

Two Strains Dengue Model Parameters and Descriptions

Parameter	Value(days)	Description
Π_H	100	Recruitment rate of susceptible host population
Π_V	3000	Recruitment rate of susceptible vector population
η_1	1.4	ADE factor for strain 1
η_2	28	ADE factor for strain 2
μ_H	$1 / (65 \times 365)$	Natural death rate of hosts
μ_V	$100 / 365$	Natural death rate of vectors
ϕ_1	$73 / 365$	Rate of transfer from exposed to infectious for strain 1
ϕ_2	$73 / 365$	Rate of transfer from exposed to infectious for strain 2
γ_1	$52 / 365$	Rate of recovery from infection with strain 1
γ_2	$52 / 365$	Rate of recovery from infection with strain 2
δ_1	$0.18 / 365$	Disease-induced death rate of hosts infected with strain 1
δ_2	$0.18 / 365$	Disease-induced death rate of hosts infected with strain 2
δ_{V1}	0	Disease-induced death rate of vectors infected with

		strain 1
δ_{V2}	0	Disease-induced death rate of vectors infected with strain 2
w_1	12 / 365	Rate at which recovered from strain 1 gain partial immunity to strain 2
w_2	12 / 365	Rate at which recovered from strain 2 gain partial immunity to strain 1
α_{V1}	1000 / 365	Effective contact rate for vectors infected with strain 1
α_{V2}	800 / 365	Effective contact rate for vectors infected with strain 2
α_{H1}	10 / 365	Effective contact rate for hosts infected with strain 1
α_{H2}	10 / 365	Effective contact rate for hosts infected with strain 2
ω	0.005	Waning immunity rate
u_1	0.6	Fraction of individuals exposed to secondary infection with strain 2
u_2	0.3	Fraction of individuals exposed to secondary infection with strain 1
ε	0.8	Vaccine efficacy