A cost-based comparison of quarantine strategies for new emerging diseases.
(English summary)

Summary: “A classical epidemiological framework is used to provide a preliminary cost analysis of the effects of quarantine and isolation on the dynamics of infectious diseases for which no treatment or immediate diagnosis tools are available. Within this framework we consider the cost incurred from the implementation of three types of dynamic control strategies. Taking the context of the 2003 SARS outbreak in Hong Kong as an example, we use a simple cost function to compare the total cost of each mixed (quarantine and isolation) control strategy from a public health resource allocation perspective. The goal is to extend existing epi-economics methodology by developing a theoretical framework of dynamic quarantine strategies aimed at emerging diseases, by drawing upon the large body of literature on the dynamics of infectious diseases. We find that the total cost decreases with increases in the quarantine rates past a critical value, regardless of the resource allocation strategy. In the case of a manageable outbreak resources must be used early to achieve the best results whereas in case of an unmanageable outbreak, a constant-effort strategy seems the best among our limited plausible sets.”

References
SARS in Toronto as a case study, Journal of Infection, 50 (2005), 386–393.


31. J. M. Hyman, J. Li and E. A. Stanley, Modeling the impact of random screening and contact tracing in reducing the spread of HIV, Mathematical Biosciences, 181 (2003), 17–54. MR1943227


34. J. J. Kim, M. Brisson, W. J. Edmunds, S. J. Goldie, Modeling cervical cancer prevention in developed countries, Vaccine, 26 Suppl. 10 (2008), K76-K86.


47. F. Sassi, Calculating QALYs, comparing QALY and DALY calculations, Health


50. J. Speakman, F. Gonzalez-Martin and T. Perez, *Quarantine in Severe Acute Respiratory Syndrome (SARS) and other emerging infectious diseases*, Journal of Law, Medicine & Ethics, 31 (2003), 63–64.


Note: This list reflects references listed in the original paper as accurately as possible with no attempt to correct errors.

© Copyright American Mathematical Society 2018