IS UNIVERSAL NIRSEVIMAB COST-EFFECTIVE IN BRAZIL? A COMPARISON WITH MATERNAL RSV VACCINATION

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INTRODUCTION

- RSV is a major driver of severe respiratory illness and death in young children globally[1]
- In Brazil, RSV is a major driver of seasonal hospitalizations among infants, placing considerable pressure on the Brazilian Unified Health System (Sistema Único de Saúde, SUS) and generating substantial societal costs[2]
- Two effective preventive options:
  - RSV vaccine for pregnant women[3]
  - Nirsevimab (single-dose monoclonal antibody), directly to infants[4]

OBJECTIVE

This study evaluates whether universal nirsevimab use in infants is cost-effective relative to maternal RSV vaccination within the Brazilian health system

METHOD

- Decision-tree model
- Cohort: 2.5 million Brazilian newborns over one year
- Perspective: Public health system (Sistema Único de Saúde—SUS)
- Outcomes: RSV infections, hospitalizations, deaths, and disability-adjusted life years (DALYs)
- Model inputs sources: local national databases, published evidence, and proposed market prices (nirsevimab: USD 255.15; maternal vaccine: USD 39.08)
- Coverage: 50% for both strategies
- One-way and probabilistic sensitivity analyses tested parameter uncertainty

RESULTS

	Nirsevimab	Vaccine	Differences between interventions (NSV - Vaccine)
RSV cases	192,908	206,611	**-13,703**
RSV hospitalizations	33,025	35,989	**-2,964**
RSV outpatient care	159,667	170,384	-10,717
RSV deaths	216	239	**-23**
Life years lost (discounted)	4,421	4,888	-467
DALYs (discounted)	4,652	5,138	**-485**
DALYs (undiscounted)	16,711	18,471	-1,760
DALYs averted	485.40	485.40	—

Table 1. Clinical Outcomes of Universal Nirsevimab Administration Compared With Maternal RSV Vaccination in Brazil
RSV — Respiratory Syncytial Virus, DALY — Disability-adjusted life years. NSV — Nirsevimab.

	Nirsevimab	Vaccine	Differences between interventions (NSV - Vaccine)
Health system total costs	**$362,309,398.82**	**$76,345,885.31**	$285,963,513.51
Societal total costs	$380,726,294.50	$95,749,933.72	$284,976,360.78
Intervention cost	$343,028,834.90	$55,321,361.17	$287,707,473.73
Direct medical cost	$19,280,563.92	$21,024,524.14	-$1,743,960.22
Direct non-medical cost (transport)	$845,439.19	$912,058.94	-$66,619.75
Indirect costs (wage loss)	$17,571,456.49	$18,491,989.70	-$920,533.21
Incremental cost	$285,963,513.51	—	—
Incremental Cost per DALY averted	**$589,129.62**	—	—
Cost-effective nirsevimab dose price[1]	**$43.31**	—	—

Table 2. Costs* and Cost-Effectiveness of Universal Nirsevimab Administration Compared With Maternal RSV Vaccination in Brazil
* All costs were expressed in 2023 Brazilian reais (BRL) and converted to US dollars (USD) using an exchange rate of BRL 4.99 per USD 1.00
1 Brazil's cost-effectiveness threshold of USD 8,016 per DALY. RSV — Respiratory Syncytial Virus, DALY — Disability-adjusted life years. NSV — Nirsevimab.

CONCLUSIONS

- While nirsevimab offers superior health benefits, its current price prevents cost-effective use in Brazil
- Marked price reductions are essential for feasible and long-term public adoption
- These results carry important lessons for other middle-income nations considering similar RSV immunization programs

REFERENCES

1 Li Y, Wang X, Blau DM, Caballero MT, Feikin DR, Gill CJ, et al. Global, regional, and national disease burden estimates of acute lower respiratory infections due to respiratory syncytial virus in children younger than 5 years in 2019: a systematic analysis. Lancet 2022;399:2047–64. **2** Bianchini S, Silvestri E, Argentiero A, Fainardi V, Pisi G, Esposito S. Role of Respiratory Syncytial Virus in Pediatric Pneumonia. Microorganisms 2020;8. https://doi.org/10.3390/microorganisms8122048. **3** Kampmann B, Madhi SA, Munjal I, Simões EAF, Pahud BA, Llapur C, et al. Bivalent Prefusion F Vaccine in Pregnancy to Prevent RSV Illness in Infants. N Engl J Med 2023;388:1451–64. **4** Griffin MP, Yuan Y, Takas T, Domachowske JB, Madhi SA, Manzoni P, et al. Single-Dose Nirsevimab for Prevention of RSV in Preterm Infants. N Engl J Med 2020;383:415–25.

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