

Transmissibility of 2019 Novel Coronavirus: zoonotic vs. human to human transmission, China, 2019-2020

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Abstract

Objectives: The novel coronavirus (2019-nCoV) originating from Wuhan has rapidly spread throughout China. While the origin of the outbreak remains uncertain, accumulating evidence links a wet market in Wuhan for the early spread of 2019-nCoV. Similarly, the influence of the marketplace on the early transmission dynamics is yet to be investigated. **Methods:** Using the daily series of COVID-19 incidence including contact history with the market, we have conducted quantitative modeling analyses to estimate the reproduction numbers (R) for the market-to-human and human-to-human transmission together with the reporting probability and the early effects of public health interventions. **Results:** Our mean R estimates for China in 2019-2020 are estimated at 0.37 (95%CrI: 0.02-1.78) for market-to-human transmission, and 3.87 (95%CrI: 3.18-4.78) for human-to-human transmission, respectively. Moreover we estimated that the reporting rate cases stemming from market-to-human transmission was 3-31 fold higher than that for cases stemming from human-to-human transmission, suggesting that contact history with the wet market played a key role in identifying COVID-19 cases. **Conclusions:** Our findings suggest that the proportions of asymptomatic and subclinical patients constitute a substantial component of the epidemic's magnitude. Findings suggest that the development of rapid diagnostic tests could help bring the epidemic more rapidly under control.