A MATHEMATICAL SIR MODEL FOR EPIDEMIC EMERGENCY

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Abstract: Outbreaks of infectious diseases are one of the worst scourges in the history of mankind that have affected its flow. First they were tied to the supernatural beings, then they were used as a cause for wars and state internal showdowns, only then as a matter of medicine. For a long time, epidemics of infectious diseases have been considered only as a medical phenomenon, but by expanding the fields of security procedures, this phenomenon is classified in a group of emergency. It was found that in these situations there is certain mathematical regularity that can predict possible consequences. In order to be mathematically modeled performance of the epidemic in a large population need to be grouped into departments. Agreed standard labels for these units as S (for susceptible – exposed), I (infected) and R (recovered), so this model is called the SIR model. This is a simple model for many infectious diseases including measles, mumps and rubella. Number of persons in each department may vary in time, and it follows that the precise numbers must be calculated as a function of time t: S (t), I (t) and R (t).
Keywords: outbreak, an emergency, SIR model, an infectious disease.