Measles in small populations : predictability in highly stochastic systems

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Abstract

Blah

Introduction

Measles is a highly contagious and strongly immunizing infection of the respiratory system. Due to its extreme transmissibility, its epidemiology is conditional on the birth of susceptible individuals. As such, the temporal dynamics of measles are typically strongly oscillatory, driven seasonally by the increased contact rate amongst children during school periods, assuming the population is large enough to sustain the disease (Black FL, 1966, JTB 11). These dynamics have been well studied (Grenfell papers, others), and many modelling efforts have successfully explained the biennial cycle exhibited in pre-vaccination records of measles incidence in Europe and elsewhere (papers ?).

In small populations, where the number of individuals is much smaller than the critical community size required to support an endemic infection, however, the dynamics of measles cases are vastly different. Susceptible individuals accumulate when measles is absent; then, driven by stochastic importation, an epidemic may sweep through a large number of susceptible population very quickly, only to go extinct once more.

Results

Subsection 1

Subsection 2

Discussion

Materials and Methods

Acknowledgments

Figure Legends

Tables