

1415. Comparison of the Reproductive Numbers of Middle East Respiratory Syndrome Coronavirus Nosocomial Outbreaks in Saudi Arabia and Korea

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Background. Early recognition and initial countermeasures are important for emerging infectious diseases such as SARS and MERS, which do not have any specific treatment or vaccine. To determine the scope of initial countermeasures, it is important to understand the rate of transmission, basic reproductive number, R_0 . Until now, R_0 for

SARS was reported to be more than 1, whereas it was generally estimated to be less than 0.7 for MERS. However, this does not explain the large-scale outbreaks that occurred within hospitals in the Kingdom of Saudi Arabia (KSA) and Korea.

Methods. R_0 was estimated using the incidence decay with exponential adjustment (IDEA). To compare the outbreak in KSA, a line listing of MERS-CoV cases maintained by Andrew Rambaut was used. The line list was compiled from publicly available sources, including the KSA Ministry of Health and World Health Organization reports. We estimated parameters (R_0 and d) by fitting the model to incidence and cumulative incidence epidemic curves using the Matlab.

Results. R_0 was estimated by assuming 6 to 8 days of serial interval. As a result, the best fitted model had the serial interval of 6 days when all 186 patients in Korea were used for the calculation and the R_0 was 3.99. Based on the information from the first outbreak cluster in Pyeongtaek St. Mary's Hospital, the R_0 was 4.04, and from the biggest outbreak cluster in Samsung Seoul Hospital, the R_0 was 5.0. When the outbreak information of Jeddah and Riyadh in KSA was used after assuming 6 days of the serial interval, R_0 came out to be 3.95 and 1.92, respectively.

Conclusion. This study shows that R_0 for MERS-CoV is greater than what was reported to be 0.7 for the cases of the nosocomial outbreaks occurred in KSA and Korea. This demonstrates that more active and extensive measures are needed when dealing with nosocomial infections of MERS.

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