Estimation of the latent period distribution of SARS-CoV-2 in China, a retrospectively study

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- **Background**
  - **Definition**: The latent period of an infectious disease is the time interval between infection and start transmit virus to others.
  - **Pre-symptomatic transmission of COVID-19**: Indicating shorter latent period compare to incubation period, which is the time interval between infection and showing symptoms.

- **Objectives**
  - Estimating the latent period distribution of COVID-19
  - Compare the latent period with incubation period

- **Methods**
  - **Data**: doubly-censored for latent period and single-censored for incubation period (Fig 1)
  - **Analysis**: Parametric models using maximum likelihood estimation
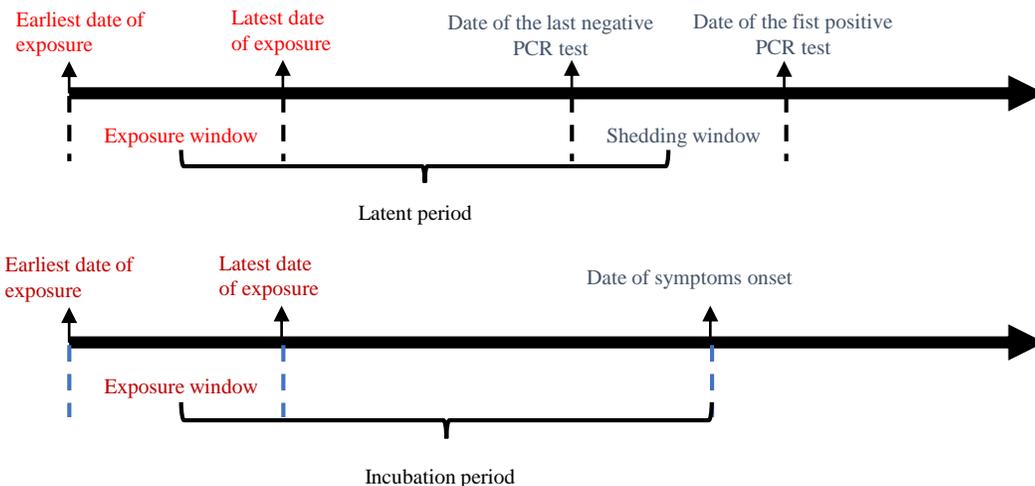
Figure 1: Latent period was the time interval between exposure window and viral shedding window; incubation period was the time interval between exposure window and date of symptoms onset

- **Results**
  - Basic Characteristics: An overall 177 cases, 143 were symptomatic cases and 34 were asymptomatic cases.
  - Mean estimation of latent period was 5.5 days, 1.4 days shorter than the mean incubation period (6.9 days).
  - 95th percentile* of latent period was 10.6 days, also shorter than 95th percentile of incubation period (13.1 days).
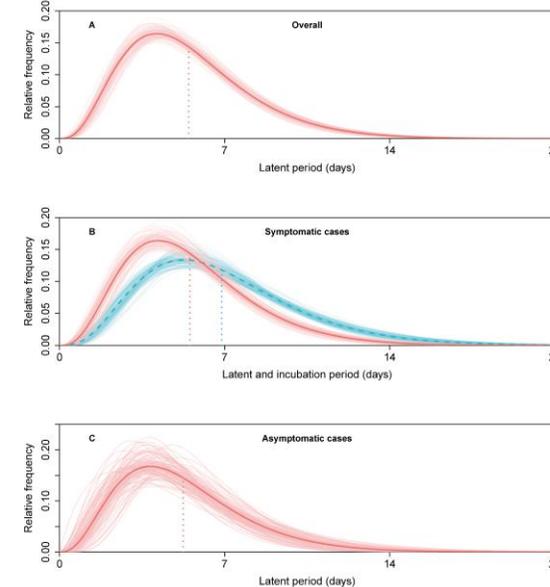
*95th percentile: means 95% of the time data points are below that value

Figure 2:
A: Overall latent period distribution (solid red line) with uncertainty
B: Latent period (red lines) and incubation period (blue lines) for symptomatic cases
C: Latent period for asymptomatic cases
Dashed lines are the mean estimation

- **Conclusions and discussions:**
  - The latent period distribution of COVID-19 to be 5.5 days on average with a 95th percentile of 10.6 days
  - Shorter quarantine period could be implemented based on latent period with the available laboratory test during quarantine