S3 Text. Basic and control reproduction number of the model in Fig 3 in the main text. The reproduction number in Eq. (5) in the main text is obtained using the next generation matrix operator described in [1]. The vector of infected state variables without considering hospitalization is denoted by $x = (E, P, I, A)$. We define $F = \left[ \frac{\partial \mathcal{F}_i(x_0)}{\partial x_j} \right]$ and $V = \left[ \frac{\partial \mathcal{V}_i(x_0)}{\partial x_j} \right]$, where $\mathcal{F}_i$ is the rate of appearance of new infections in the $i$th compartment; $\mathcal{V}_i = \mathcal{V}_i^- - \mathcal{V}_i^+$, where $\mathcal{V}_i^+$ is the rate of transfer of individuals into the $i$th compartment by all other means except for infection, and $\mathcal{V}_i^-$ is the rate of transfer of individuals out of the $i$th compartment; and $x_0 = (S := 1, E := 0, P := 0, I := 0, A := 0, H := 0, Q := 0, D := 0, R := 0)$ is the disease–free equilibrium state of the system. We have

$$F = \begin{pmatrix} 0 & \beta \epsilon & \beta \epsilon \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{pmatrix} \quad \text{and} \quad V = \begin{pmatrix} d_E & 0 & 0 & 0 \\ -d_E & d_P & 0 & 0 \\ 0 & -d_P \beta & d_I & 0 \\ 0 & -d_P(1 - \delta) & 0 & d_A \end{pmatrix}.$$ 

Then,

$$FV^{-1} = \begin{pmatrix} \beta \left( \frac{\epsilon(d_A - \delta d_P + d_P)}{d_A d_P} \right) + \frac{\delta}{\delta_1} & \beta \left( \frac{\epsilon(d_A - \delta d_P + d_P)}{d_A d_P} \right) + \frac{\delta}{\delta_1} & \frac{\beta \epsilon}{\beta_1} & \frac{\beta \epsilon}{\beta_1} \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{pmatrix}.$$ 

Let $\rho(FV^{-1})$ denote the dominant eigenvalue of $FV^{-1}$. The control reproduction number is given by $R_c = \rho(FV^{-1})$.

References