

[Assessment of Air Contamination by SARS-CoV-2 in Hospital Settings \(JAMA\)](#)

Bottom Line: In this review of 24 studies, 17.4% of air samples from close patient environments were positive for SARS-CoV-2 RNA, and viable virus was only found in 8.6% of cultures.

Details: This systematic review looked at available evidence regarding the presence of SARS-CoV-2 RNA in air sampled from various hospital areas, and what factors were associated with contaminated air. Several databases were used to identify potential included studies published between January and October 2020. 24/2284 studies were included. 17.4% of air samples (82/471) from close COVID-19 patient environments positive for SARS-CoV-2 RNA; higher positivity rates were reported in ICUs vs. non-ICUs (25.2% vs 10.7%). Distance from patients did not result in any significant differences. SARS-CoV-2 RNA was found in 23.8% of toilet air samples, 8.3% of clinical area samples, 12.3% of staff area samples, and 33.3% of public area samples. Five studies performed 81 viral cultures; 8.6% (n=7), all from close patient environments, were positive for viable virus. High median SARS-CoV-2 RNA concentrations (viral loads) were found in the air of toilets/bathrooms, staff areas, and public hallways.

Key Takeaways:

- In this study, air samples from hospital settings close to and farther from patients was often contaminated with SARS-CoV-2 RNA, though viable virus was not commonly found.

[Assessment of Maternal and Neonatal SARS-CoV-2 Viral Load, Transplacental Antibody Transfer, and Placental Pathology in Pregnancies During the COVID-19 Pandemic \(JAMA\)](#)

Bottom Line: In this prospective study of 64 pregnant people with COVID-19, there was no SARS-CoV-2 found in umbilical cord, placenta, or babies, but mothers did pass antibodies to their babies.

Details: This prospective cohort study looked at the risk and mechanisms of protection against vertical transmission of SARS-CoV-2 from pregnant people with COVID-19 to their babies. 127 pregnant people with and without positive reverse transcription-polymerase chain reaction (RT-PCR) results (64 and 63, respectively) were recruited from April to mid June, with follow up through mid July 2020. In viral load analyses among 107 enrolled participants, there was no detectable SARS-CoV-2 in maternal or cord blood, nor evidence of vertical transmission. Of 77 neonates with SARS-CoV-2 antibodies found in cord blood, 1 had IgM antibodies against the virus' nucleocapsid. SARS-CoV-2 RNA was not found in any of the 88 placentas tested. In 37 SARS-CoV-2 participants with antibody analyses, IgG against the receptor binding domain (RBD) and the nucleocapsid was detected in 65% and 70%, respectively. While antibodies against SARS-CoV-2 were transferred to neonates, levels were significantly lower than those transferred against influenza hemagglutinin A (anti-RBD IgG = 0.72, anti-nucleocapsid = 0.74, anti-influenza = 1.44).

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Key Takeaways:

- In this study, no evidence of vertical transmission of SARS-CoV-2 from pregnant people to their babies was found, supporting the placenta's role of conferring fetal protection against SARS-CoV-2 circulating in a pregnant person.
- While some antibodies against SARS-CoV-2 were transferred to babies, they were at considerably lower levels than those for influenza.

[Intrafamilial Exposure to SARS-CoV-2 Associated with Cellular Immune Response without Seroconversion, France \(EID\)](#)

Bottom Line: This small study suggests that even in situations when people do not develop antibodies to COVID-19 after a close contact exposure, it is possible for them to develop T-cell responses to the COVID-19 virus.

Details: This study looked at T-cell responses to the COVID-19 virus in 11 couples where one partner had a mild COVID-19 infection and developed antibodies (index partner) but the other partner (exposed partner) did not develop antibodies. Ten healthy blood donors who had not been exposed to COVID-19 patients and who tested negative for COVID-19 antibodies were enrolled as controls. Even though none of the 11 exposed partners developed COVID-19 antibodies, 6 of them developed COVID-19 symptoms within a median of 7 days after their partners, and 4 of them tested strongly positive for T-cell responses specific to the COVID-19 virus. These T-cell responses lasted for up to 93 days. In the control group, 5/10 had weakly positive or partial T-cell responses to COVID-19, but none had strongly positive T-cell responses.

Key Takeaways:

- People exposed to COVID-19, especially those who develop COVID-19 symptoms, may develop T-cell mediated immune responses even if they do not develop antibodies; T-cell mediated immunity may be an important element of the natural history of COVID-19 and a target for interventions.
- The authors suggest that epidemiology data that look only at COVID-19 antibody development may underestimate the exposure to COVID-19 within a population.