

COVID-19 Research Watch
May 13, 2020

PHARMACEUTICAL INTERVENTIONS

[Triple combination of interferon beta-1b, lopinavir-ritonavir, and ribavirin in the treatment of patients admitted to hospital with COVID-19: an open-label, randomised, phase 2 trial¹](#)

In this phase 2 trial conducted among adults admitted with COVID-19 to six hospitals in Hong Kong, 86 patients were randomized to the combination group receiving a 14-day course of lopinavir-ritonavir, ribavirin, and interferon beta-1b, and 41 patients were randomized to the control group receiving 14 days of lopinavir-ritonavir. The group randomized to the combination therapy had a shorter median time from treatment initiation to a negative nasopharyngeal swab (7 days) compared to the control group (12 days), suggesting that early triple antiviral therapy was superior to lopinavir-ritonavir alone to shorten duration of viral shedding. Additionally, the therapy was found to be safe, alleviate symptoms, and shorten hospital stay in patients with mild-to-moderate COVID-19.

REGION-SPECIFIC LESSONS LEARNED

[Changes in SARS-CoV-2 Positivity Rate in Outpatients in Seattle and Washington State, March 1-April 16, 2020²](#)

Randhawa et al. found the positivity rates for COVID-19 in outpatient settings were 8.2% and 8.4% in Washington State and Seattle, respectively, and 14.4% in Seattle emergency departments. Positivity rates were higher in males (15.5%) than females (13.0%) and peaked March 28th-29th before declining state-wide. These temporal trends align with state physical distancing guidelines implemented first on March 16th and heightened on March 23rd, suggesting the enactment of early physical distancing guidelines affected the course of COVID-19 in Washington.

MODELS

[Sars-CoV-2 productively infects human gut enterocytes³](#)

The human intestine has one of the highest expressions of angiotensin-converting enzyme (ACE2) receptors in the body, the receptor SARS-CoV and SARS-CoV-2 viruses use to enter target cells. Lamers et al. used human small intestinal organoids, tiny 3D cell cultures of gut epithelial cells, to determine if SARS-CoV and SARS-CoV-2 can directly infect and replicate within the cells of the gut. Both viruses were observed to rapidly and productively infect the gut, suggesting human small intestinal organoids may be an appropriate in vitro model to study SARS-CoV-2.

TRANSMISSION PATTERNS

Clinical Characteristics and Results of Semen Tests Among Men With Coronavirus Disease 2019⁴

In this cohort study conducted in Shangqiu, China, Li et al. looked for the presence of SARS-CoV-2 in the semen of 38 male participants with laboratory-confirmed COVID-19. Six patients' semen was found positive for SARS-CoV-2 by real-time RT-PCR. Of the six patients, four specimens were from patients who were at the acute stage of infection and two were from recovering patients. There was no significant difference in results by age, urogenital disease history, days since onset, days since hospitalization, or days since clinical recovery. Given the small sample size, further studies regarding the possibility of sexual transmission are needed.

ADDITIONAL RESOURCES

[UCSF Library COVID-19 Research and Information Resources](#)
[UCSF Institute for Global Health Sciences COVID-19 Resources](#)
[UC Davis One Health Institute COVID-19 FAQs](#)
[Harvard Viswanath Lab Myths vs Facts](#)

Note on this Document: This document was assembled by graduate and doctoral students attending the University of California, San Francisco with the intent of facilitating the rapid dissemination of information to the global community in order to help during this time. Sunya Akhter and James Feng contributed to these summaries. This work is volunteer based.

References:

- 1 Hung IF-N, Lung K-C, Tso EY-K, *et al.* Triple combination of interferon beta-1b, lopinavir–ritonavir, and ribavirin in the treatment of patients admitted to hospital with COVID-19: an open-label, randomised, phase 2 trial. *Lancet* 2020; **0**. DOI:10.1016/S0140-6736(20)31042-4.
- 2 Randhawa AK, Fisher LH, Greninger AL, *et al.* Changes in SARS-CoV-2 Positivity Rate in Outpatients in Seattle and Washington State, March 1-April 16, 2020. *JAMA* 2020; published online May 8. DOI:10.1001/jama.2020.8097.
- 3 Lamers MM, Beumer J, van der Vaart J, *et al.* SARS-CoV-2 productively infects human gut enterocytes. *Science (80-)* 2020; : eabc1669.
- 4 Li D, Jin M, Bao P, Zhao W, Zhang S. Clinical Characteristics and Results of Semen Tests Among Men With Coronavirus Disease 2019. *JAMA Netw Open* 2020; **3**: e208292.