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SYNOPSIS

01/31/2020

Review of "Early transmission dynamics in Wuhan, China, of novel coronavirus-infected pneumonia"

Article citation: Li Q, Guan X, Wu P, Wang X, Zhou L, Tong Y, et al. Early transmission dynamics in Wuhan, China, of novel coronavirus-infected pneumonia. N Engl J Med. 2020 Jan 29 [Epub ahead of print]. Available from: https://www.nejm.org/doi/10.1056/NEJMoa2001316

One-minute summary

- Case series of **425 confirmed 2019 novel coronavirus (2019-nCoV) cases** diagnosed between December 2019 and January 22, 2020.
- **Median age** of cases was **59 years: Age range** was 15-89 years; **56% were male**
- Compared cases identified in three time periods: period 1 - before January 1, 2020 (before the Huanan Seafood Market closed) (N=47); period 2 - January 1- 11, 2020 (N=248); and period 3 - January 12- 22, 2020 (N=130).
- The proportion of **cases in healthcare workers increased across the time periods:**
  - 0% in period 1; 3% in period 2; and 7% in period 3.
- Cases in period 1 were more likely than in period 3 to:
  - be **male (66% vs. 48%,** respectively**)**
  - be **less than 65 years of age (77% vs. 63%,** respectively**)**
  - have had exposure to the **Huanan Seafood Market (55% vs 6%,** respectively**)**
- In periods 2 and 3, **72% and 73% of cases, respectively, had no exposures** to either markets or people with known respiratory symptoms
- Mean duration from **illness onset** to **first medical visit** decreased from **5.8 days** in period 1 to **4.6 days** in period 2
- Mean duration from **illness onset** to **hospital admission** decreased from **12.5 days** in period 1 to **9.1 days** in period 2.
- The mean **incubation period** was estimated to be **5.2 days** (95% confidence interval (CI): 4.1-7.0), with 95th percentile of the distribution at 12.5 days, based on information from 10 cases

- The mean **serial interval** (time from illness onset in the first case to illness onset in a secondary case) was estimated as **7.5 days**+/- 3.4 days standard deviation (95% CI: 5.3-19 days) based on six pairs of cases

- The **basic reproductive number** (R_0) was estimated to be **2.2** (95% CI: 1.4-3.9) based on cases before January 4, 2020 when awareness about the outbreak increased

Additional information

- Laboratory confirmation was based on testing upper and/or lower respiratory specimens; testing methods were reverse transcriptase polymerase chain reaction (RT-PCR), genome sequencing and/or viral isolation

- The **lack of infected children** is notable, indicating that children are either less likely to be infected or more likely to only show mild symptoms and not seek health care

- **Fewer health care workers** were infected with 2019-nCoV relative to the SARS or MERS outbreaks. Transmission of MERS and SARS were associated with superspreading events, which have not yet been identified with 2019-nCoV.

- Time to first medical visit was shorter than time to hospitalization emphasizing the importance of proactive case finding in outpatient clinics and emergency departments

- Although no clinical information is provided, the case definition for most of the study period focused on pneumonia. Mild cases were therefore less likely to be detected.

PHO reviewer's comment

This is the largest case series of 2019-nCoV published to-date, however represents cases which occurred in one province in China relatively early in the outbreak.

Citation

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Review of “Early transmission dynamics in Wuhan, China, of novel coronavirus-infected pneumonia”. Toronto, ON: Queens’s Printer for Ontario; 2020.

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