EE89

Budget Impact Analysis of Introducing Nirsevimab into the National Immunization Program for Infants in Korea

Eunah Jung[1,2], Shinyoung Park[1,2], Seongmin Yoon[3], Eunjin Bae[4], Minseok Gong[4], Hyun Woo Jeong[4], Hae Sun Suh[1,2,3]*

1 Department of Regulatory Science, Graduate School, Kyung Hee University, Seoul, Republic of Korea
2 Institute of Regulatory Innovation through Science (IRIS), Kyung Hee University, Seoul, Republic of Korea
3 College of Pharmacy, Kyung Hee University, Seoul, Republic of Korea
4 Sanofi-Aventis Korea, Seoul, Republic of Korea.

*Corresponding Author (Email: haesun.suh@khu.ac.kr)

Pharmaceutical Economics
Big Data Analysis and Policy Lab

KYUNG HEE UNIVERSITY

Key takeaway Introducing nirsevimab into Korea's National Immunization Program (NIP) could substantially reduce RSV infections and related economic burdens, resulting in annual savings of $0.86 million from a societal perspective.

OBJECTIVE

- To evaluate the budget impact of introducing Nirsevimab into Korea's NIP to prevent respiratory syncytial virus (RSV) infection in infants.
- To assess the potential medical and societal benefits of universal RSV prevention in infants.

CONCLUSIONS

Introducing nirsevimab into Korea's NIP can reduce RSV-related medical costs and caregiver productivity loss costs.

Despite higher immunization costs, it offers net societal savings and supports sustainable RSV prevention.

INTRODUCTION

- Respiratory syncytial virus (RSV) is a leading cause of lower respiratory tract infections (LRTI) in young children and contributes substantially to the global burden of pediatric morbidity and mortality.[1]
- Most cases are managed with supportive care, including oxygen therapy, fluid replacement, and antipyretics. Severe cases require hospitalization, and in more serious situations, intensive care and mechanical ventilation may be required.[2]
- Compared with palivizumab, which is limited to high-risk RSV infants and requires up to 5 monthly doses per RSV season, nirsevimab provides protection for all infants with a single injection and found to be cost-effective.[3]

METHODS

Model Description

- A budget impact analysis was conducted assuming NIP implementation of nirsevimab in October 2025, comparing the current strategy of palivizumab for high-risk infants aged <24 months with nirsevimab for all infants aged <12 months and high-risk infants aged <24 months.
- The number of palivizumab doses (≤5 doses) was applied based on the monthly birth distribution reflecting differential exposure to the RSV season.
- All costs are expressed in USD (1 USD = 1,300 KRW).

Analysis

- One-way sensitivity analyses (OWSA) were conducted to assess model robustness under ±20% variations in key parameters.
- Per-capita cost analysis was conducted to compare total costs—including immunization, medical, and productivity loss costs—between nirsevimab-immunized and non-immunized infants.

Model Inputs

- Cohort characteristics, such as population size, monthly birth rates, and other demographic parameters, were derived from the Korean Statistical Information Service (KOSIS).[4]
- RSV-related medical costs and hospitalization rates were estimated using nationwide claims data (2017-2021) from the Health Insurance Review and Assessment Service (HIRA).
- Caregiver productivity loss costs were estimated based on survey data using the validated Korean Work Productivity and Activity Impairment Questionnaire (WPAI), collected from caregivers with experience in RSV care (n=248).
- RSV incidence, efficacy, and coverage rates were obtained from the literature, and additional model inputs were informed by expert interview.[5-9]

Table 1: Model structure

Index	Note
Perspective	Societal perspective
Patient population	• All infants under 1 year and palivizumab eligible infants under 2 years • Subgroups were defined by health status: **- Palivizumab eligible infants**: aged ≤6 months at the start of the RSV season (October–March) who were preterm (born <32 weeks' gestation or born during the RSV season at <36 weeks' gestation), or aged ≤24 months with bronchopulmonary dysplasia or hemodynamically significant congenital heart disease **- Preterm infants**: preterm infants not eligible for palivizumab **- Term infants**: all other infants
Intervention	A single dose of nirsevimab for all infants aged <12 months and high-risk infants aged <24 months
Comparator	Current practice: Palivizumab (1–5 doses depending on month of birth) for high-risk infants aged <24 months
Time Horizon	1 year (2025-2026 RSV season)

RESULTS

Budget impact

Implementation of the NIP expanded immunization coverage and reduced RSV-related infections, hospitalizations, and outpatient visits. Despite an increase in immunization costs, overall reductions in disease management, caregiver burden, and postpartum care center costs resulted in a **net annual savings of $0.86 million** (Figures 1-2).

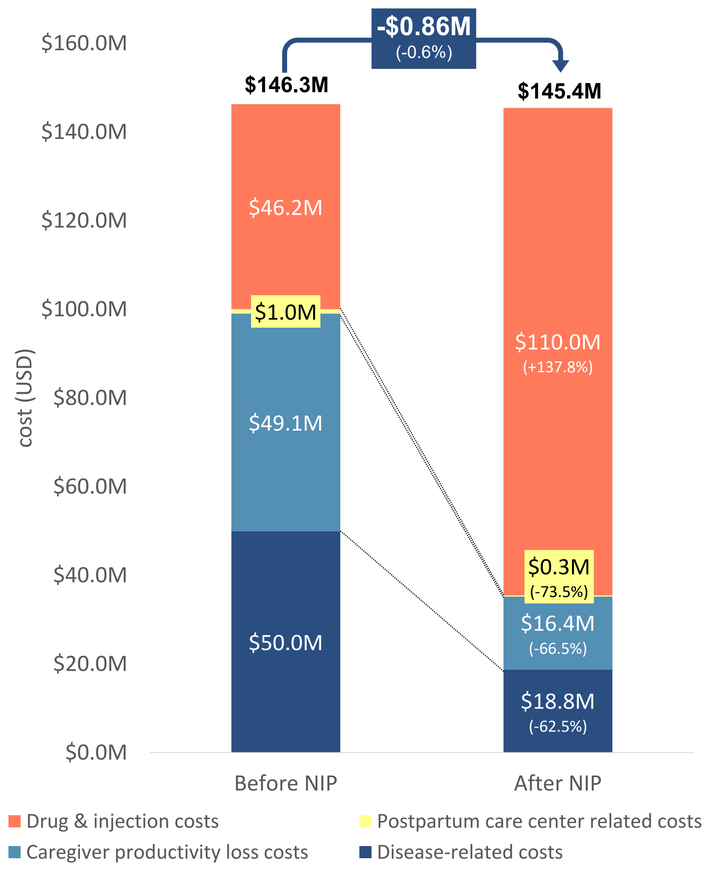

Figure 1: Change in total and component costs of before and after NIP implementation

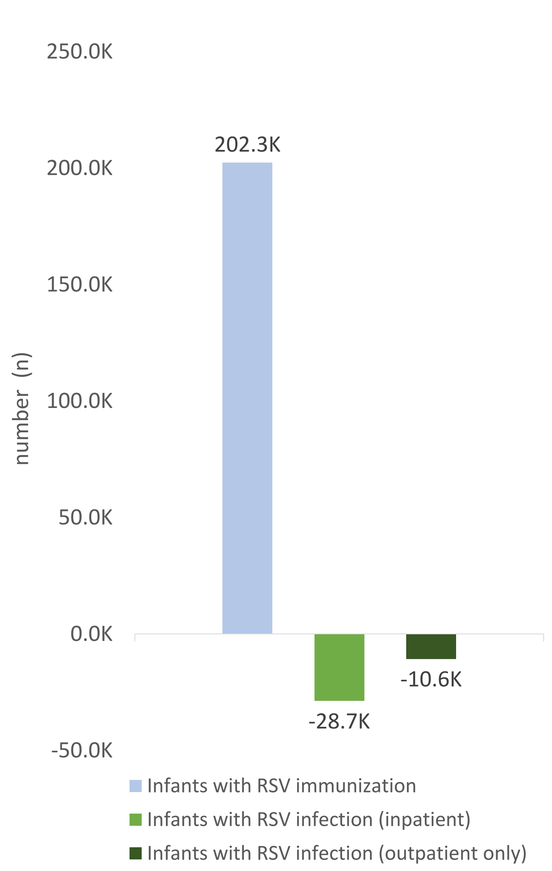

Figure 2: Change in number of infants before and after NIP implementation

Per Capita Cost

Nirsevimab immunization was associated with cost savings of $767 per infant compared with no immunization ($898 vs. $1,665; Table 2).

Table 2: Per capita cost comparison between nirsevimab-immunized and non-immunized infants (USD)

Group	immunization	Drug & Injection cost	Costs attributable to RSV infection: Medical cost & Productivity loss cost	Costs attributable to RSV infection: Probability[a)]	Average total cost
Nirsevimab-immunized	Successful	$520	-	77.30%	$898
	Failure	$520	$1,665[b)]	22.70%	
Non-immunized	-	-	$1,665[b)]	100%	$1,665
			Difference in per capita cost		**-$767**

a) Assumed based on the drug efficacy reported in previous studies.[9]

b) Based on the average medical cost per person derived from *Han et al., 2024* and the average caregiver productivity loss costs calculated from a survey (n=248).[10]

Sensitivity analysis

(Base-case values in parentheses)

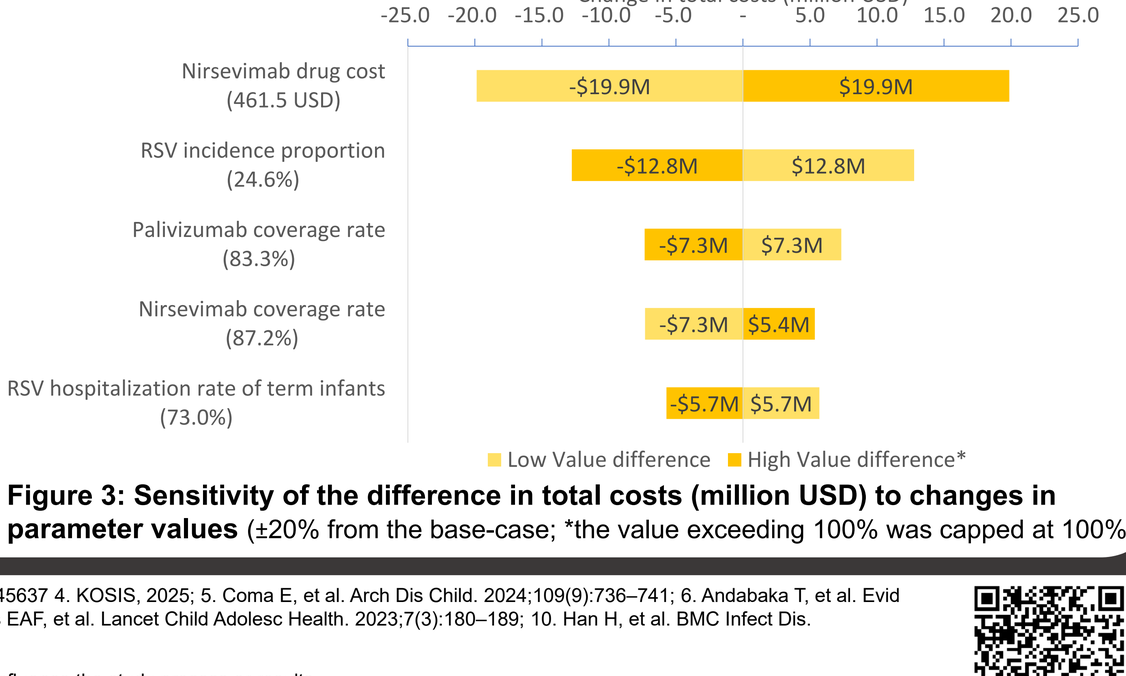

Figure 3: Sensitivity of the difference in total costs (million USD) to changes in parameter values (±20% from the base-case; *the value exceeding 100% was capped at 100%)

REFERENCES: 1. Mazur., et al, 2024; 2. Kenmoe S., et al. *PLoS ONE*. 2020;15(2):e0229357; 3. Han H, et al. Hum Vaccin Immunother. 2025;21(1):2545637 4. KOSIS, 2025; 5. Coma E, et al. Arch Dis Child. 2024;109(9):736–741; 6. Andabaka T, et al. Evid Based Child Health. 2013;8(6):2243–2376; 7. Kim GY, et al. Respir Res. 2020;21(1):191; 8. Kim S, et al. Epidemiol Health. 2025;47:e2025015; 9. Simões EAF, et al. Lancet Child Adolesc Health. 2023;7(3):180–189; 10. Han H, et al. BMC Infect Dis. 2024;24:1152

FUNDING STATEMENT: This research was supported by the Sanofi-Aventis Korea and AstraZeneca. The funder did not intervene in the research or influence the study process or results.

CONFLICTS OF INTEREST: Eunjin Bae, Min Seok Gong, and Hyun Woo Jeong are currently employed by Sanofi-Aventis Korea, which may potentially benefit from the publication of this manuscript. The remaining authors declare no competing financial interests.

ACKNOWLEDGEMENTS: This work was supported by a research grant from Sanofi-Aventis Korea and AstraZeneca. The funding source as an institution had no role in the study design, data collection, analysis, or interpretation of the study. We used the Health Insurance Review and Assessment Service-(M20250131010); however, we declare that the results do not reflect the positions of either the Health Insurance Review and Assessment Service or the Ministry of Health and Welfare in Korea.