Economic and Clinical Impact of Immunization with Nirsevimab Among All Infants in Their First RSV Season Against Standard of Care in Japan

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INTRODUCTION

Respiratory syncytial virus (RSV) is a common cause of lower respiratory tract infection in infants (<12 months of age).
In Japan RSV season lasts 5 months with a peak in July 2023.
Standard prevention strategy is limited to high-risk preterm infants

Nirsevimab provides protection against medically attended RSV infection for all infants. This product was launched in Japan in 2024.

OBJECTIVE

To compare seasonal burden (health events and associated costs) of RSV infections in Japan

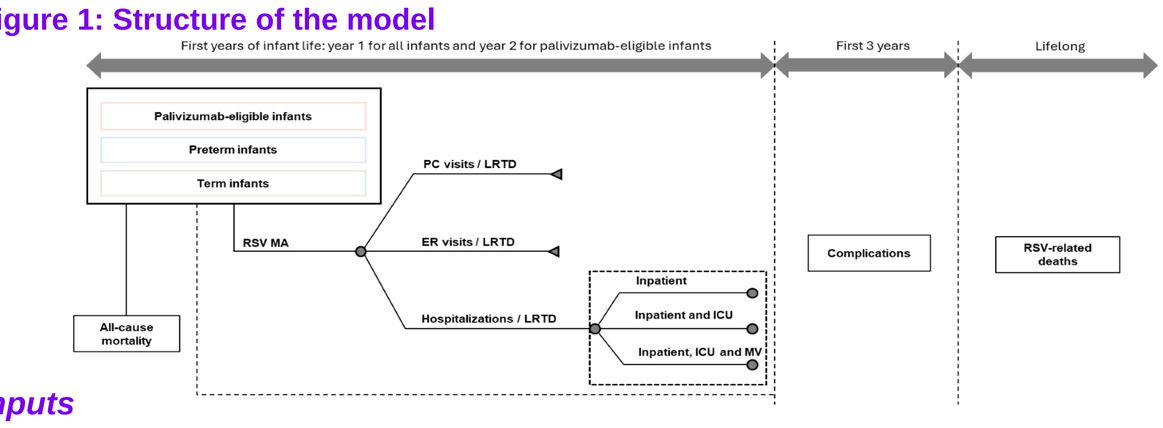
- **Standard of practice: palivizumab for palivizumab-eligible population and no prophylaxis for palivizumab-non-eligible population**
- **Universal immunization with nirsevimab, including term, preterm, and palivizumab-eligible infants**

METHODS

Model

- Static decision analytic model, used in a previous study [1], following 3 dimensions:
  - RSV seasonality and age at start of season: infants entering the model in the first month of RSV season or first month of life (if born during RSV season)
  - Distribution of RSV cases over the year
  - Rate of RSV-related healthcare resources

Figure 1: Structure of the model



Inputs

- Efficacy of nirsevimab derived from a prespecified pooled analysis of clinical trials [2] and of palivizumab from a meta-analysis of RCTs [16].
- Coverage rate of 90% for both strategies assumed based on real-world pediatric vaccine coverage data of NIP in Japan [3].
- Literature data for the occurrence of RSV-related hospitalizations [4,5,6,7,8], emergency room visits [9], outpatient visits [4], and wheezing [10].

Table 1: Unit costs

Event	Cost
Hospitalization [5]	¥391,649
ICU admission [11]	¥2,022,198
Emergency room visit [12]	¥10,613
Primary care [13]	¥2,910
Complication (wheezing) [13,14]	¥18,333*
Productivity loss [4,12,15]	¥41,228

*Recurrent wheezing cost in the 2nd and 3rd years adjusted by 2% discount rate

Figure 2: RSV infection rates

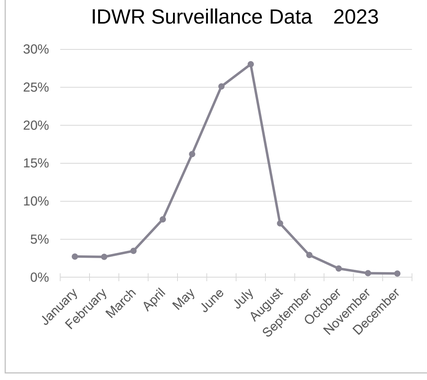


Figure 3: Hospitalization rates by month of birth

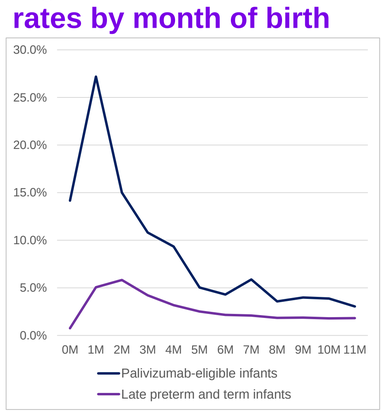


Figure 4: Outpatient visit rates by month of birth

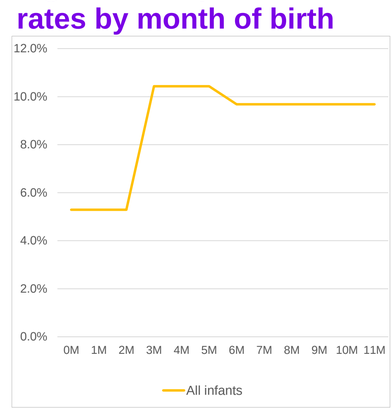
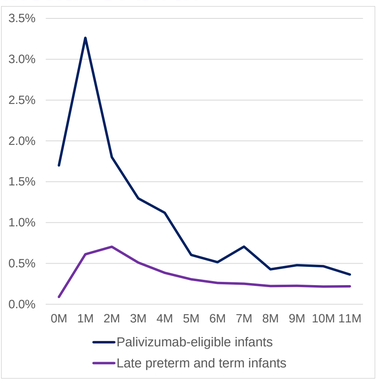


Figure 5: ER visit rates by month of birth



RESULTS

- Universal immunization with nirsevimab would reduce the number of health events by 51%.

Table 2: Number of RSV-related health events in both strategies

Event	Standard of practice	Nirsevimab	Reduction [%]
Hospitalizations (including ICU)	23,039	10,564	54.1%
Emergency room visits	2,784	1,276	54.2%
Outpatient visits	69,096	35,312	48.9%
Wheezing	17,418	7,986	54.2%
Total	**112,337**	**55,138**	50.9%

Figure 6: Comparison of disease burden cost in both strategies

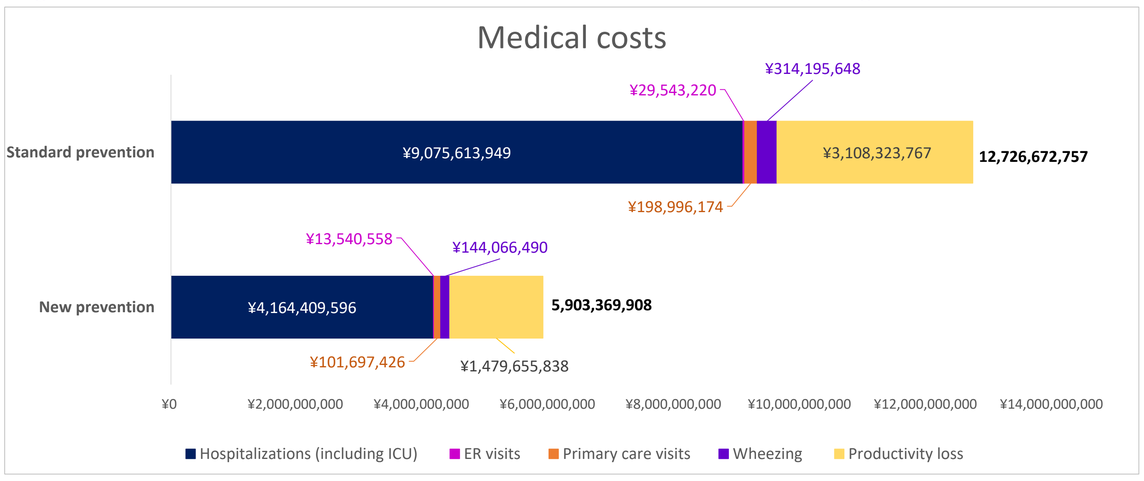
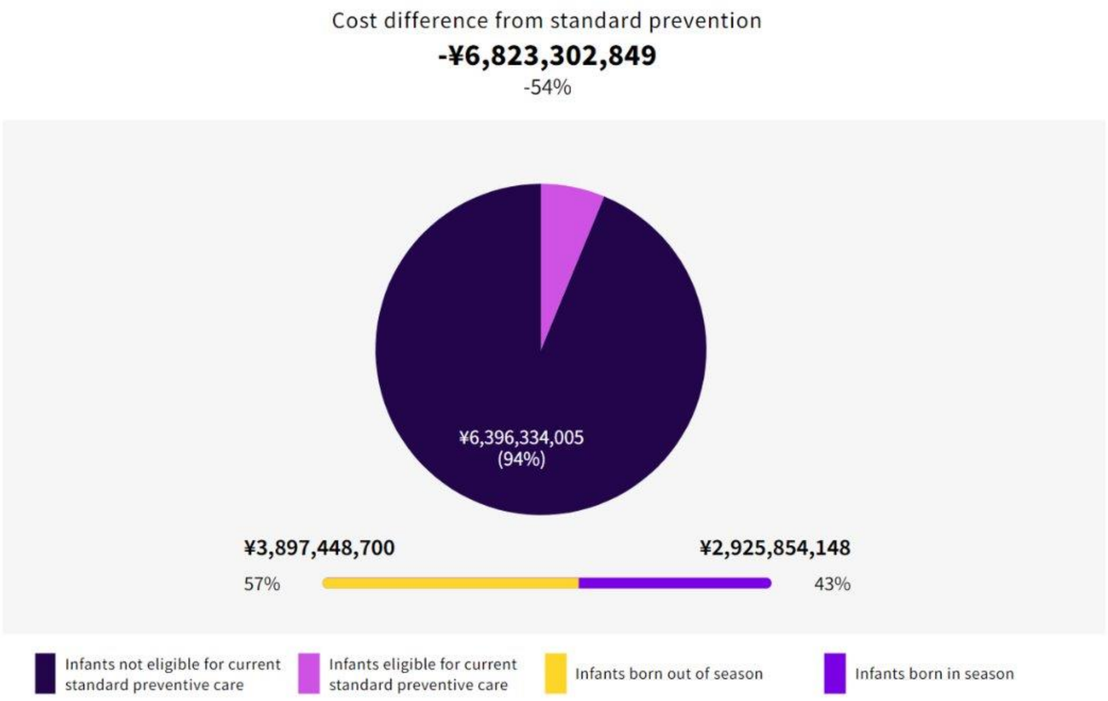


Figure 7: Shares of costs among patient groups



- Difference in health events corresponded to an economic saving of ¥6,823,302,849, which reduced disease burden costs by 54%.
- Reduction in hospitalizations is a key driver of the results.
- Majority of savings results from the use of nirsevimab among infants currently not eligible for standard preventive care.

CONCLUSION

- **Immunization of all infants with nirsevimab in Japan would substantially reduce the clinical burden of RSV and its associated costs.**
- **Highest reduction of costs would occur in the group of term and late preterm infants, who are not eligible for current standard preventive care.**

ABBREVIATIONS: ER, emergency room; ICU, intensive care unit; LRTD, lower respiratory tract disease; MA, medically attended; MV, mechanical ventilation; NIP, national immunization program; PC, primary care; RCT, randomized controlled trial; RSV, respiratory syncytial virus

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