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Impact of Incidence Functions on Epidemiological Model Dynamics: Mass Action vs. Standard Incidence

The selection of incidence functions in epidemiological models plays a critical role in shaping the disease dynamics, particularly in populations of varying sizes. In this presentation, we examine a model that incorporates post-infection mortality and partial immunity, comparing the effects of mass-action and standard incidence functions. With the mass-action incidence, the model exhibits periodic solutions under certain parameter conditions. In contrast, applying the standard incidence reduces the likelihood of periodic solutions, potentially eliminating them entirely.