

Fecal Shedding of SARS-Cov-2: Literature Review as of September 21, 2020

Kenya Moyers, Zachary Weber and Stephanie Schulte on Behalf of the Safe Campus & Scientific Advisory Committee

Some patients report gastrointestinal symptoms when diagnosed with COVID-19, which raises the question whether virus is shed through the gastrointestinal system and if the fecal-oral route of transmission is a possibility. The following is a summary of the literature, including preprints, thus far.

Fecal Shedding of Viral RNA

Studies have looked at viral RNA in fecal samples and anal swabs. Not all patients will shed viral RNA in their stool samples, but multiple meta-analyses of articles suggest that approximately 40% of positive COVID-19 cases have viral RNA in their stool samples.¹⁻³

A common theme through many studies is that viral RNA is detectable in fecal matter well beyond when a nasopharyngeal test is negative. Many studies compare the difference in time when a patient tests negative for a nasopharyngeal test versus when they test negative in a stool sample or anal swab. This time can vary drastically, with most studies finding an average time difference of 10-20 days, with some exceptions that may exceed 40-50 days.⁴⁻⁸ Fecal shedding of the virus peaks in the symptomatic period and can persist for several weeks, but with declining abundances in the post-symptomatic phase.⁹ Additionally, studies have tried to determine whether presence of viral RNA in fecal matter and extended shedding are associated with GI symptomology or more critical cases of COVID-19. Studies investigating this have found there is no difference in symptoms nor severity of symptoms between patients who shed via fecal matter and those that do not.^{5, 10-12} These themes have been shown to occur in both adults and children that have been diagnosed with COVID-19.

Fecal-Oral Transmission

With viral RNA detectable in fecal matter the concern of transmission of SARS-Cov-2 via the fecal-oral route exists. Most studies have focused on detection of viral RNA and only a few have investigated whether the fecal-oral route is possible. Three studies found try to address this question. The first, by Xiao et al., was able to isolate SARS-Cov-2 from 2 of 3 fecal samples, suggesting that live, infectious virus may be transmittable through fecal material.¹³ The second, a research letter by Wang et al., describes that “live SARS-Cov-2” was observed in 2 patients out of 4 that were cultured after observing high viral RNA in stool samples. Alternatively, a study by Zang et al., shows that after 10 minutes of exposure to simulated gastric fluid, SARS-Cov-2 starts to become deactivated and longer durations of exposure deactivates more of the virus, suggesting that live virus cannot be shed through the GI tract.¹⁴ Another study conducted by Jones et al., found that In comparison to enteric viruses transmitted via the fecal-oral route (e.g. norovirus, adenovirus), the likelihood of SARS-CoV-2 being transmitted via feces or urine

appears much lower due to the lower relative amounts of virus present in feces/urine. The biggest risk of transmission will occur in clinical and care home settings where secondary handling of people and urine/fecal matter occurs.⁹

Based on the literature, there is confidence that fecal matter contains viral RNA. There is no definitive answer on whether the fecal-oral route of transmission is viable which suggests that handwashing should continue to be encouraged. Additionally, much more virus is spread via aerosolization and more focus should be on prevention of that route of respiratory transmission as even if live virus is found in stool samples, it may be too little to truly offer a high risk of infection.

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