Public Health Impact and Cost-effectiveness of Recombinant Zoster Vaccination among 50 years old or older in Austria

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Conclusions

The current study demonstrates a substantial health and economic **burden** of **HZ** that may be largely **preventable by vaccination.**

A zoster **vaccination programme** for individuals ≥50 YO with RZV would be highly **cost-effective** in **Austria**, with an ICER well below the GDP per capita.

Background

Herpes zoster (HZ) develops due to the reactivation of the varicella zoster virus and may lead to post herpetic neuralgia (PHN), a painful complication involving a rash with long-lasting pain, and other complications (e.g. ocular, cutaneous).[1,2]

Across age groups, with high prevalence in patients with comorbidities or older adults, HZ and its complications incur a significant health and economic burden,[3,4] preventable by vaccination.

In Austria, recombinant zoster vaccine (RZV) is available and recommended by the government for all individuals ≥50 years old (YO) as well as high risk groups ≥18 YO since 2019. However, population access remains low due to the lack of reimbursement.

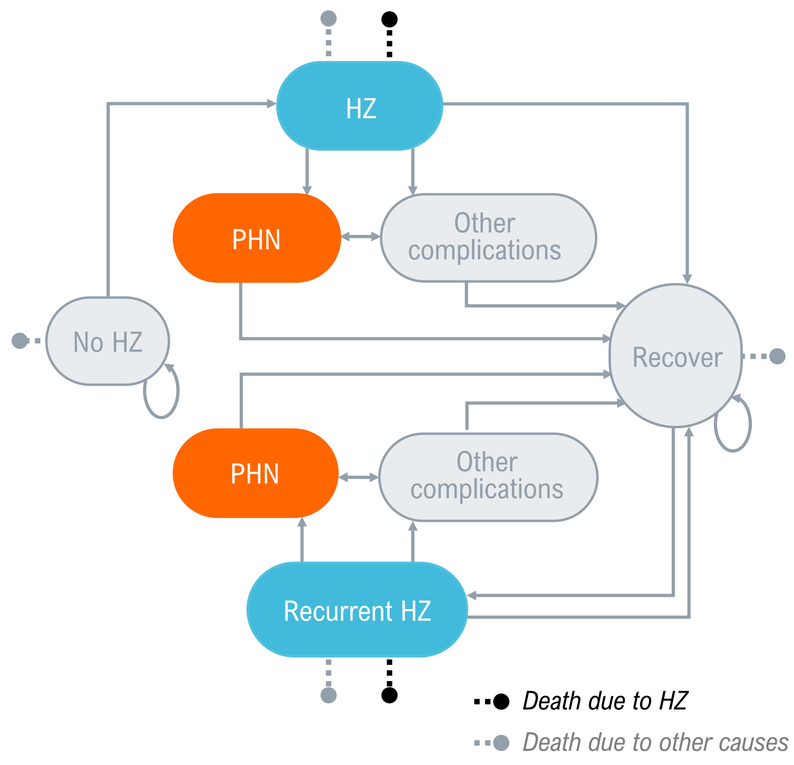
Aim

To investigate the public health impact and the cost-effectiveness of RZV in Austria, among people aged 50 YO or older

Methodology

Model	Multi-cohort Markov model,[5] remaining lifetime horizon from vaccination
Population	3.7M Austrian ≥50 YO (PHI) ; 1M cohort* (CEA), Austrian ≥50 YO (50–59, 60–64, 65–69, 70–79, ≥80 YO)
Scenarios	Based on vaccination coverage (1st dose/2nd dose); base case: 30%/90%, alternative: 100%/100%
Inputs	HZ-specific Epi & QoL: [6] Demographic: HCRU and costs (in € 2022):
Vaccine efficacy	At time 0: one dose: 90.1% (50-69 YO), 69.5% (≥70 YO); two doses: 98.9% (50-69 YO), 95.4% (≥70 YO)[7]
Vaccine waning	1.5% (50-69 YO), 2.3% (≥70 YO) (annual)
Perspective	Societal including direct medical costs; vaccination costs; indirect costs
Health outcomes	QALYs, cases of HZ, PHN, non-PHN complications, HZ-related deaths
Costs	Medical direct (healthcare) and indirect costs (productivity loss)
Discount rate	3% for costs and health outcomes
Sensitivity analyses	One way and probabilistic
WTP threshold	€49,369/QALY (1 GDP per capita)[8]

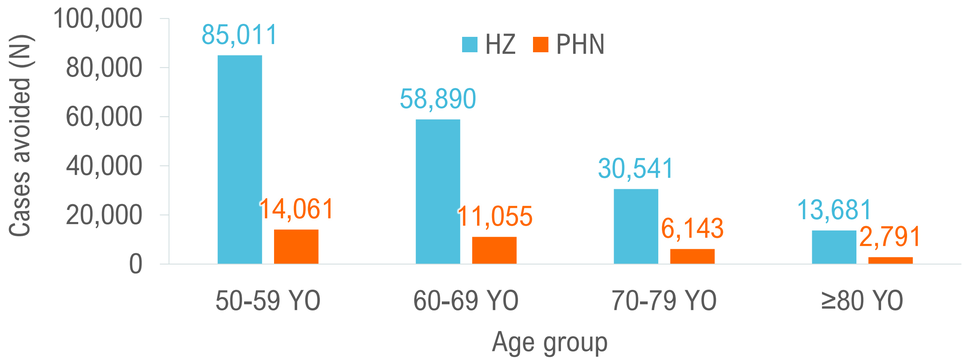
*for comparability



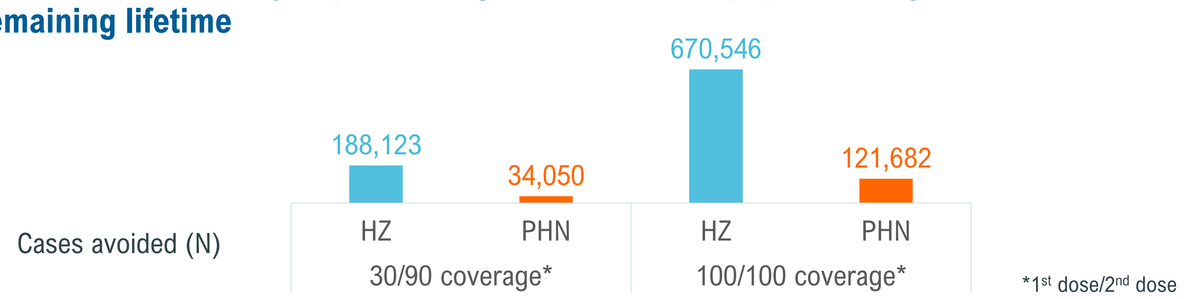
Results

- **39,382 HZ cases and 6,736 PHN cases are expected each year among the ≥50 YO in Austria.**
- **~57% HZ cases would occur in ≥ 65 YO.**

HZ and PHN cases avoided with RZV in Austrian population aged ≥50 YO, with the base case coverage



Total cases averted by implementing RZV in Austrian population aged ≥50 YO, over remaining lifetime



NNV to prevent one case with 30% coverage and 100% 2nd dose compliance:

Age group (YO)	50-59	60-64	65-69	≥70	**Overall**
HZ	5	5	6	9	6
PHN	28	28	29	40	31

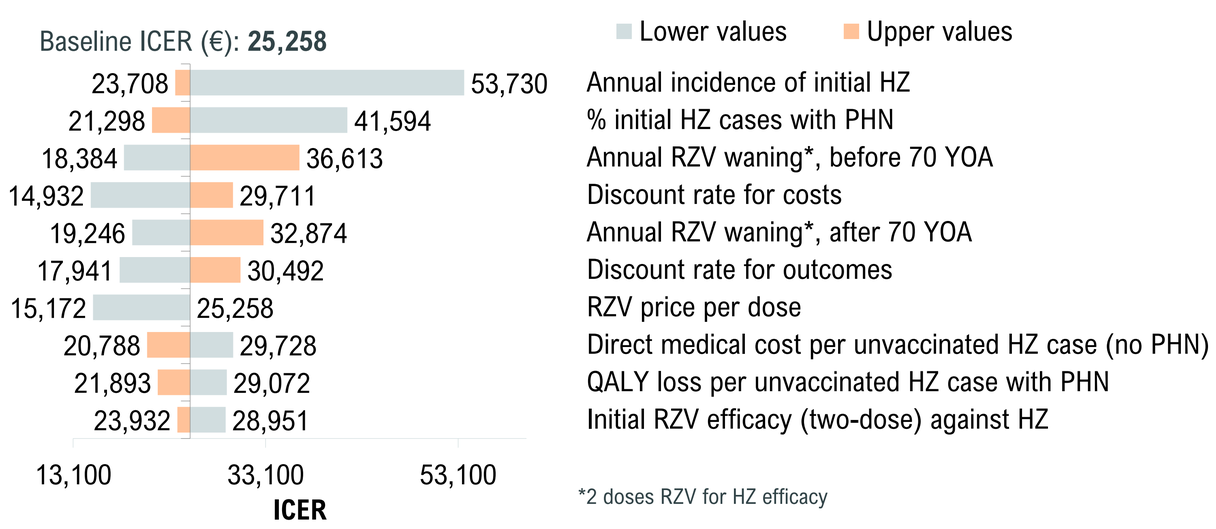
Benefits of RZV vaccination for 1M cohort over lifetime, with the base-case coverage

HZ cases avoided	50,235	
PHN cases avoided	9,092	
Other non-PHN complications avoided	6,154	
Hospitalisations avoided	4,263	
Discounted QALYs gained	1,663	
Vaccination costs (€)	92,292,410	
Direct costs averted (€)	32,697,037	
Indirect costs averted (€)	17,583,295	
ICER (€/QALY)	**25,258**	**Cost-effective**

ICER per age group

Age group (YO)	50-59	60-64	65-69	70-79	≥80	**Total**
ICER (€/QALY)	17,911	20,020	25,641	30,572	51,755	**25,258**

Deterministic sensitivity analysis



*2 doses RZV for HZ efficacy

These results were robust in probabilistic sensitivity analysis

Abbreviations

CEA cost-effectiveness analysis, **Epi** epidemiology, **GDP** gross domestic product, **ICER** incremental cost-effectiveness ratio, **HCRU** healthcare resource use, **HZ** herpes zoster, **M** million, **N** number, **NNV** number needed to vaccinate, **PHI** public health impact, **PHN** postherpetic neuralgia, **QALY** quality-adjusted life years, **QoL** quality of life, **RZV** recombinant zoster vaccine, **WTP** willingness to pay, **YO** years old

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Narrated summary

Audio File

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