

## 基于演化博弈的重大突发公共卫生事件情景预测模型与防控措施

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## Scenario forecasting model and prevention-control measurements of important public health event based evolutionary game

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**摘要** 运用演化博弈理论建立了重大突发公共卫生事件的疫情传播方程, 将政府部门和社会公众的策略互动和行为演化分析融入到传染病自然传播的SI模型。根据卫生部公布甲型H1N1流感疫情每日新增确诊病例数, 在三种演化情景下(即疫情大规模扩散、疫情迅速得到控制、当前的政府积极防控策略), 对疫情传播初期阶段进行了Logistic方程拟合和疫情传播峰值点的预测分析。最后, 提出了重大疫情初期阶段“谨慎性”防控原则、随着疫情进展及时调整防控策略的“灵活性”原则、选择调整时机的主要考虑因素。根据疫情传播方程, 讨论了政府调整甲型H1N1疫情控制策略对疫情传播的影响。

**关键词:** 突发公共卫生事件 演化博弈 传染病SI模型 情景预测 应急管理

**Abstract:** The important epidemic situation diffusion function is built by using evolutionary game theory, where the strategy interaction and behavioral evolution between government and social public are considered into the traditional infectious disease diffusion SI model. According to the daily new confirmed cases of influenza A (H1N1) promulgated by Chinese Ministry of Health, the paper makes the Logistic estimation for the epidemic situation diffusion course in the early stage, and makes forecasting analysis of peak-value under three evolutionary scenarios, i.e., large-scale diffusion, rapid control and currently active prevention and control. At last, it puts forward the prudence principle in the early stage, the flexibility principle to adjust prevention and control measures timely along with the epidemic situation development, and the influence factors to be considered in choosing favorable adjusting opportunity. The effect of government adjusting the prevention and control strategies on influenza A diffusion is discussed.

**Key words:** public health emergency response evolutionary game SI model of infectious diseases scenarios forecasting emergency management


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











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