INTRODUCTION

Herpes Zoster (HZ) is a painful recurrence of latent varicella zoster virus, occurring predominantly in older adults.

Adjuvanted Recombinant Zoster Vaccine (RZV). More recently abstracted by the Food and Drug Administration (FDA), and therefore previously not available for commercial use.

The Advisory Committee on Immunization Practices (ACIP) for the Centers for Disease Control and Prevention (CDC) made the following recommendations:

- Recommended for the prevention of HZ in adults aged ≥ 60 years.
- Recommended for the prevention of HZ in adults aged ≥ 50 years.
- Preferred over ZVL for the prevention of HZ and related complications for immunocompetent adults aged ≥70 years.
- Preferred over ZVL for the prevention of HZ and related complications for immunocompetent adults ≥80 years.

The objective of this study was to determine the cost-effectiveness of vaccination against HZ. Incremental cost-effectiveness ratios (ICERs) were calculated for RZV versus no vaccination as well as RZV versus ZVL in US adults aged ≥50 years.

METHODS

The ZOster ecoNomic Analysis (ZONA) model is a deterministic Markov model.

Two, independently developed probabilistic models (100,000-person cohort, US adults) were developed: one for the cohort vaccinated at age 50 years and one for the cohort vaccinated at age 60 years.

Three different HZ primary vaccination strategies were compared: no vaccination, vaccination with RZV, and vaccination with ZVL.

This analysis included all adverse events associated with vaccination and vaccine-related adverse events.

Model inputs included demographics, incidence and disease burden, vaccine effectiveness, and vaccine costs (Table 1).

Costs and quality-adjusted life-years (QALYs) were calculated using the lifetime cohort, discounted both immunocompetent and immunocompetent adults, and were calculated using the ICERs between vaccination strategies.

Sensitivity analyses were carried out to explore the robustness of our findings considering uncertainty about model inputs for the cohort aged ≥60 years.

RESULTS

US adults aged ≥50 years

- For 100-person cohort, primary vaccination with RZV would reduce disease burden compared to no vaccination. This produced an ICER of $19,865 per QALY saved compared to no vaccination.

- Compared to ZVL, primary vaccination of 100-person cohort aged ≥50 years with RZV would result in a gain of 1.480 QALYs and societal cost savings of $7,467 per vaccinated compared to no vaccination.

US adults aged ≥60 years

- For 100-person cohort, vaccination with RZV would result in a gain of 1.823 QALYs and societal cost savings of $6,211 per vaccinated compared to no vaccination.

- RZV vaccination of 100-person cohort aged ≥60 years with RZV would result in a gain of 1.230 QALYs and societal cost savings of $4,610 per vaccinated compared to no vaccination.

CONCLUSIONS

In US adults aged ≥60 years who have not been previously vaccinated against HZ and US adults aged ≥50 years, RZV is cost-effective relative to no vaccination and cost-saving relative to vaccination with ZVL.

Sensitivity analyses suggest that the model results were robust to the uncertainty of input parameters.