

HOUSEHOLD AND COMMUNITY TRANSMISSION OF THE ASIAN INFLUENZA A (H2N2) AND INFLUENZA B VIRUSES IN 1957 AND 1961

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Abstract. This study analyzed the distribution of the number of cases in households of various sizes, reconsidering previous survey data from the Asian influenza A (H2N2) pandemic in 1957 and the influenza B epidemic in 1961. The final size distributions for the number of household cases were extracted from four different data sources ($n = 547, 671, 92$ and 263 households), and a probability model was applied to estimate the community probability of infection (CPI) and household secondary attack rate (SAR). For the 1957 Asian influenza pandemic, the CPI and household SAR were estimated to be 0.42 [95% confidence intervals (CI): $0.37, 0.47$] and 7.06% (95% CI: $4.73, 9.44$), respectively, using data from Tokyo. The figures for the same pandemic using data from Osaka were 0.21 (95% CI: $0.19, 0.22$) and 9.07% (95% CI: $6.73, 11.53$), respectively. Similarly, the CPI and household SAR for two different datasets of influenza B epidemics in Osaka in 1961 were estimated as 0.37 (95% CI: $0.30, 0.44$) and 18.41% (95% CI: $11.37, 25.95$) and 0.20 (95% CI: $0.13, 0.28$) and 10.51% (95% CI: $8.01, 13.15$), respectively. Community transmission was more frequent than household transmission, both for the Asian influenza pandemic and the influenza B epidemic, implying that community-based countermeasures (eg, area quarantine and social distancing) may play key roles in influenza interventions.

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