Cost-Effectiveness Evaluation of RSVpreF Vaccine for Preventing RSV among Older Adults with High Risk under Taiwan National Vaccination Program

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OBJECTIVE

Older adults - especially those with chronic conditions like chronic obstructive pulmonary disease, coronary artery disease, and heart failure - face higher risk of severe RSV illness. In Taiwan, the Taiwan Society of Pulmonary and Critical Care Medicine recommends vaccination for adults over 60 years of age with underlying health conditions. Based on the burden and guidance, we evaluated the clinical and economic impact of a national bivalent RSVpreF vaccination strategy for high-risk older adults.

METHODS

Markov model was adapted to simulate the clinical and economic outcomes from the healthcare perspective over a lifetime horizon. The model compared bivalent RSVpreF vaccination with no intervention in high-risk older adults with chronic or immunocompromising conditions.

Epidemiological data from local and neighboring countries, vaccine effectiveness, utilities, and direct medical costs were sourced from scientific literature, official databases, and consultations with local experts.

Both costs and utilities were discounted at an annual rate of 3%. Sensitivity and scenario analyses were conducted to explore uncertainties associated with model input parameters.

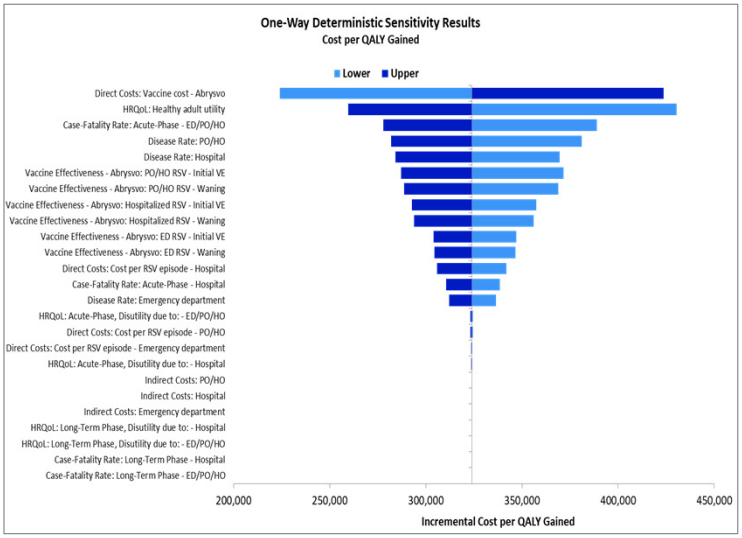

Figure1. One-Way Sensitivity Analyses

Table1. Base-case results for the scenario of vaccine vs no vaccine

	No Vaccine	RSVpreF	Difference
Clinical outcomes			
No. of cases			
Hospital	976,622	962,780	- 13,842
Emergency department	342,289	315,822	- 26,466
PO/HO	1,812,288	1,713,930	- 98,358
No. of deaths	635,002	616,478	- 18,525
Life-years			
Undiscounted	56,967,859	57,050,747	82,888
Discounted	45,428,521	45,493,616	65,095
Quality-adjusted life-years			
Undiscounted	35,629,690	35,681,489	51,799
Discounted	28,502,065	28,542,916	40,850
Costs (in millions, TWD)			
Direct			
Medical care	164,239	161,162	- 3,076
Vaccination	0	16,307	16,307
Total	164,239	177,469	13,231
Cost-effectiveness (discounted)			
Healthcare perspective			
Cost per LY			203,254
Cost per QALY			323,884

RESULTS

With all available parameters, among adults with age 60-99 with high risk, the program can avoid 13,842 hospitalizations, 26,466 emergency department care, and 98,358 outpatient visits, also prevent 18,525 deaths due to RSV infections.

The analysis revealed that the additional cost of vaccine- TWD 16,307M, could increase life years by 65,095 and quality-adjusted life years(QALY) by 40,850 compared to no vaccination. This results in an Incremental Cost-Effectiveness Ratio (ICER) of 323,884 per QALY gained, falling within 1x Taiwan’ s GDP per capita.

One-way sensitivity analysis indicated the parameter that had the greatest impact on ICER were utility and disease rate.

CONCLUSION

Our findings emphasize the critical importance of implementing nationwide RSV vaccination programs targeting high-risk older adults. Such initiatives have the potential to substantially reduce the clinical and economic burden of RSV infection in this population.

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