Public Health and Economic Impact of RSVpreF Maternal Vaccination among Infants in Five Asian Countries

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INTRODUCTION

- Respiratory syncytial virus (RSV) is a common cause of respiratory tract infections in young children. In Asia, RSV associated hospitalisations can reach up to 124 per 1,000 among infants <1 years old[1]. The literature is scarce though on the RSV-associated public health burden in Asia
- A novel bivalent stabilized prefusion F subunit maternal vaccine (RSVpreF) offers protection against RSV-associated illnesses in infants[2]

OBJECTIVE

- This study estimates the clinical and economic burden of RSV among infants in five Asian countries—**Hong Kong, Malaysia, Philippines, Singapore and Taiwan**—and explores the potential impact of year-round maternal RSVpreF vaccination

METHODS

Model Overview

- A Markov model was used to project clinical and economic outcomes of RSV among infants under 1 year of age with a single dose of maternal RSVpreF vaccination compared to no vaccination
- The study population included all infants born during a 1-year period, followed through 12 months. Infants were stratified by gestational age in weeks (wGA) at birth
- Clinical outcomes consisted of medically-attended RSV stratified by care setting (i.e., hospital [H], physician's office [PO]) and RSV-related deaths (for hospital-admitted patients). Economic outcomes included only direct medical care costs

Model Parameters

- RSV-H and PO rates for Singapore, Taiwan and Malaysia were obtained from a modelling study using electronic records on primary care consultations and hospital admissions in Singapore[3]. Hong Kong and Philippines rates were taken from local studies[4,5]
- The distribution of RSV- H and PO by month of age was assumed to be the same as in the United States (US), based on Curns et al. (2022) and Lively et al. (2019), respectively[6,7]
- Case-fatality rate (CFR) for RSV-associated in-hospital mortality in Singapore and Taiwan was based on a global systematic literature review on RSV burden in children[8]. Local studies informed CFRs for Hong Kong, Philippines and Malaysia[9,10,11]
- Vaccine effectiveness was derived from MATISSE clinical trial data[2] and duration of protection beyond trial was extrapolated assuming linear waning and truncated at 9 months
- Vaccine uptake was assumed to reflect coverage levels observed in existing country-specific maternal vaccination programmes, ranging from 20% to 80% depending on the setting
- Costs of RSV-H and PO for Singapore were based on a local modelling study[3]. Taiwan's costs were drawn from a local cost-effectiveness analysis of RSV prophylaxis[12]. In Hong Kong, both RSV- H and PO costs were sourced from the Hospital Authority[13]. Hospitalization costs in the Philippines were informed by a systematic review and meta-analysis on pneumonia burden[14], while PO costs for both the Philippines and Malaysia were based on regional outpatient RSV estimates[15]. Malaysia's H costs were derived from a local study on RSV burden in children[16]
- All costs were reported in 2025 US dollars ($)

Analyses

- An annual discount rate of 3% was applied for both future costs and outcomes and the healthcare system perspective was adopted

RESULTS

Table 1: Clinical and Economic Burden of RSV without RSVpreF Vaccination Among Infants in Hong Kong, Malaysia, Philippines, Singapore and Taiwan

	Hospitalisations (H)	Physician's office (PO)	Deaths	Direct Medical Costs (US$)
Hong Kong	1,017	16,075	31	3.47million
Malaysia	10,535	164,051	147	58.75 million
Philippines	175,317	1,051,902	4,121	382.88 million
Singapore	709	11,088	1	3.93 million
Taiwan	4,214	30,464	9	36.54 million

- Without intervention, RSV was projected to cause 1,465,372 medically-attended cases annually among infants across the five countries with an estimated annual direct medical costs of US$485.57 million

Figure 1: Reduction (%) of RSV medically-attended cases with year-round maternal RSVpreF vaccination in Hong Kong, Malaysia, Philippines, Singapore and Taiwan*

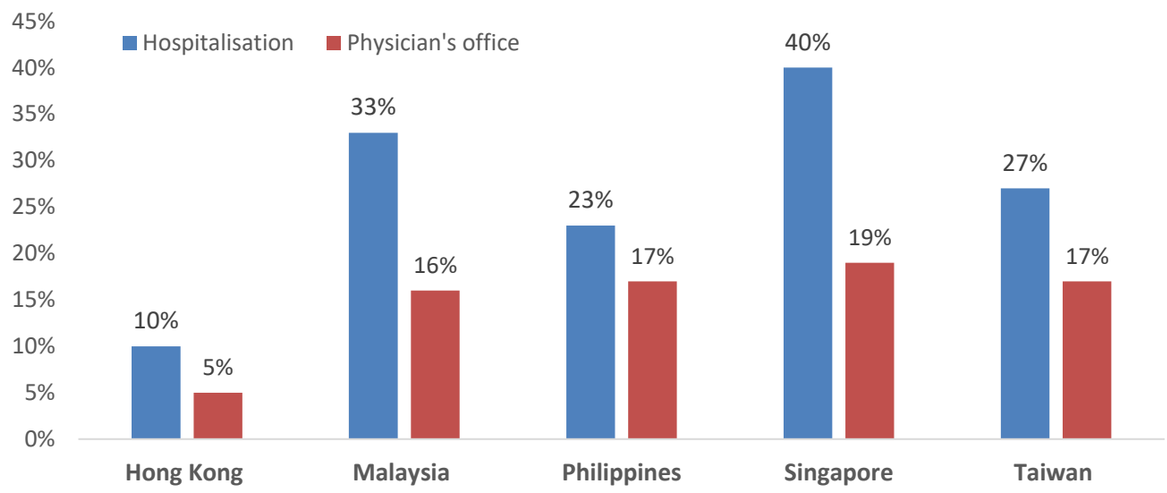
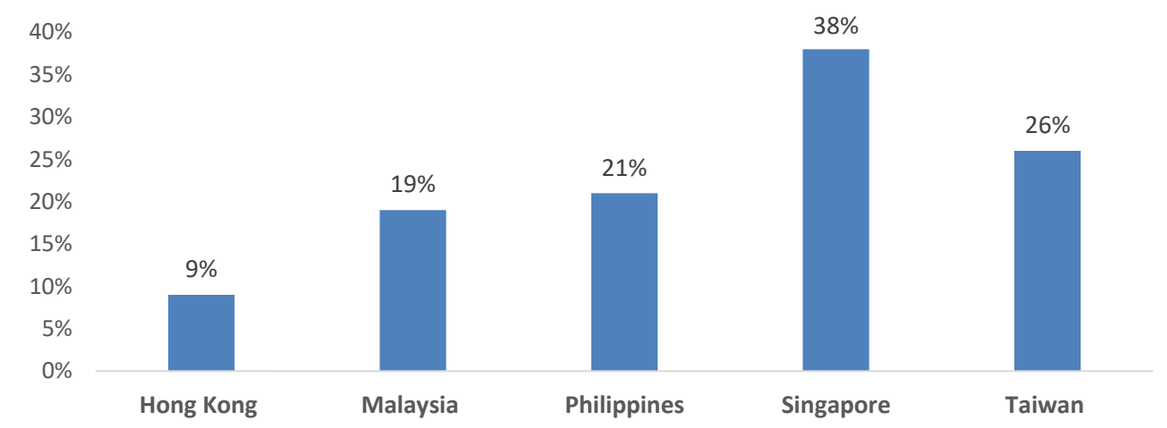


Figure 2: Reduction (%) of RSV direct medical costs with year-round RSVpreF vaccination in Hong Kong, Malaysia, Philippines, Singapore and Taiwan*



- With year-round maternal RSVpreF vaccination, 262,446 medically attended infant cases could be prevented annually — including 46,047 hospitalisations, 216,399 outpatient visits, and 1,120 deaths
- Implementation of RSVpreF maternal vaccination is projected to yield annual cost savings of US$103.64 million

*NB. RSVpreF maternal vaccination uptake was assumed at: 20% Hong Kong, 80% Singapore, 63.3% Malaysia, 52% Philippines, and 50% Taiwan.

LIMITATIONS

- Local data was used where available; where not, regional or global inputs were sourced from existing literature
- RSV-related deaths are likely underestimated since community deaths are not included, and the majority of RSV deaths in these countries may occur in the community
- Vaccine effectiveness for early preterm and extreme preterm infants was assumed to be 0% due to lack of data on these subgroups
- Vaccine effectiveness from 6 to 9 months of age was assumed to decline linearly to zero by 9 months, and may be conservative
- Direct effects among vaccinated pregnant people, and potential reductions in upper respiratory tract infections, disease transmission, secondary infections, and long-term sequelae of infant RSV-LRTI were not captured, making findings likely conservative

CONCLUSION

- RSV places substantial health and economic burden on infants in Asia
- The introduction of RSVpreF year-round vaccination could help reduce this burden, preventing medically-attended cases, deaths, and associated costs

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DISCLOSURES

The authors are employed by Pfizer and may own stocks in company. This study was sponsored by Pfizer Inc