

Cost Effectiveness and Budget Impact of the Recombinant Zoster Vaccine Among Older Adults in Singapore

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INTRODUCTION & OBJECTIVE

- Herpes zoster (HZ) is a painful rash caused by the reactivation of the varicella zoster virus (VZV), which may lead to complications including post-herpetic neuralgia (PHN; a significant pain lasting more than 90 days after rash onset). The incidence of HZ increases with age.
- The Agency for Care Effectiveness (ACE) is the national health technology assessment (HTA) agency in Singapore to guide health policy, drive appropriate use of treatments and inform technology funding decisions. This study evaluates the cost effectiveness and budget impact of the recombinant zoster vaccine (RZV) for preventing HZ and its associated complications, including PHN among older adults in Singapore.

METHODS

- A cost-utility analysis using a static Markov cohort model was performed to evaluate the cost effectiveness of RZV vaccination versus no vaccination in immunocompetent adults aged 50 years and older (Figure 1). The analysis was conducted from the Singapore healthcare system perspective over a 30-year time horizon.

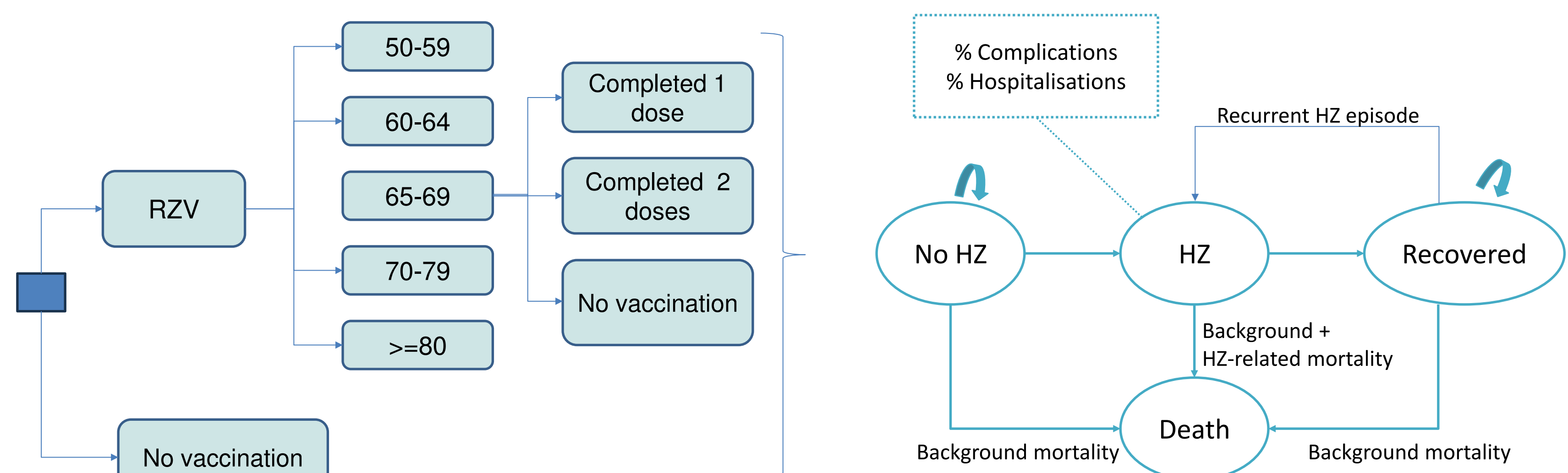


Figure 1. Model structure

- The model used vaccine efficacy from ZOE-50, ZOE-70 and ZOSTER-049 studies, and local HZ incidence rates. Costs and healthcare resource utilisation were obtained from local public healthcare institutions and clinical experts. The vaccine cost was based on an average of overseas and local prices in 2023. In the absence of local estimates health state utilities were obtained from published literature.
- Sensitivity and scenario analyses were performed to assess model uncertainties.
- Additionally, an epidemiological-based budget impact analysis was performed to estimate the financial impact to the healthcare system if RZV was funded in Singapore.

RESULTS

- Compared to no vaccination, the RZV resulted in a high base-case incremental cost-effectiveness ratio (ICER) of over SGD 120,000 (USD 88,884) per quality-adjusted life-year (QALY) gained. Given the low mortality risk with HZ, the incremental QALYs were driven mainly by the QALY gains from the reduced incidences of HZ and PHN.
- As HZ incidence increases with age, it is expected that the cost-effectiveness would improve in older adults. Additional subgroup analysis indicated that the ICER was the lowest in those 65 years and older. However, it remained over SGD 90,000 (USD 66,663) per QALY gained.
- Other than cost of vaccination, ICER results were most sensitive to the incidence rate of HZ, discount rate, and disutility values associated with HZ and PHN (Figure 2).
- The budget impact analysis on vaccine costs estimated a 5-year expenditure of SGD 93.3 million (USD 69.1 million) based on a conservative assumption that coverage rate reaches 20% after 5 years.

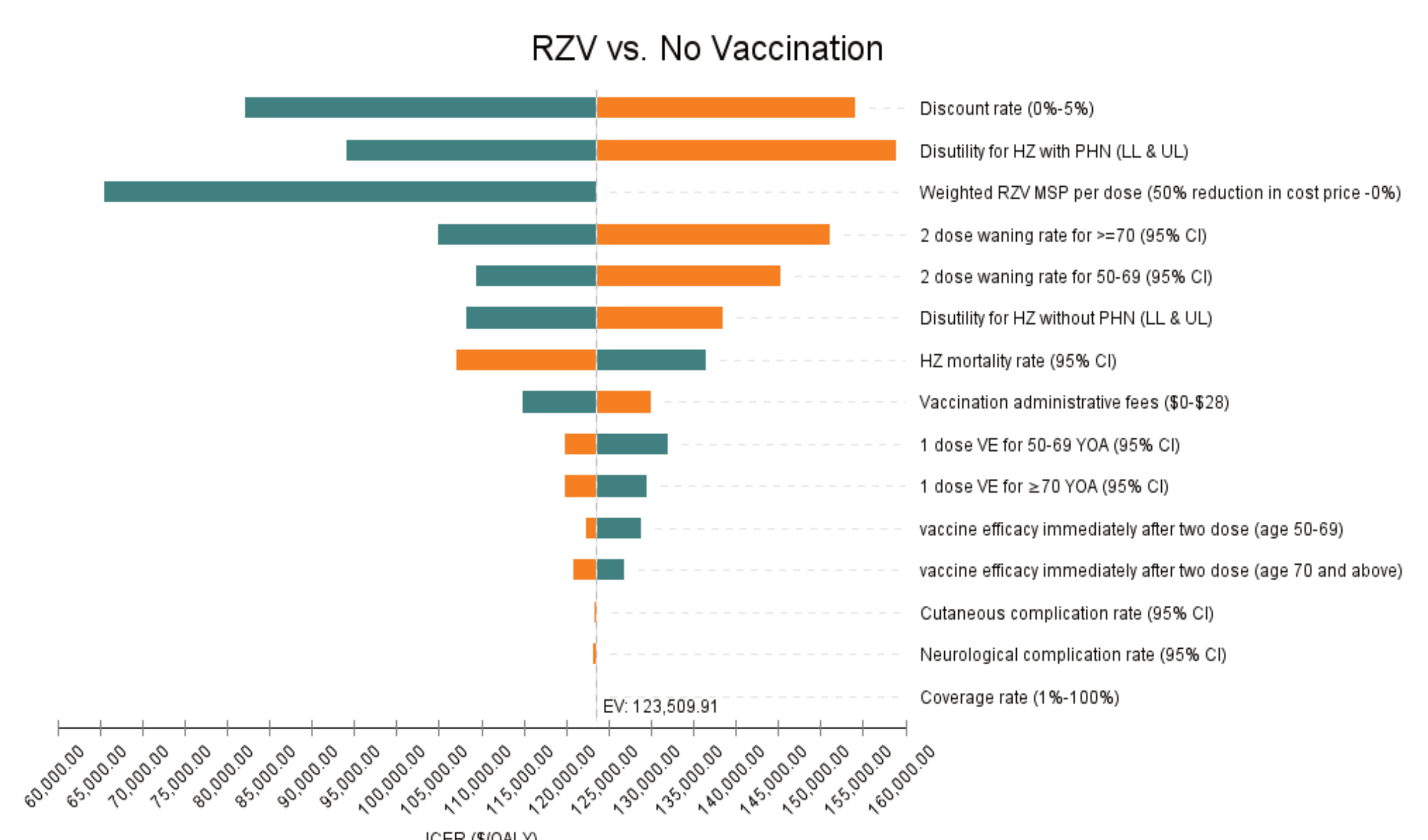


Figure 2. Tornado diagram for one-way sensitivity analysis

CONCLUSION

- In Singapore, RZV is unlikely to represent good value even in older age cohorts, based on year 2023 prices.