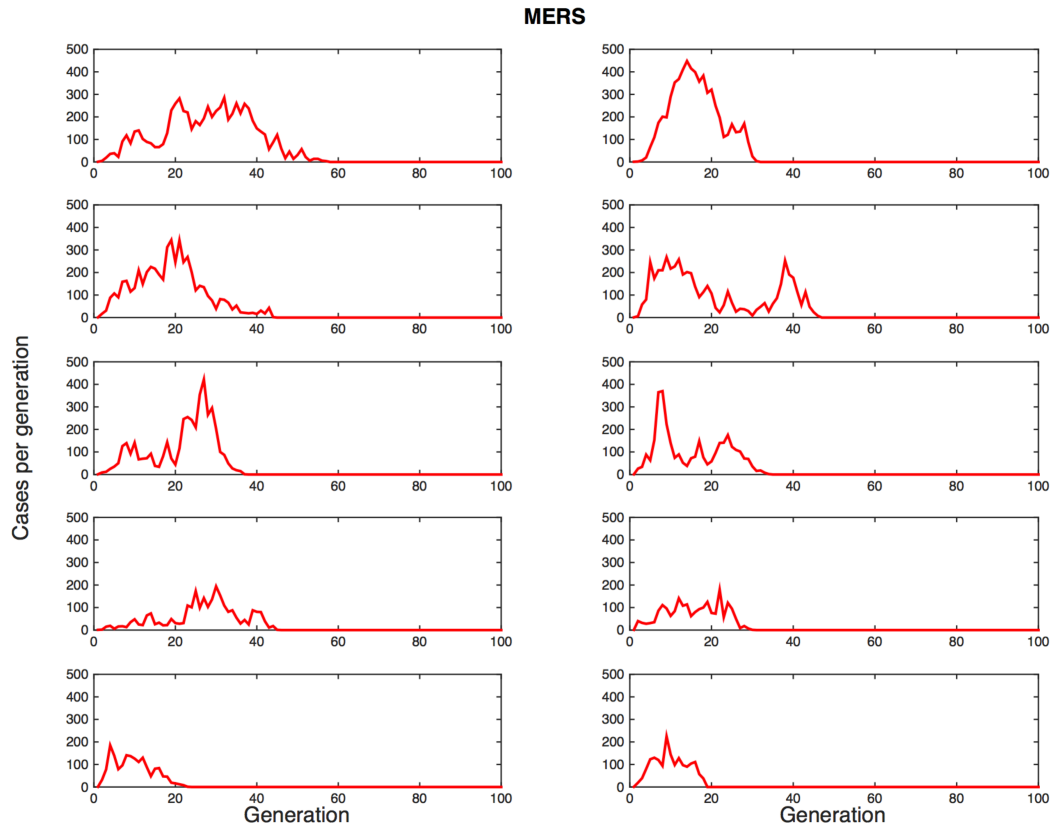
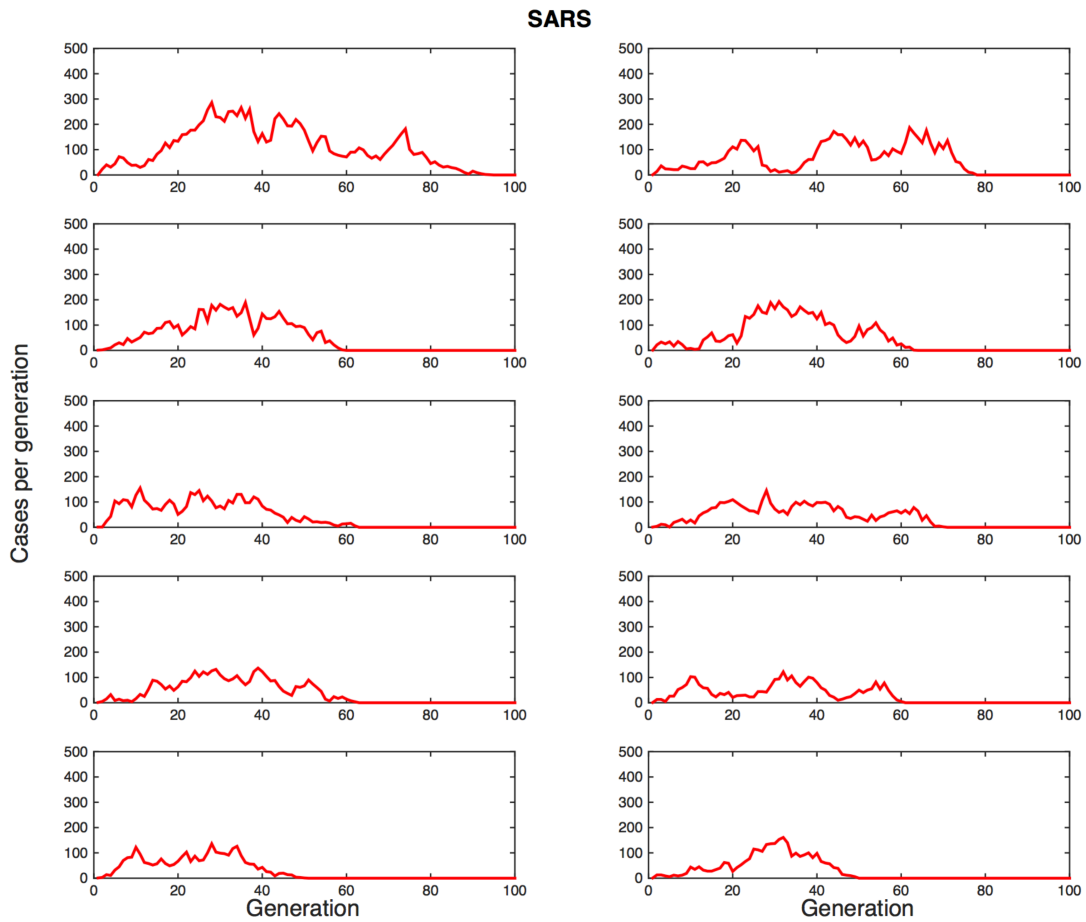


### Additional file 1: Supplementary figures

**Figure S1.** Outbreak simulations for MERS that demonstrate the potential for multi-modal outbreaks characterized by larger total size and duration that result from low-probability super-spreading events. Simulations were obtained through branching process models using parameters shown in Table 3.



**Figure S2.** Outbreak simulations for SARS that demonstrate the potential for multi-modal outbreaks characterized by larger total size and duration that result from low-probability super-spreading events. Simulations were obtained through branching process models using parameters shown in Table 3.



**Figure S3.** Time series of incident cases of MERS and SARS outbreaks display multi-modal epidemic patterns. SARS outbreaks in Singapore and Toronto occurred from 23 February 2003 to 8 June 2003. The MERS outbreak in South Korea occurred from 10 May to 5 July 2015 while the MERS outbreak in Al-Hasa, Saudi Arabia occurred from 8 April to 12 May 2015.

