SARS-CoV-2 shedding and infectivity

Authors' reply

We thank Barry Atkinson and Eskild Petersen for their comments on our Article describing the clinical course and risk factors for mortality of adult inpatients with coronavirus disease 2019 (COVID-19) in Wuhan, China.[1] We agree that the presence of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) viral RNA in a respiratory specimen cannot be directly interpreted as a potential for disease transmission and infection.

Although viral culture is an important method to evaluate viral infectivity and activity, it is unavailable in clinical practice because of its low sensitivity and long turn-around time for virus detection.[2] Two negative SARS-CoV-2 RNA PCR tests, at least 24 h apart, was recommended by WHO[3] as one of several criteria for discharge. Prolonged periods of detectable SARS-CoV-2 RNA suggest a sustained viral replication in some kinds of host cells in patients with COVID-19. A comparison has previously been made between viral shedding, as quantified by real time PCR (RT-PCR), and median tissue culture infectious dose (TCID50) in patients with influenza.[4] The temporal changes in viral load by RT-PCR were similar to that of TCID50.[4] For COVID-19, the association between viral load in respiratory tract specimens, quantified by RT-PCR, and viral culture needs evaluation.

Viral activity is only one of various factors that might influence disease transmission. Epidemiology is the gold standard to measure transmission potential of patients who recover from COVID-19 yet are still positive for SARS-CoV-2 RNA. Further effort is urgently needed to evaluate the basic reproductive number in these patients.

We declare no competing interests.

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2 Charlton CL, Babady E, Ginocchio CC, et al. Practical guidance for clinical microbiology laboratories: viruses causing acute respiratory tract infections. *Clin Microbiol Rev* 2019; **32:** e00042–18.
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