

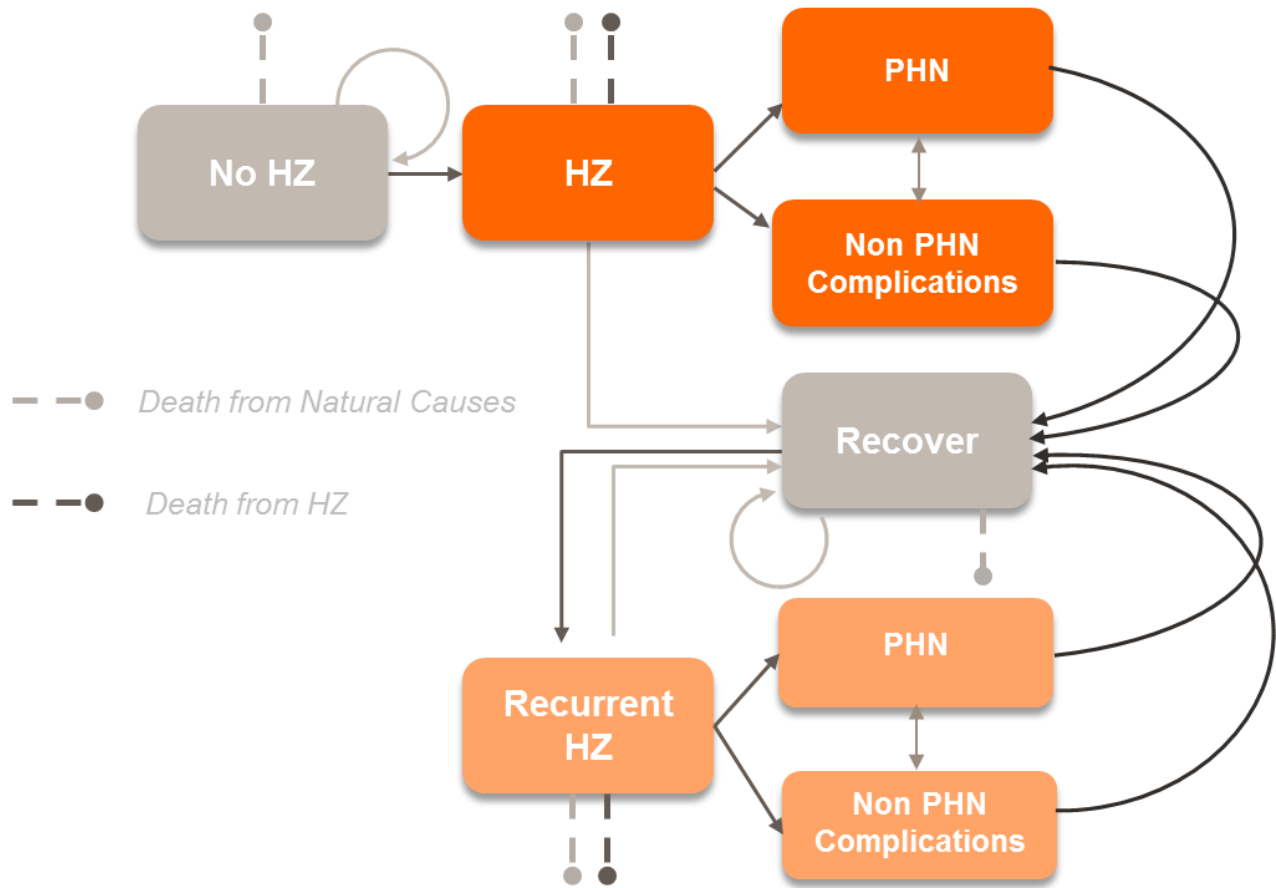
Supplementary Material

Evaluation of the public health impact of introducing a novel Adjuvanted Recombinant Zoster Vaccine into the UK universal mass vaccination programme

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SI Figure 1: Schematic overview of the ZONA model



HZ: herpes zoster; PHN: postherpetic neuralgia.

Figure originally published in Curran et al. 2017.¹

SI Table 1: Mortality in the general UK population in 2018/2019

Age (YOA)	Number of deaths	Annual probability of death
50-54	15,903	0.00342
55-59	22,590	0.00544
60-64	29,886	0.008366
65-69	45,562	0.013091
70-74	65,747	0.021570
75-79	78,692	0.036493
80-84	104,536	0.065713
85-89	114,461	0.117689
90-94	82,948	0.198093
95-99	33,361	0.304037
≥ 100	5,496	0.436439

YOA: years of age.

Projected numbers using data reported by the Office of National Statistics based on observed numbers of the UK population in 2014.²

The immunocompromised (IC) population was identified as individuals presenting one of the following conditions: Hematopoietic stem cell transplantation, solid organ transplantation, solid organ malignancies, haematological malignancies, human immunodeficiency virus, end-stage renal disease, corticosteroid exposure, other immunosuppressive therapy, other immunodeficiency conditions and autoimmune diseases (rheumatoid arthritis, systemic lupus erythematosus, inflammatory bowel disease, psoriasis, multiple sclerosis, polymyalgia rheumatica and autoimmune thyroiditis).³

Herpes Zoster (HZ) incidence for the whole (IC and IC-free) population was calculated by applying a weighting for IC proportion by age group.⁴ A unitary weight across the populations was not deemed to be appropriate or robust as prevalence of herpes zoster varies between the age groups; rising with increasing age. This is because applying IC incidence, accounting for the overall proportion of IC (16.2%) irrespective of age group would underestimate the incidence in older people and overestimate it in younger people.

SI Table 2: Weighting CPRD population for IC proportion by age

Age Group (YOA)	Prevalence of IC (%)	IC weighting	IC-free weighting
50-59	16.13	0.161	0.839
60-64	22.26	0.223	0.777
65-69	27.56	0.276	0.724
70-79	34.88	0.349	0.651
≥ 80	42.16	0.422	0.578

CPRD: Clinical Practice Research Datalink; IC: immunocompromised; IC-free: immunocompetent; YOA: years of age

SI Table 3: Incidence and probability of HZ in the whole population

Age (YOA)	Incidence rate/1,000 patient years		Probability	Range	
	IC	IC-Free		Lower limit	Upper limit
50-59	6.85	4.9	0.0052	0.00375	0.00791
60-64	8.8	6.92	0.0073	0.004392	0.009001
65-69	9.93	8.62	0.0089	0.005108	0.010147
70-79	11.32	11.04	0.0111	0.005975	0.011605
≥ 80	12.61	11.02	0.0116	0.007363	0.013955

HZ: herpes zoster; IC: immunocompromised; IC-free: immunocompetent; YOA: years of age

SI Table 4: Proportion of PHN (after 3 months)

Age (YOA)	Proportion (%)	Lower limit (%)	Upper limit (%)
50-59	11.418	8.91	14.13
60-64	13.894	12.03	15.88
65-69	15.705	13.95	17.57
70-79	17.116	13.53	20.94
≥ 80	20.418	17.08	23.82

PHN: postherpetic neuralgia; YOA: years of age

SI Table 5 HZ-associated mortality

Age (YOA)	Probability	Lower limit	Upper limit
50-54	0.00001	0.0000063	0.000012
55-59	0.00001	0.0000063	0.000012
60-64	0.00003	0.0000189	0.000035
65-69	0.00003	0.0000189	0.000035
70-74	0.00004	0.0000245	0.000046
75-79	0.00009	0.0000644	0.000120
80-84	0.00049	0.0003409	0.000633
85-89	0.00202	0.0014126	0.002623
90-94	0.00202	0.0014126	0.002623
95-99	0.00202	0.0014126	0.002623
≥ 100	0.00202	0.0014126	0.002623

HZ: herpes zoster; YOA: years of age

SI Table 6: Hospitalisation rates in IC and IC-free cohort, derived from CPRD database

Age (YOA)	IC	IC-free	ALL
	Mean Events 90-365 days	Mean Events 90-365 days	Weighted Average*
50-59	0.044	0.007	0.012622
60-64	0.054	0.009	0.019245
65-69	0.050	0.014	0.023713
70-79	0.074	0.030	0.045143
≥ 80	0.168	0.115	0.135529

CPRD: Clinical Practice Research Datalink; IC: immunocompromised; IC-free: immunocompetent; YOA: years of age; IC-free: immunocompetent

*Weighted averages calculated using IC proportions in the CPRD study.

SI Table 7 GP visits in IC and IC-free cohort, derived from CPRD database

Age (YOA)	IC	IC-free	ALL
	Mean Events 90-365 days	Mean Events 90-365 days	Weighted Average*
50-59	3.75	2.69	2.86
60-64	4.41	2.86	3.20
65-69	5.05	3.19	3.70
70-79	5.75	4.09	4.67
≥ 80	6.15	4.59	5.25

*Weighted averages calculated using IC proportions in the CPRD study.

CPRD: Clinical Practice Research Datalink; GP: general practitioner; IC: immunocompromised; IC-free: immunocompetent; YOA: years of age

SI Table 8: Vaccine Efficacy against HZ and PHN

Age (YOA)	ZVL			RZV – 2-dose			RZV – 1-dose		
	Efficacy	Lower limit	Upper limit	Efficacy	Lower limit	Upper limit	Efficacy	Lower limit	Upper limit
HZ									
50-59	0.698	0.5410	0.8060	0.984	0.9500	1.0000	0.9	0.5890	0.9890
60-64	0.6389	0.5600	0.7100	0.984	0.9500	1.0000	0.9	0.5890	0.9890
65-69	0.6389	0.5600	0.7100	0.984	0.9500	1.0000	0.9	0.5890	0.9890
70-79	0.4085	0.2800	0.5200	0.9784	0.9410	1.0000	0.695	0.2490	0.8910
≥ 80	0.1825	0.0000	0.4800	0.9784	0.9410	1.0000	0.695	0.2490	0.8910
PHN									
50-59	0.698	0.3080	0.8960	0.984	0.9500	1.0000	0.9	0.5890	0.9890
60-64	0.6569	0.2540	0.8420	0.984	0.9500	1.0000	0.9	0.5890	0.9890
65-69	0.6569	0.2540	0.8420	0.984	0.9500	1.0000	0.9	0.5890	0.9890
70-79	0.7338	0.5160	0.8580	0.9784	0.9410	1.0000	0.695	0.2490	0.8910
≥ 80	0.3951	0.0000	0.7380	0.9784	0.9410	1.0000	0.695	0.2490	0.8910

HZ: herpes zoster; PHN: postherpetic neuralgia; RZV: adjuvanted recombinant zoster vaccine; YOA: years of age; ZVL: zoster vaccine live

SI Table 9: Vaccine Waning

Vaccine	Age group (YOA)/years after vaccination	Value	5% CI	95% CI
ZVL – 1-dose	All ages/Years 1-4	0.0543	0.0450	0.0640
	All ages/Years 4+	0.0510	0.0410	0.0600
RZV – 2-dose	< 70 YOA/Years 1-4	0.010	0.0000	0.0260
	< 70 YOA/Years 4+	0.0230	0.0070	0.0460
	≥70 YOA/ all years after vaccination	0.0360	0.0140	0.0660
RZV – 1-dose	All ages/Years 1-4	0.0543	0.0450	0.0640
	All ages/Years 4+	0.0510	0.0410	0.0600

CI: confidence interval; RZV: adjuvanted recombinant zoster vaccine; YOA: years of age; ZVL: zoster vaccine live

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