$$\Lambda_F(t) = \beta(1-\epsilon(C(t)))\lambda(t)$$

$$\Lambda_M(t) = \beta r_\beta(1-\hat{\epsilon}(B(t)))\lambda(t)$$

$$\lambda(t) = \frac{r_\beta(I_M+P_M)+I_F+P_F}{A_M+A_F}$$