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SYNOPSIS

02/26/2020

Review of "Viral load of SARS-CoV-2 in clinical samples"

Article citation: Pan Y, Zhang D, Yang P, Poon LLM, Wang Q. Viral load of SARS-CoV-2 in clinical samples. Lancet Inf Dis. 2020 Feb 24 [Epub ahead of print]. Available from: https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30113-4/fulltext

One-Minute Summary

- Report of viral loads using reverse transcription (RT)-PCR in **clinical specimens for 82 individuals** with coronavirus disease 2019 (COVID-19).
- Serial samples (throat swabs, sputum, urine and stool) were collected daily from **two patients** in Beijing after their hospitalization (three to 12 days and four to 15 days after symptom onset).
    - Viral loads in throat swab and sputum peaked at five to six days after symptom onset (range: 104 to 107 copies per mL during this period).
    - No viral RNA was detected in urine or stool from these two patients.
- Respiratory samples (nasal [n=1], throat [n=67] and sputum [n=42]) from **80 individuals at different stages of infection** were also studied.
    - Viral loads ranged from 641 to 1.3 x 1011 copies per mL. The highest viral load was found in sputum on day eight post-symptom onset in a patient who died.
    - Two individuals under surveillance showed positive results a day before symptom onset.
    - Viral loads were correlated between throat and sputum samples (n=30 pairs).
    - Stool samples were positive on RT-PCR for 9/17 (53%) of cases with available data. Viral loads in these samples were lower than in respiratory samples (range: 550 to 1.2 x 105 copies per mL).
- In both sample sets, sputum samples showed higher viral loads than throat swab samples.

Additional Information

- For the two individuals with serial samples:
    - Specimens were tested using N-gene-specific quantitative RT PCR.
    - The authors note that the viral load pattern peak at five to six days is **distinct from SARS**, which normally peaked around 10 days after onset.
- For the other 80 individuals with testing:
    - The only nasal swab tested showed a viral load of 1.7×10^5 copies per mL (at three days post-onset).

PHO Reviewer's Comments

- Sample quality between specimens collected may not be consistent and can impact measurements of correlation.
- The authors do specify which PCR laboratory test was used to test the 80 patients.

Citation

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Review of "Viral load of SARS-CoV-2 in clinical samples". Toronto, ON: Queen's Printer for Ontario; 2020.

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