



Budget Impact Analysis of the Maternal RSVpreF Vaccine for the Prevention of Respiratory Syncytial Virus in Colombian Infants

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BACKGROUND

- Respiratory syncytial virus (RSV) is a leading cause of acute lower respiratory tract infections, hospitalizations, and infant mortality in Colombia¹.
- The healthcare system bears a heavy cost burden due to frequent hospital admissions and emergency visits, particularly during seasonal RSV peaks².
- With no widespread antiviral treatment, maternal immunization using the RSV prefusion F protein vaccine (RSVpreF) represents a promising strategy³. By transferring protective antibodies to the fetus, this vaccine offers passive immunity to infants from birth during their most vulnerable period, particularly the first six months of life⁴.

OBJECTIVE

- To estimate the budget impact of implementing the RSVpreF maternal vaccine (MV) in Colombia's national immunization program from the perspective of the national healthcare system over a five-year horizon.

METHODS

Model Description

- A cohort-based budget impact model is developed for comparing two strategies: (1) RSVpreF maternal vaccination (MV) and (2) no intervention (NI).
- The model included five consecutive annual birth cohorts (2025–2029) and followed each infant's health outcomes and costs for one year after birth. The analysis is done from the perspective of the Colombian health system.
- All costs are expressed in 2024 USD (1 USD = 4,020 COP).

Model Inputs

- Inputs for RSV incidence, vaccine effectiveness⁵, costs, and healthcare resource utilization were sourced from clinical trials, Colombian national databases⁶, PAHO vaccine pricing records⁷ and published literature.
- Outcomes included outpatient visits, emergency department (ED) visits, hospitalizations, and RSV-related deaths.
- A maternal year-round vaccination uptake of 86.7% is assumed, based on coverage rates for maternal influenza vaccination in Colombia.

Analyses

- One-way sensitivity analyses (OWSA) is conducted to assess model robustness under $\pm 25\%$ variations in key parameters, including RSV incidence and hospitalization rates.

RESULTS

Over five years, implementing RSVpreF maternal vaccination in Colombia would prevent:

- Approximately 180,000 RSV cases (33.44%) of outpatient and emergency visits and about 49.36% of cases requiring hospitalization. Additionally,
- Up to 540 (49.36%) infant deaths could be avoided over the study horizon.
- An estimated 29,253 cases in the first year and 36,827 by the fifth.

Budget impact

- Average Total vaccine program costs per year were estimated at USD 15.4 million, amounting to USD 77 million during the five-year period.
- Medical care savings due to prevented cases totaled approximately USD 60 million, with an average of USD 12 million per year. This results in a net budget impact of USD 17 million (3,4 million annually).
- Average annual cost per woman of reproductive age was estimated at USD 0.24, indicating an affordable investment at the population level (Table 1).
- The net annual budget impact remained relatively stable over the five years, while medical cost savings accrued progressively.

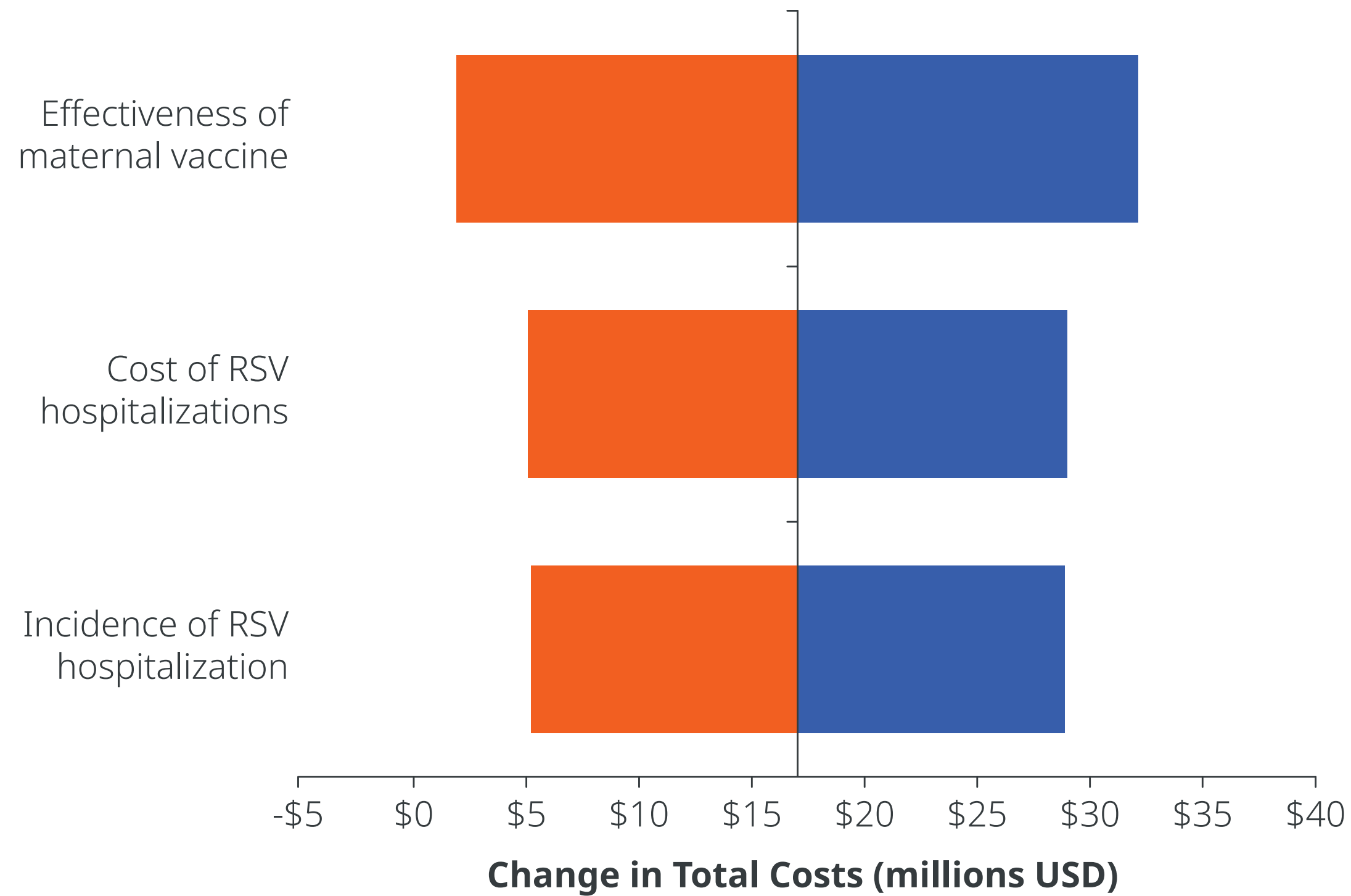
Table 1. Annual budget impact of RSVpreF vaccine in Colombia over the five-year period

	1st year	2nd year	3rd year	4th year	5th year
Economic outcomes (millions)					
Total savings in medical care	11,5	13,3	12,5	11,8	11,0
Intervention costs	17,4	16,4	15,4	14,5	13,6
Total costs	5,9	3,1	2,9	2,7	2,5
Budget impact					
Cost per woman of reproductive age per month	0,03	0,02	0,02	0,02	0,01
Cost per woman of reproductive age per year	0,42	0,22	0,20	0,19	0,18

- Sensitivity analyses revealed that changes in effectiveness of maternal vaccine, costs of RSV hospitalizations and its incidences were the main drivers of budget variation (Figure 1).

RESULTS (cont)

Figure 1. Sensitivity of the Difference in Total Costs (millions) to Changes in Parameter Values



CONCLUSION

- Implementing RSVpreF maternal vaccination in Colombia is associated with a moderate and manageable budget impact while significantly reducing the national burden of RSV-related disease.
- With an average cost of less than a quarter of a dollar per woman annually, the program provides substantial value for money by improving neonatal outcomes and reducing healthcare system pressures, particularly during RSV season.
- Given the significant clinical and economic benefits, RSVpreF maternal vaccination represents a cost-efficient strategy, supporting improved neonatal health outcomes at a modest investment.

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