2019-nCoV Literature Situation Report (Lit Rep)
January 30, 2020

Key Takeaways

- **The first case of person-to-person transmission in the U.S. was reported in Chicago today.**
- **Case fatality among hospitalized patients was estimated at 14% by one report, with case fatality among non-hospitalized cases assumed to be much lower.**
- **Various sources report that the outbreak in China is likely significantly larger in case count and geography than current estimates suggest due to the frequency of undetected mild cases.**

Transmission

- A Wuhan-based research team studied the genetic diversity, origin, and evolution of the 2019-nCoV outbreak in china and Thailand (Bangkok) using likelihood-mapping and phylogenetic analysis. They estimate that the common ancestor of the virus originated in Wuhan on November 9, 2019 (95% CI: Sep 25-Dec 19. 2019). There is some evidence that super-spreaders may have driven transmission early in the outbreak.

    Li et al. (Jan 30, 2020). Potential of large 'first generation' human-to-human transmission of 2019-nCoV. J Med Virology. doi: 10.1002/jmv.25693

- The epidemiologic characteristics of cases of 2019-nCoV identified as of Jan 22, 2020 by health authorities are described. Graphics and tables are valuable resources worth reviewing.
- Case fatality among hospitalized patients was estimated at 14% (95% CI: 3.9–32%), though caution should be used in interpreting this as duration of hospitalization prior to death can be long. This may therefore be an underestimate. Overall case fatality is likely substantially lower as data indicate there are likely many undetected cases with mild symptoms.
- While there is evidence of low person-to-person transmission earlier in the outbreak, more recent data suggest sustained human-to-human transmission.

    Wu et al. (Jan 23, 2020). Real-time tentative assessment of the epidemiological characteristics of novel coronavirus infections in Wuhan, China, as at 22 January 2020. https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.3.2000044?emailalert=true

Modelling and Prediction

- Using ground, rail, and air travel data, researchers estimated the risk of 2019-nCoV exportation from Wuhan to other Chinese cities prior to the enforced quarantine in Wuhan. Among other findings, the model identified several high-risk cities (due to transportation patterns) throughout China currently have undetected cases.

    Du et al. (Jan 30, 2020). Risk of 2019 novel coronavirus importations throughout China prior to the Wuhan quarantine. Pre-Print. https://www.medrxiv.org/content/10.1101/2020.01.28.20019299v1

- Researchers aimed to quantify the effectiveness of traveler screening for 2019-nCoV. Even under ideal screening assumptions, around half of infected travelers are likely to be missed. Most missed cases are asymptomatic, undetectable, and unaware of their exposure. The paper offers helpful visuals to support decision making. An interactive Shiny App is available as well.

Gostic et al. (Jan 30, 2020). Estimated effectiveness of traveller screening to prevent international spread of 2019 novel coronavirus (2019-nCoV). Pre-Print.
https://www.medrxiv.org/content/10.1101/2020.01.28.20019224v1

Clinical Characteristics

- Updated descriptive epidemiology is provided for the outbreak.
  - While the authors provide an estimated case fatality of 2.84% overall, this was calculated from an outdated estimate of 1,975 cases in mainland China.
- The first 17 deaths reported by the China national Health Commission are described clinically.
  - The majority (13/17) were male with median age of 75.
  - Fever (65%) and cough (53%) were the most common initial symptoms reported.
  - Median time from symptom onset to death was 14 days (range 6-41) and was shorter for patients 70+ years.

    Wang et al. (Jan 30, 2020). Updated understanding of the outbreak of 2019 novel coronavirus (2019-nCoV) in Wuhan, China. J Med Virology. Pre-Print. doi: 10.1002/jmv.25689.

Laboratory Updates

- Researchers present a new diagnostic workflow that does not rely on having virus material available. It reliably detects 2019-nCoV and can discriminate from SARS-CoV.

    Corman, et al. (Jan 30, 2020). Detection of 2019 novel coronavirus (2019-nCoV) by real-time RT-PCR. EuroSurveillance.
    https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.3.2000045

- An Australian lab has successfully frown the 2019-nCoV in cell culture. This will support vaccine development and development of antibody testing methods for asymptomatic individuals.

    Available from (Jan 30, 2020):
    https://www.reuters.com/article/china-health-australia-idUSL4N29X3XX

In addition to the articles described here, there are several editorials, commentaries, and technical (e.g., drug trial) papers available to view via the 2019-nCoV SharePoint site along with previous Lit Reps.