Emerging Evidence Search Request

Please note: Our "Emerging Evidence" feature is based on the existing literature at the time the question is asked to provide the most informed answers possible to questions about COVID-19, and the science continues to evolve. As with any research, studies need to be replicated and there needs to be a strong body of evidence before any absolute conclusions can be made.

Questions about UHN policy or practice are best directed to the appropriate department (e.g. IPAC, Occupational Health).

Question:

How long is a person contagious after they contract Covid? What is the best evidence for determining people are no longer infectious?

Additional Results from an Updated Search: November 3, 2020

<1>
Unique Identifier
33104776
Title
Repeat COVID-19 Molecular Testing: Correlation of SARS-CoV-2 Culture with Molecular Assays and Cycle Thresholds.
Source
Clinical Infectious Diseases. 2020 Oct 27.
VI 1
Status
Publisher
Authors
Gniazdowski V; Morris CP; Wohl S; Mehoke T; Ramakrishnan S; Thielen P; Powell H; Smith B; Armstrong DT; Herrera M; Reifsnyder C; Sevdali M; Carroll KC; Pekosz A; Mostafa HH.
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Abstract
BACKGROUND: Repeat COVID-19 molecular testing can lead to positive test results after negative tests and to multiple positive test results over time. The association between positive tests and infectious virus is important to quantify.

METHODS: A two months cohort of retrospective data and consecutively collected specimens from COVID-19 patients or patients under investigation were used to understand the correlation between prolonged viral RNA positive test results, cycle threshold (Ct) values and growth of SARS-CoV-2 in cell culture. Whole genome sequencing was used to confirm virus genotype in patients with prolonged viral RNA detection. Droplet digital PCR (ddPCR) was used to assess the rate of false negative COVID-19 diagnostic tests.

RESULTS: In two months, 29,686 specimens were tested and 2,194 patients received repeated testing. Virus recovery in cell culture was noted in specimens with SARS-CoV-2 target genes' Ct value average of 18.8 +/- 3.4. Prolonged viral RNA shedding was associated with positive virus growth in culture in specimens collected up to 20 days after the first positive result but mostly in individuals symptomatic at time of sample collection. Whole genome sequencing provided evidence the same virus was carried over time. Positive tests following negative tests had Ct values higher than 29.5 and were not associated with virus culture. ddPCR was positive in 5.6% of negative specimens collected from COVID-19 confirmed or clinically suspected patients.

CONCLUSIONS: Low Ct values in SARS-CoV-2 diagnostic tests were associated with virus growth in cell culture. Symptomatic patients with prolonged viral RNA shedding can also be infectious.
Publication Type
Journal Article.
Year of Publication
2020

Link to the Ovid Full Text or citation:
Click here for full text options

Link to UHN Full Text:
Serial Solutions

<2>
Unique Identifier

33077007
Title
Understanding Viral Shedding of SARS-CoV-2: Review of Current Literature.
Source
Infection Control & Hospital Epidemiology. 1-35, 2020 Oct 20.
VI 1
Status
Publisher
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Abstract
OBJECTIVE: Transmission of SARS-CoV-2 has significant implications for hospital infection prevention and control, discharge management, and public health. We reviewed available literature to reach an evidenced-based consensus on the expected duration of viral shedding.

DESIGN: We queried four scholarly repositories/search engines for studies reporting SARS-CoV-2 viral shedding dynamics by PCR and/or culture available through September 8, 2020. We calculated the pooled median duration of viral RNA shedding from respiratory and fecal sources.

RESULTS: Seventy-seven studies on SARS-CoV-2 were included. All studies reported PCR-based testing and 12 also included viral culture data. The overall pooled median duration of RNA shedding from respiratory sources was 18.4 days (95% CI: 15.5 days - 21.3 days; I2=98.87%, p<0.01) among 28 studies. When stratified by disease severity, the pooled median duration of viral RNA shedding from respiratory sources was 19.8 days (95% CI: 16.2 days - 23.5 days; I2=96.42%, p<0.01) among severely ill patients and 17.2 days (95% CI: 14.0 days - 20.5 days; I2=95.64%, p<0.01) in mild/moderate illness. Viral RNA was detected up to 92 days after symptom onset. Viable virus was isolated by culture from -6 days to 20 days relative to symptom onset.

CONCLUSIONS: SARS-COV-2 RNA shedding can be prolonged, yet high heterogeneity exists. Detection of viral RNA may not correlate with infectivity since available viral culture data suggests shorter durations of shedding of viable virus. Additional data is needed to determine the duration of shedding of viable virus and the implications for risk of transmission.
Publication Type
Journal Article.
Year of Publication
2020

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Link to UHN Full Text:
Serial Solutions

<3>
Unique Identifier
33049331
Title
The duration of infectiousness of individuals infected with SARS-CoV-2. [Review]
Source
Journal of Infection. 2020 Oct 10.
VI 1
Status
Publisher
Authors
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Abstract
OBJECTIVES: To summarise the evidence on the duration of infectiousness of individuals in whom SARS-CoV-2 ribonucleic acid is detected.

METHODS: A rapid review was undertaken in PubMed, Europe PubMed Central and EMBASE from 1 January 2020 to 26 August 2020.

RESULTS: We identified 15 relevant studies, including 13 virus culture and 2 contact tracing studies. For 5 virus culture studies, the last day on which SARS-CoV-2 was isolated occurred within 10 days of symptom onset. For another 5 studies, SARS-CoV-2 was isolated beyond day 10 for approximately 3% of included patients. The remaining 3 virus culture studies included patients with severe or critical disease; SARS-CoV-2 was isolated up to day 32 in one study. Two studies identified immunocompromised patients from whom SARS-CoV-2 was isolated for up to 20 days. Both contact tracing studies, when close contacts were first exposed greater than 5 days after symptom onset in the index case, found no evidence of laboratory-confirmed onward transmission of SARS-CoV-2.

CONCLUSION: COVID-19 patients with mild-to-moderate illness are highly unlikely to be infectious beyond 10 days of symptoms. However, evidence from a limited number of studies indicates that patients with severe-to-critical illness or who are immunocompromised, may shed infectious virus for longer.

Publication Type
Journal Article. Review.
Year of Publication
2020

Link to the Ovid Full Text or citation:
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Link to UHN Full Text:
Serial Solutions

Databases Searched:

Ovid MEDLINE(R) ALL <1946 to November 02, 2020>

Search history sorted by search number ascending

#	Searches	Results	Type
1	Virus Shedding/	3465	Advanced
2	((viral or virus) adj2 shed*).mp.	6639	Advanced
3	1 or 2	6639	Advanced
4	limit 3 to covid-19	411	Advanced
5	limit 4 to dt="20201006-20201103"	47	Advanced
6	limit 5 to english language	47	Advanced
7	remove duplicates from 6	47	Advanced
8	from 7 keep 9, 17, 19	3	Advanced

Search Completed By:

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