Acceptance code: EPH165

Modelling Respiratory Syncytial Virus Burden and Public Health Impact of RSVPreF3 vaccine among Adults Aged ≥60 Years Old in Five Countries in South-East Asia

In South-East Asia, the **burden** of **RSV disease** is considerable. Vaccination with **adjuvanted RSVPreF3** could substantially **reduce morbidity and mortality** in this region.

Digital poster
Supplemental data

SCAN ME

Ru Han[1]*, Chau Ngo Quy[2], Kim Paul de Castro[3], Henny Jaswantlal[4], Panutchaya Noivong[5], Dicky Santoso[6], Minh Nguyen[7], Adriana Guzman-Holst[1], Désirée Van Oorschot[1], Jorge A. Gomez[8]

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Background

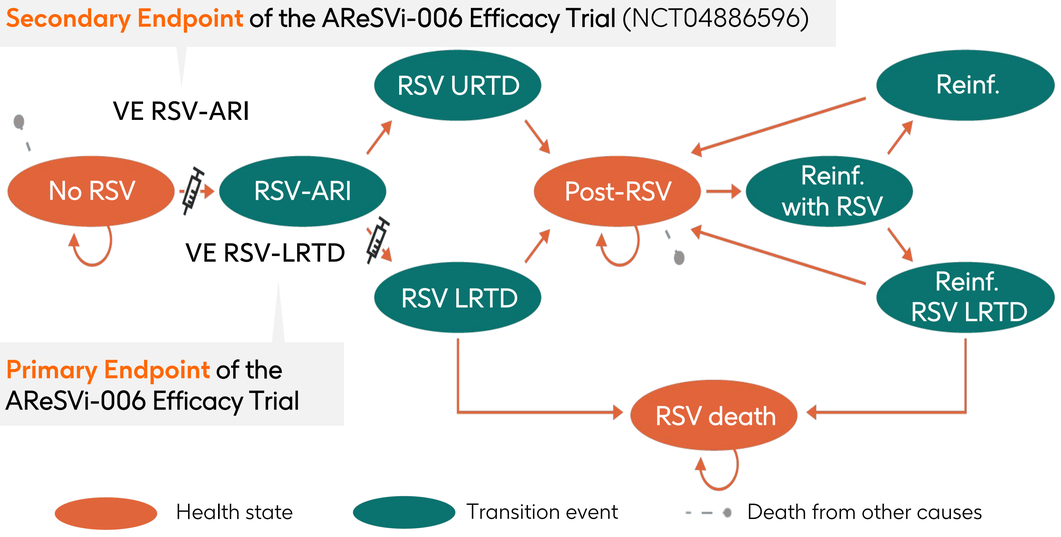
- RSV causes acute respiratory illness (ARI) in individuals of all ages on a global level[1], and leads to severe symptoms, such as lower respiratory track disease (LRTD), prolonged hospitalization and related pneumonia complication, especially in older adults ≥60 years[2].
- Each year, RSV infections can affect 4–7% of the older adults[3].
- In South-East Asia, RSV data in adults are limited.
- Three RSV vaccines are available : two prefusion F protein vaccines —the RSVFPreF3 vaccine and the AS01$_E$-adjuvanted RSVPreF3 vaccine— since 2023, and the mRNA vaccine since 2024.

Aims

- To address the burden of Respiratory Syncytial Virus (RSV) disease in South-East Asia
- To project the public health impact of adjuvanted RSVPreF3 vaccine in Indonesia, Malaysia, Philippines, Thailand, and Vietnam

Static Markov model structure

Secondary Endpoint of the AReSVi-006 Efficacy Trial (NCT04886596)



Primary Endpoint of the AReSVi-006 Efficacy Trial

For model inputs, please scan QR code

Conclusions

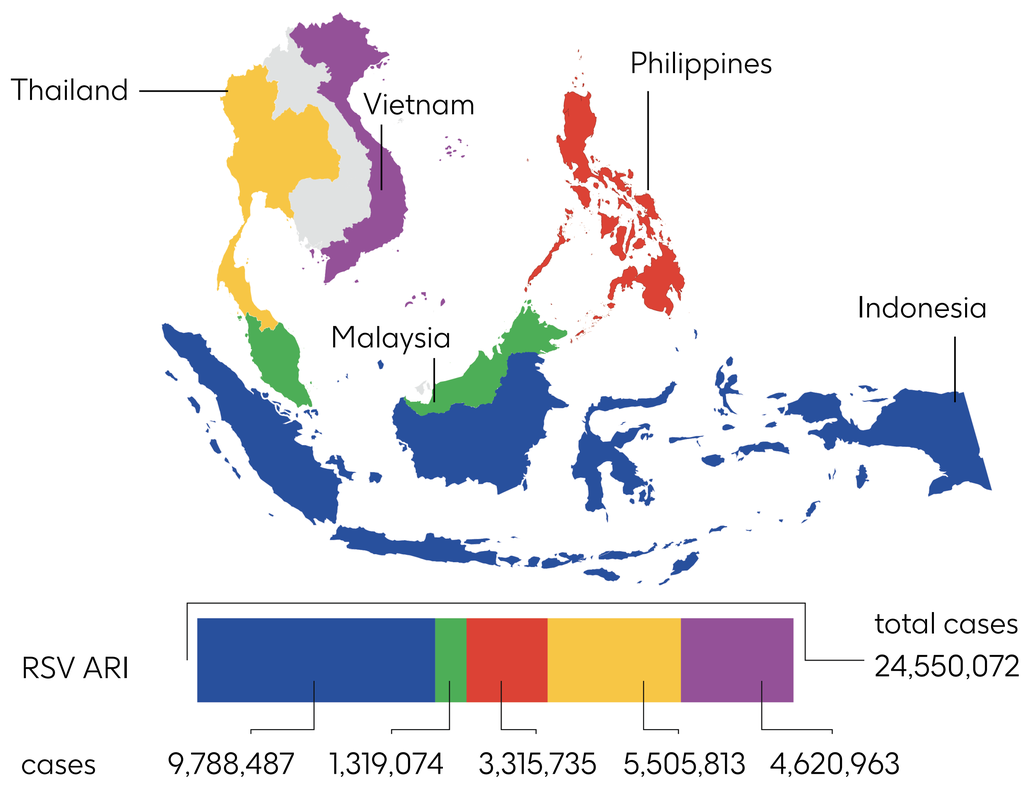
The risk of symptomatic RSV ARI might be 19%-20% over the next five years in older adults living in South-East Asia countries, causing a substantial burden to the healthcare system.

Vaccination might substantially reduce the burden of RSV by avoiding 6,576,503 ARI cases, 4,236,711 LRTD cases, 325,901 pneumonia and 33,611 deaths with a 70% vaccination coverage.

The numbers needed to vaccinate to prevent RSV-related outcomes were 8-9 for an ARI event, and 13 for an LRTD event.

Results

Without vaccination, a total of 24.5 million RSV ARI are expected to occur over 5 years in adults ≥60 years

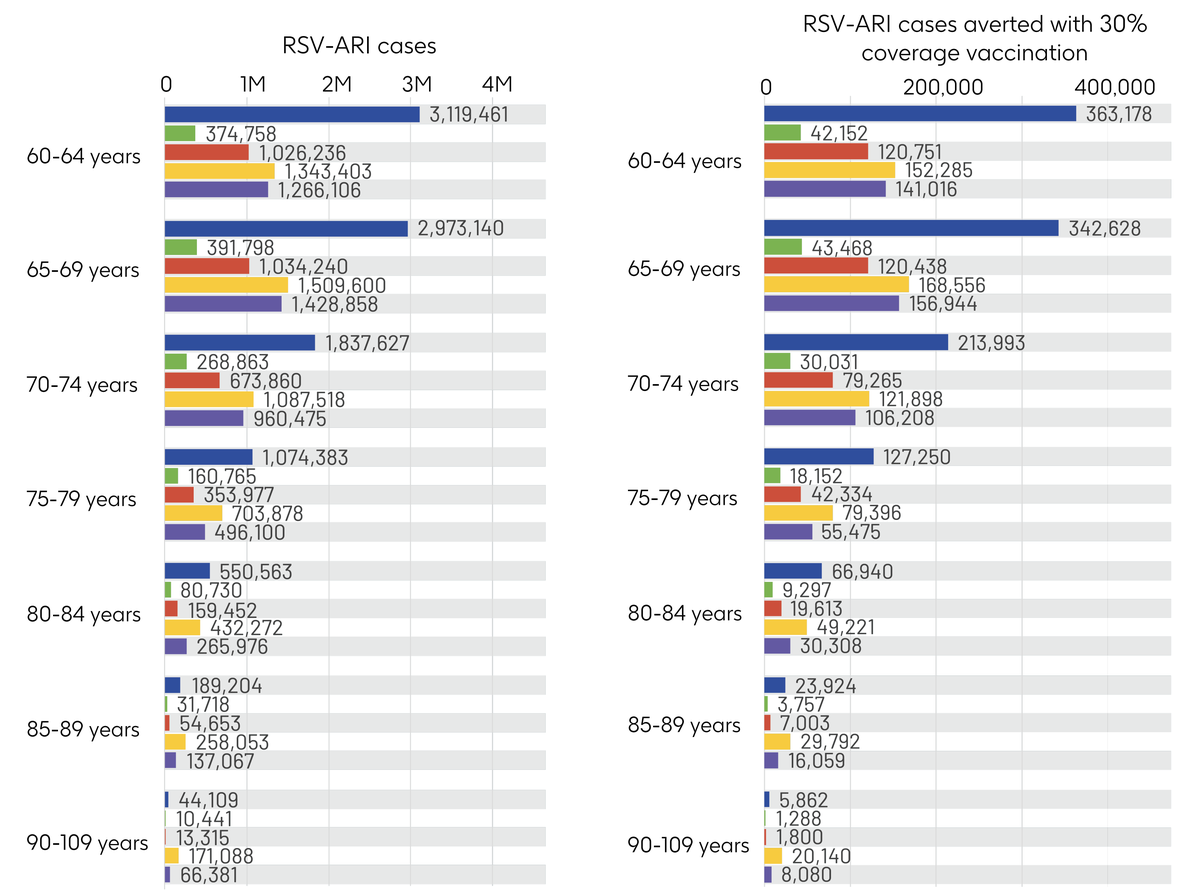


Vaccinating 13 older adults would prevent one RSV LRTD case

NNV	Indonesia	Malaysia	Philippines	Thailand	Vietnam
For 1 RSV ARI	8	9	8	8	9
For 1 RSV LRTD case	13	13	13	13	13

Introducing adjuvanted RSVPreF3 vaccination (30% coverage) could avoid 2.8 million RSV ARI, 151,737 hospitalizations, and 14,405 deaths

RSV cases can be avoided across all age groups



Abbreviations

ARI, acute respiratory infection; LRTD, lower respiratory tract disease; M, million; Reinf., reinfection; RSV, respiratory syncytial virus; URTD, upper respiratory tract disease; VE, vaccine efficacy

References

[1] Coultas JA, et al., Thorax, 2019: 74(10): 986-993.
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[3] Korsten K, et al., *Eur Respir J.* 2021: 57(4): 2002688.

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Disclosures

Funding: GSK (Study-ID: VEO-001019).
Conflicts of interest: See supplementary slide (QR code).
Trademark: AS01$_E$ is an Adjuvant System containing MPL, QS-21 and liposome (25 mg MPL and 25 µg QS-21)

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Supplemental information

Input parameters and outcomes

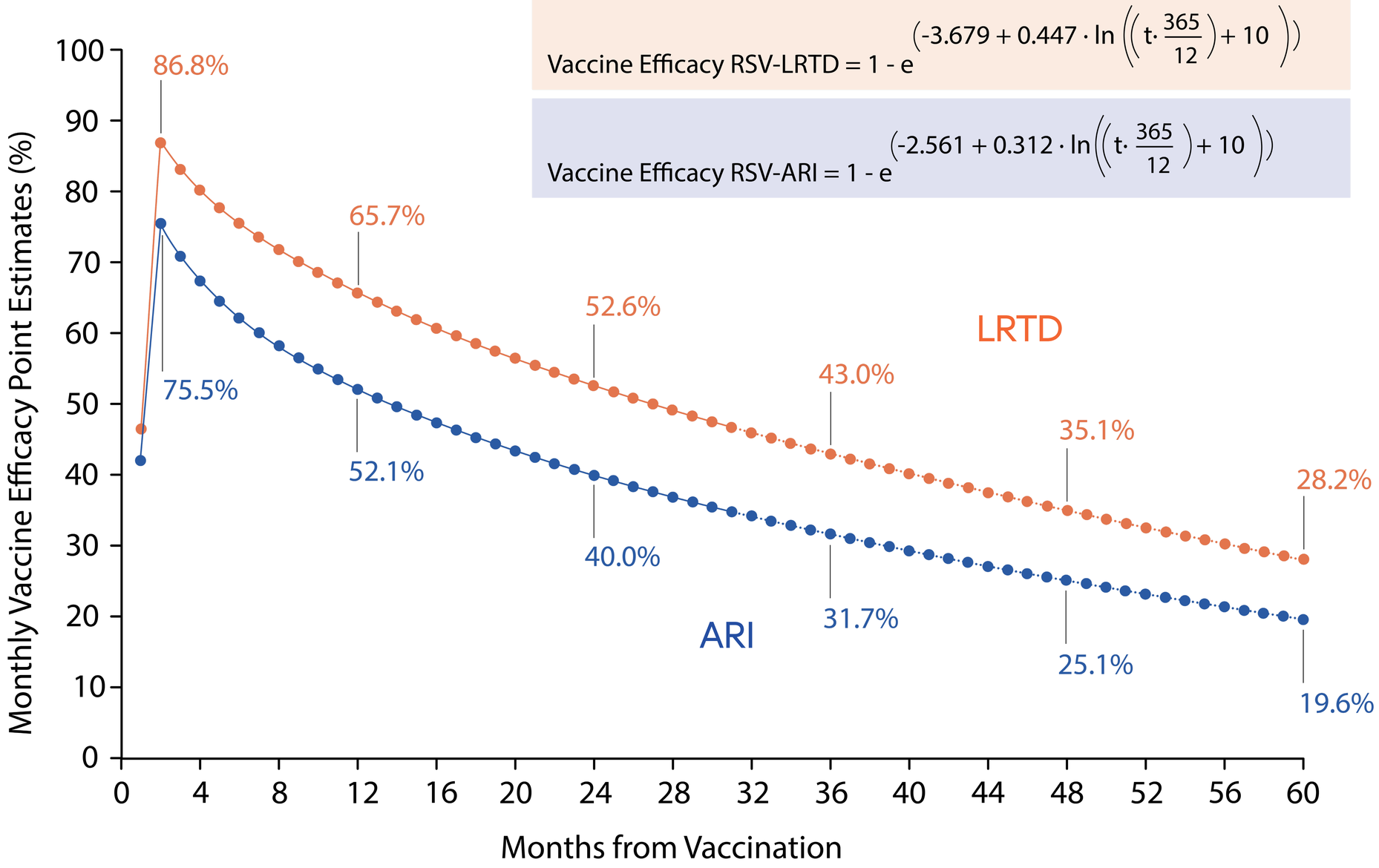
Input parameters	Source
Population aged ≥60 years and background mortality	United Nations 2024 [1]
Annual RSV incidence (≥60 years of age)	Calculation from McLaughlin 2022 [2] and Korsten 2021 [3]
RSV seasonality multiplier	FluNet [4]
Proportion of LRTD	Ison 2024 [5]
Death from RSV LRTD cases	Calculation from Shi 2020 [6], Belongia 2018 [7], Korsten 2021 [3]
Hospitalization per RSV LRTD cases	Calculation from Belongia 2018 [7], Ison 2024 [5], and Korsten 2021 [3]
RSV LRTD-related pneumonia	Calculation from Belongia 2018 [7] and Korsten 2021 [3]
VE against RSV ARI	Ison 2024 [5]
VE against RSV LRTD	Ison 2024 [5]

Horizon: 5 years
Scenario: no vaccination; 1-dose 30% coverage; 1-dose 70% coverage
Outcomes: RSV-ARI cases, RSV LRTD, RSV URTD, LRTD pneumonia, LRTD hospitalizations, and LRTD deaths

Waning of 1st dose of adjuvanted RSVPreF3 VE against RSV LRTD with RSV cycles

$$\text{Vaccine Efficacy RSV-LRTD} = 1 - e^{\left(-3.679 + 0.447 \cdot \ln\left(\left(t \cdot \frac{365}{12}\right) + 10\right)\right)}$$

$$\text{Vaccine Efficacy RSV-ARI} = 1 - e^{\left(-2.561 + 0.312 \cdot \ln\left(\left(t \cdot \frac{365}{12}\right) + 10\right)\right)}$$



Abbreviations

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Conflicts of interest: Ru Han, Kim Paul de Castro, Henny Jaswantlal, Panutchaya Noivong, Dicky Teguh Santoso, Minh Nguyen, Adriana Guzman-Holst, Désirée Van Oorschot and Jorge A. Gomez are employed by GSK. Adriana Guzman-Holst, Désirée Van Oorschot and Jorge A. Gomez hold financial equities in GSK. Chau NGO QUY is the President of the VietNam Respiratory Society. The authors declare no other financial and non-financial relationships and activities and no conflicts of interest.

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Supplemental information

	Indonesia	Malaysia	Philippines	Thailand	Vietnam
Population [1]					
60-64 years	11,850,505	1,408,306	3,871,270	5,012,165	4,738,854
65-69 years	8,555,498	1,109,039	2,949,366	4,210,051	4,024,176
70-74 years	5,488,480	781,312	1,992,453	3,076,928	2,775,476
75-79 years	3,408,009	486,743	1,110,025	2,039,751	1,496,630
80-84 years	1,914,545	263,410	551,820	1,297,889	861,883
85-89 years	754,134	115,187	218,316	816,132	494,204
90-109 years	208,886	44,243	64,011	581,564	276,500
Annual incidence of RSV ARI [2,3]					
60-64 years			5.50%		
≥65 years			7.43%		
Proportion of RSV LRTD [5]			50.23%		
LRTD mortality [3,6,7]			0.79%		
LRTD pneumonia [3,7]			7.69%		
LRTD hospitalization [3,5,7]			0.08		
Seasonality [4]					
January	341%	178%	14%	47%	140%
February	220%	164%	5%	80%	223%
March	140%	121%	21%	59%	178%
April	140%	117%	3%	38%	135%
May	68%	168%	9%	31%	32%
June	17%	102%	17%	32%	3%
July	34%	129%	43%	75%	37%
August	36%	104%	119%	138%	52%
September	63%	45%	313%	187%	83%
October	65%	41%	456%	213%	117%
November	29%	23%	178%	175%	123%
December	46%	8%	21%	126%	77%
Vaccination					
VE against RSV ARI [5]	$VE_t = 1 - exp\left[-2.56142145 + 0.31246052 \cdot \ln\left(\left(t \cdot \frac{365}{12}\right) + 10\right)\right]$				
VE against RSV LRTD [5]	$VE_t = 1 - exp\left[-3.67861479 + 0.4465065 \cdot \ln\left(\left(t \cdot \frac{365}{12}\right) + 10\right)\right]$				

Abbreviations

ARI, acute respiratory infection; LRTD, lower respiratory tract disease; Reinf., reinfection; RSV, respiratory syncytial virus; URTD, upper respiratory tract disease; VE, vaccine efficacy

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