

Pulse vaccination of an SIRS epidemic model with nonlinear incidence rate

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We present the application of pulse vaccination for a varying size of the population of time-delayed SIRS epidemic model. The dynamics of the infectious disease depends on the threshold value, R_0 , known as the basic reproduction number. In the classical epidemic models, this value is evaluated by means of the next generation matrix. However, this method does not work for non-autonomous systems. Since we consider the pulse vaccination strategy for epidemic models our system is naturally non-autonomous. We follow the general approach to derive R_0 in terms of spectral radii of Poincare maps. Further, we show the existence of an infectious-free periodic solution and its global attractiveness for $R_0 < 1$ and the persistence of infectious disease for $R_0 > 1$.