

## An Infectious Disease Medical Policy Simulation and Gaming

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### Abstract

*This paper analyses a new type of infectious disease by an agent-based simulation and gaming model based on Ebola fever and dengue fever. The mathematical model such as SIR (Susceptible, Infected, Recovered) has been used to model these infectious diseases. Besides, a simulation and gaming model enables to represent the decision-making of each citizen on the computer, and al-so reveals the pandemic by the contact process among people in the model. The study challenges to design an infectious disease model in which some health policies are introduced including vaccine stocks, antiviral medicine stocks, medical staff and so on. Aside from the policies, a gaming simulation of a new type of infectious disease, which has not yet an effective vaccine, is also implemented in the model. We created a medical policy decision game dealing with infections using a serious game approach. As results of experiments, it has been found that preventive vaccine, antiviral medicine stocks and the number of medical staffs are crucial factors to prevent the spread. Besides, a modern city is vulnerable to dengue fever due to commuting by train. It has also been found that self-control and restraint on immigration are essential, and decision-making for vaccine reserve amount and medical support to the partner country where the infection has spread.*

**Keywords:** *Infectious disease, health policy, Ebola haemorrhagic fever, dengue fever*