

Epidemic model of Covid-19 with public health interventions consideration: a review

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Abstract

:Since the Covid-19 outbreak and widely spread, global attentions have been increasingly drawn to the epidemic spread and pandemic development. Many researchers focus on the modelling of the development of the COVID-19 and the effect of intervention on containment of the spread. We systematically reviewed the epidemic models of COVID-19 transmission and its public health interventions: a) COVID-19 epidemic models, including its hypothesis, key input epidemiological parameters, asymptomatic proportion and mortality; b) the impact of public health interventions, including social isolation, contact tracking, improving quarantine rate and reporting rate, travel restrictions, etc. To help the modelling researchers to calibrate the epidemiological model accurately based on the actual situation, the public health authorities should work out accurate epidemiology data. Different countries should take appropriate public health interventions to control the development of the epidemic. Although strict travel restrictions can significantly suppress the spread of COVID-19, while contact tracking, isolation and other measures can identify and control the infection source timely and effectively, which can cut off the transmission, but protective face mask is the intervention measure with the lowest economic cost and social cost. After the recession of the epidemic in Wuhan, the result of centralized nucleic acid detection on 9.97 million people showed that the asymptomatic infection ratio was very low and asymptomatic infection was not infectious, suggesting that the existing Covid-19 epidemiological models may overestimate the risk of epidemic. Excessive public preventive measures may do more harm than good, and hinder the recovery of normal economic life order.

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