# Impact of Nirsevimab on the Health Burden and Costs of Respiratory Syncytial Virus (RSV) in the Infant Population From the Healthcare System in Argentina

EE538

Pastori LJ[1], **Silvestrini Viola C[1]**, Bardach A[1], Vain N[2], Espinola N[1]

1. Institute for Clinical Effectiveness and Health Policy (IECS), Argentina
2. Neonatology Department, Sanatorio de la Trinidad, Buenos Aires, Argentina.

## BACKGROUND

Respiratory syncytial virus (RSV) is a leading cause of acute lower respiratory tract infections and hospitalizations in infants worldwide.[1] In Argentina, seasonal RSV outbreaks place a significant burden on health outcomes and healthcare resources use.[2] Nirsevimab, a long-acting monoclonal antibody, has demonstrated efficacy in preventing RSV-related illness.[3-6] Maternal RSV vaccination was recently added to Argentina's immunization schedule, complementing palivizumab use in high-risk infants. However, some infants remain unprotected.

## OBJECTIVE

To evaluate the impact of Nirsevimab introduction on RSV disease burden compared with the current strategy of maternal vaccination (MV) plus palivizumab in Argentina's national health system.

## METHODS

**Methodology**
• Analytical model: Decision tree including RSV-related health states (outpatient events, hospitalizations, and deaths), for a cohort of 495,295 newborns.
• Population: Infant stratified into three subpopulations: (1) Palivizumab-eligible, (2) Preterm (born between 29 and 36 weeks and 6 days of gestational age, not eligible for palivizumab), and (3) Term infants (born at ≥37 weeks of gestational age, not eligible for palivizumab)
• Perspective: Argentine healthcare system.
• Time horizon: Single RSV season.
• Intervention strategy: Universal immunization with one dose of Nirsevimab — at birth for infants born during the RSV season (April–September) and at the beginning of the season for those born outside it.
• Comparator strategy: Seasonal maternal vaccination (March–August) plus palivizumab for eligible infants (May–August) (current immunization strategy).

**Data**
• Demographic and epidemiologic parameters were sourced from official databases, literature, and expert opinion. The cost of healthcare resources were sourced from the IECS unit cost database.[7]
• The costs are expressed in 2024 US dollars (USD).

**Outcomes**
• Number of immunized infants, outpatient events, hospitalizations, RSV-related deaths, and healthcare resource use savings.

**Figure 1. Analytical model**
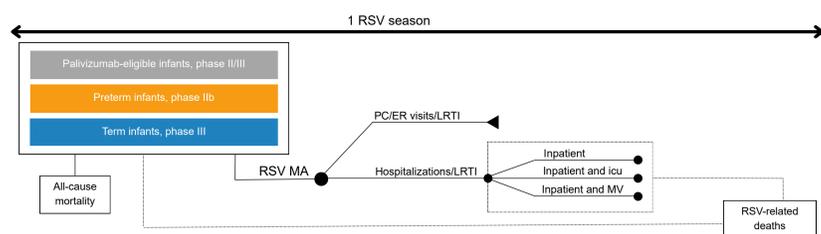


**Main assumptions**
• Palivizumab-eligible population: Non-inferiority of nirsevimab vs. palivizumab; 0% protective effect from maternal vaccination.
• Efficacy: No waning was assumed over the protection period for nirsevimab (5 months) or palivizumab (1 month), while for maternal immunization a waning of efficacy was considered from month 2 to month 6.
• Maternal immunization: Even distribution of vaccinated women between gestational weeks 32–36; antibody transfer of 0% during the first two weeks, 50% during the following two weeks post-immunization, and 100% from five weeks post-immunization.
• Coverage rate: The nirsevimab coverage rate was estimated based on routine infant vaccination rates (84.13%), while adherence to maternal vaccination was assumed to be equal to the pertussis (Tdap) vaccination rate during pregnancy (68.3%).
• Immunization costs, including acquisition, administration, and follow-up, were not included in the analysis.

## RESULTS

**Figure 2. Number of immunized infants**



Inmunization with nirsevimab — 385,617
Inmunization with MV+palivizumab — 168,298
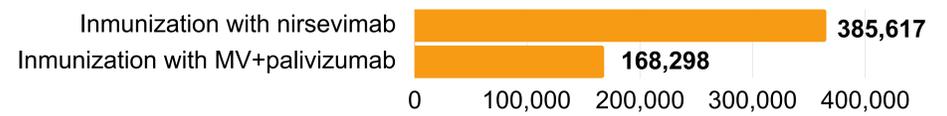
**Nirsevimab immunized 217,319 more infants than MV+palivizumab**

**Table 1. Breakdown of health outcomes**

| Clinical outcomes | Without nirsevimab | With nirsevimab | Difference |
|---|---|---|---|
| **Outpatient events** | 34,142 | 15,108 | -19,036 |
| **Hospitalizations (incl. ICU & MV)** | 8,956 | 3,534 | -5,422 |
| ICU | 791 | 330 | -460 |
| ICU with MV | 665 | 279 | -386 |
| **RSV-related deaths** | 147 | 66 | -80 |

Abbreviations. ICU: intensive care unit; MV: mechanical ventilation; RSV: Respiratory syncytial virus.

• The largest proportion of avoided RSV-related events (outpatient visits, hospitalizations, and deaths) was observed among term infants, followed by preterm infants, with minimal contribution from palivizumab-eligible infants.
• Implementing a universal Nirsevimab immunization strategy policy would reduce RSV-related deaths by 55%.
• The intervention would also lead to a significant reduction in RSV-related events:
  → 56% reduction in outpatient visits
  → 61% reduction in hospitalizations
• The reduction in RSV-related events also translates into an estimated $10 million savings in healthcare resource use for the health system.

## CONCLUSION

• Introducing Nirsevimab in Argentina might increase infant protection against RSV, addressing the gap for those currently unprotected under the existing immunization strategy.
• Its implementation could reduce the health and economic burden associated with healthcare resource use for RSV from the healthcare system perspective.
• While these findings highlight the potential value of incorporating Nirsevimab into the national immunization program to improve population-level protection and optimize the use of healthcare resources, they provide only a partial perspective on the overall outcomes. To support an evidence-based policy decision, it is essential to consider the broader context, including all immunization-related costs within both the intervention and comparator strategies.

## REFERENCES

1. Ferolla et al. (2019) Clinical and epidemiological impact of respiratory syncytial virus and identification of risk factors for severe disease in children hospitalized due to acute respiratory tract infection. Arch Argent Pediatr.
2. Dworkin et al. (2024) Cost of illness due to respiratory syncytial virus acute lower respiratory tract infection among infants hospitalized in Argentina. BMC Public Health.
3. Griffin et al. (2020) Single-Dose Nirsevimab for Prevention of RSV in Preterm Infants.
4. Drysdale et al. (2023). Nirsevimab for prevention of hospitalizations due to RSV in infants. New England Journal of Medicine.
5. Simões et al. (2023) Efficacy of nirsevimab against respiratory syncytial virus lower respiratory tract infections in preterm and term infants, and pharmacokinetic extrapolation to infants with congenital heart disease and chronic lung disease: a pooled analysis of randomised controlled trials. The Lancet Child & Adolescent Health.
6. Hammitt et al. (2022) Nirsevimab for prevention of RSV in healthy late-preterm and term infants. New England Journal of Medicine.
7. Palacios et al. (2019) HT3 Base de costos unitarios en salud en Argentina: una fuente de información continuamente actualizada para evaluaciones. Value Health