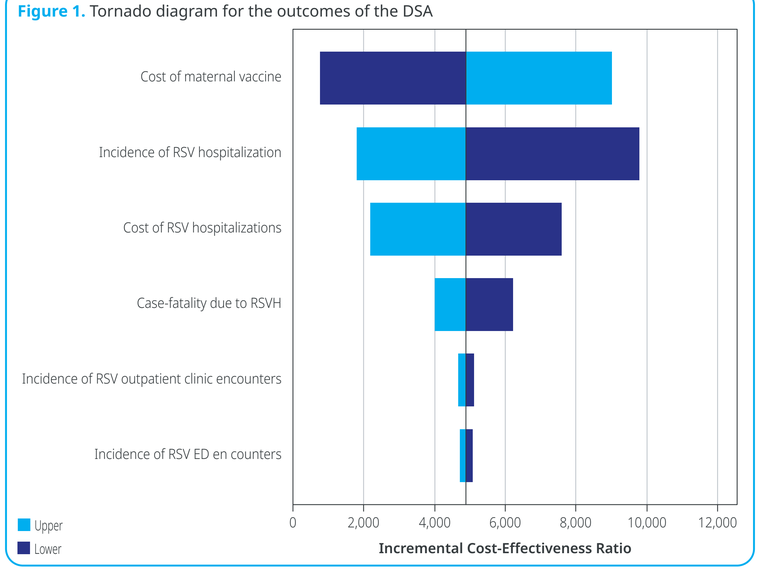
Outcome	RSVpreF Vaccination	No Intervention	Difference
Clinical Outcomes			
Total RSV cases	15,362	20,068	-4,707
Hospitalizations	1,203	1,735	-532
Emergency department visits	5,205	6,726	-1,521
Outpatient visits	8,954	11,608	-2,654
RSV-related deaths	18	26	-8
Life-years (discounted)	3,520,273	3,520,055	218
QALYs (discounted)	3,193,595	3,193,365	230
Economic Outcomes			
Direct medical costs (USD millions)	$ 6,76	$ 9,51	$ -2,75
Vaccine program cost (USD, M)	$ 3.87		$ 3.87
Total cost (USD, millions)	$ 10.64	$ 9,51	$ 1.13
Incremental Cost-Effectiveness Ratio (ICER)			
ICER (USD/QALY gained)	Cost-Effective		$ 5,171
ICER (USD/QALY gained)	Cost-Effective		$ 4,890

Note: Totals may differ slightly due to rounding

Sensitivity analysis

- One-way sensitivity analysis identified that cost-effectiveness results are sensitive to vaccine price, RSV hospitalization rates, and their costs (Figure 1). However, the ICER does not exceed the WTP threshold, showing the robustness of the results.

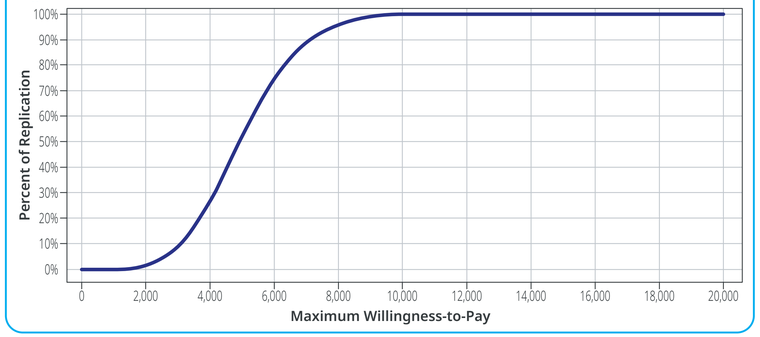
Figure 1. Tornado diagram for the outcomes of the DSA



- Probabilistic sensitivity analysis also confirmed the robustness of these findings, with an estimated probability of 100% of being cost-effective at $10,875 per QALY gained (1 GDP per capita, Figure 2).

RESULTS (cont)

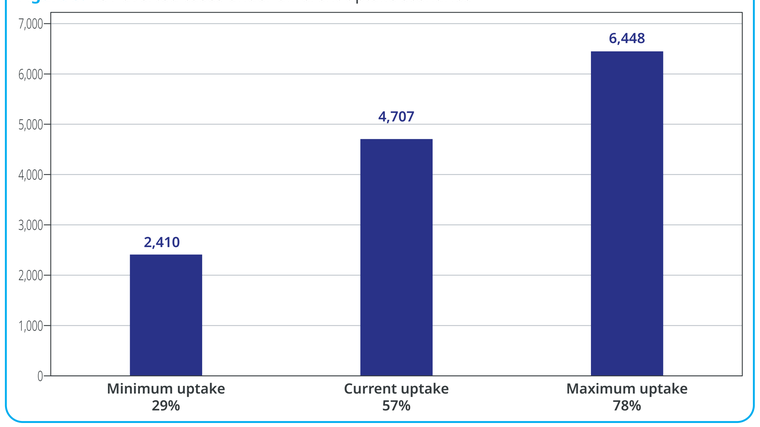
Figure 2. Cost-effectiveness acceptability curve



Scenario analysis

- Scenario analyses suggest that increasing the uptake would lead to more averted RSV cases and therefore a greater public health impact on the burden of RSV among infants in Dominican Republic.

Figure 3. RSV averted cases under different uptake scenarios



CONCLUSION

- In the Dominican Republic, maternal RSVpreF vaccination is a cost-effective strategy for reducing RSV-related morbidity, mortality, and healthcare costs. It offers substantial clinical benefits, especially for preterm infants, and contributes to equity by protecting vulnerable populations.
- Scenario analysis of varying vaccine uptake highlights the importance of improving vaccination rates to increase the protected population.

REFERENCES

1. Averin A, Quinn E, Atwood M, Weycker D, Shea KM, Law AW. Cost-effectiveness of bivalent respiratory syncytial virus Prefusion F (RSVpreF) maternal vaccine among infants in the United States. Vaccine 2025;58:127191. https://doi.org/10.1016/j.vaccine.2025.127191. **2.** Huerta JL, Kendall R, Ivkovic L, Molina C, Law AW, Mendes D. Economic and Clinical Benefits of Bivalent Respiratory Syncytial Virus Prefusion F (RSVpreF) Maternal Vaccine for Prevention of RSV in Infants: A Cost-Effectiveness Analysis for Mexico. Vaccines 2025;13:77. https://doi.org/10.3390/vaccines13010077. **3.** Estadística (ONE) ON de. Estadísticas Vitales. Oficina Nac Estad ONE n.d. https://www.one.gob.do/datos-y-estadisticas/temas/estadisticas-demograficas/estadisticas-vitales/ (accessed November 15, 2025). **4.** Colomé-Hidalgo M, Brea J, Debbag R, Ávila ML, Gallego M, Dauhajre M, et al. Epidemiología y estacionalidad del virus respiratorio sincitial en la República Dominicana: un análisis del 2013 al 2023. Rev Chil Infectol 2025;42:225–31. https://doi.org/10.4067/s0716-10182025000300127. **5.** Heemskerk S, van Heuvel L, Asey T, Bangert M, Kramer R, Paget J, et al. Disease Burden of RSV Infections and Bronchiolitis in Young Children (<5 Years) in Primary Care and Emergency Departments: A Systematic Literature Review. Influenza Other Respir Viruses 2024;18:e13344. https://doi.org/10.1111/irv.13344. **6.** Rojas-Fermin RA, Guzman-Marte AE, Sanchez-Marmolejos AS, Guzman-Ricardo F, Reyes Y, Calcano R. P-720. Are we aware of the RSV problematic in the Dominican Republic? Open Forum Infect Dis 2025;12:ofae631.916. https://doi.org/10.1093/ofid/ofae631.916. **7.** Simões EAF, Pahud BA, Madhi SA, Kampmann B, Shittu E, Radley D, et al. Efficacy, Safety, and Immunogenicity of the MATISSE (Maternal Immunization Study for Safety and Efficacy) Maternal Respiratory Syncytial Virus Prefusion F Protein Vaccine Trial. Obstet Gynecol 2025;145:157–67. https://doi.org/10.1097/AOG.0000000000005816. **8.** World Health Organization. WHO Immunization Data portal - Detail Page. Immun Data n.d. https://immunizationdata.who.int/global/wise-detail-page (accessed November 15, 2025). **9.** Packnett ER, Winer IH, Oladapo A, Wojdyla M. Risk of RSV-related hospitalization is associated with gestational age in preterm (born at 29–34 wGA) infants without outpatient palivizumab administration. Hum Vaccines Immunother 2023;19:2252289. https://doi.org/10.1080/21645515.2023.2252289. **10.** McLaurin KK, Farr AM, Wade SW, Diakun DR, Stewart DL. Respiratory syncytial virus hospitalization outcomes and costs of full-term and preterm infants. J Perinatol 2016;36:990–6. https://doi.org/10.1038/jp.2016.113. **11.** Banco Central de la República Dominicana. Mercado cambiario. Banco Cent Repúb Dominic n.d. https://www.bancentral.gov.do/ (accessed October 8, 2025). **12.** PAHO. PAHO REVOLVING FUND FOR ACCESS TO VACCINES PRICES FOR THE CALENDAR YEAR 2025 2025. **13.** GDP per capita (current US$) - Dominican Republic. World Bank Open Data 2024. https://data.worldbank.org (accessed December 10, 2025).

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