Table S1. Sensitivity of estimated parameters to fixed parameter assumptions. The log-likelihood of the best-fit model with the original parameter assumptions is -6,379.

Fixed parameter	**Original value**	**New value**	**Estimated parameters**	**Log-likelihood**
Duration of full immunity from infection ($1/\omega$)	104 weeks	4 weeks	$R_{0,p} = 2.46$ $R_{0,w} = 0.23$ $q = 0.82$ $\phi = 18.8$ weeks $\varepsilon = 2.86\text{x}10^{-7}$ $r = 0.01$ $f = 0.0053$	-6,380
Duration of full immunity from infection ($1/\omega$)	104 weeks	50 years	$R_{0,p} = 1.82$ $R_{0,w} = 1.26$ $q = 0.19$ $\phi = 16.8$ weeks $\varepsilon = 2.49\text{x}10^{-6}$ $r = 0.01$ $f = 0.0052$	-6,377
Duration of infectiousness ($1/\delta$)	4 weeks	2 weeks	$R_{0,p} = 2.80$ $R_{0,w} = 0.17$ $q = 0.96$ $\phi = 22.5$ weeks $\varepsilon = 4.71\text{x}10^{-13}$ $r = 0.01$ $f = 0.0050$	-6,388
Duration of infectiousness ($1/\delta$)	4 weeks	8 weeks	$R_{0,p} = 2.67$ $R_{0,w} = 4.57\text{x}10^{-5}$ $q = 0.79$ $\phi = 45.9$ weeks $\varepsilon = 1.61\text{x}10^{-8}$ $r = 0.01$ $f = 0.0055$	-6,389
Fraction infected who become carriers (θ)	0.003-0.101 depending on age	0.0003-0.0101 depending on age	$R_{0,p} = 2.23$ $R_{0,w} = 0.24$ $q = 0.66$ $\phi = 15.2$ weeks $\varepsilon = 5.40\text{x}10^{-9}$	-6,366

			$r = 0.01$ $f = 0.0058$	
Fraction infected who become carriers (θ)	0.003-0.101 depending on age	0.006-0.202 depending on age	$R_{0,p} = 2.85$ $R_{0,w} = 0.23$ $q = 1.00$ $\phi = 19.8$ weeks $\varepsilon = 3.14 \times 10^{-11}$ $r = 0.01$ $f = 0.0050$	-6,387
Rate of decay of infectious particles from water supply (ξ)	1/3 week^{-1}	1 week^{-1}	$R_{0,p} = 2.29$ $R_{0,w} = 0.48$ $q = 0.004$ $\phi = 52.5$ weeks $\varepsilon = 7.45 \times 10^{-9}$ $r = 0.01$ $f = 0.0051$	-6,395
Rate of decay of infectious particles from water supply (ξ)	1/3 week^{-1}	1/9 week^{-1}	$R_{0,p} = 2.77$ $R_{0,w} = 0.001$ $q = 0.014$ $\phi = 9.9$ weeks $\varepsilon = 9.69 \times 10^{-9}$ $r = 0.01$ $f = 0.0053$	-6,394