MATHEMATICAL MODELS FOR THE SPATIO – TEMPORAL SPREAD OF INFECTIOUS DISEASE

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ABSTRACT

We shall be concerned with mathematical models that describe the circulation of infectious diseases among spatially distributed populations. We begin with a classical elementary system of ordinary differential equation models that describes interaction of infected and susceptible population as well as the progression from the exposed to the infected state and eventual recovery or mortality. We account for the age of the infection and its geographic spread with the introduction of more complex systems that couple parabolic and hybrid parabolic/hyperbolic systems. These considerations together with additional features are used to describe the outbreak of Ebola among a spatially distributed population.

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