



# COVID-19 research update

April 28, 2020

## **Mitigating the spread of COVID-19 in healthcare settings**

A [simulation study of the effectiveness personal protective equipment for emergency physicians and nurses](#) (JAMA Research Letter, April 27) found that, despite the use of PPE, fluorescent markers were found on the uncovered skin, hair and shoes of participants after simulations of the emergency department management of patients experiencing respiratory distress. The findings suggest that the current recommendations for personal protective equipment may not fully prevent exposures in emergency department settings. Clothing that covers all skin may further diminish exposure risk.

A [study investigated the aerodynamic nature of SARS-CoV-2](#) (Nature, April 27) found that the concentration of COVID-19 virus in aerosols detected in isolation wards and ventilated patient rooms in two hospitals in Wuhan, China was very low, but it was elevated in patient bathrooms. Levels of airborne SARS-CoV-2 RNA in the majority of public areas was undetectable, except in two areas prone to crowding, possibly due to infected carriers in the crowd. Authors found that some medical staff areas initially had high concentrations of viral RNA, but these levels were reduced to undetectable levels after implementation of rigorous sanitization procedures. To reduce the concentration of SARS-CoV-2 aerosol in medical staff areas, hospitals can implement more rigorous and thorough sanitization measures, including more frequent spraying of chlorinated disinfectant on the floor of patient areas, spraying alcohol disinfectant all over the protective apparel before taking off and prolonged operation time of indoor air purifiers. Results also indicate that room ventilation, open space and proper use and disinfection of bathrooms can effectively limit the concentration of SARS-CoV-2 RNA in aerosols.

## **Impact of the pandemic on the mental health of children**

A [study investigating depressive and anxiety symptoms among elementary school students in Hubei province, China](#) (JAMA Pediatrics, April 24) found that 22.6% of 2,330 students interviewed reported having depressive symptoms, which is higher than other investigations in primary schools of China (17.2%). The study also found that 18.9% of students reported anxiety symptoms, which is higher than the prevalence in other surveys. During the outbreak of COVID-19, the reduction of outdoor activities and social interaction may have been associated with an increase in children's depressive

symptoms. These findings suggest that serious infectious diseases may influence the mental health of children as other traumatic experiences do.

### **Asymptomatic and presymptomatic cases in congregate settings**

Several recent studies of widespread testing of residents in congregate settings such as homeless shelters and nursing homes have found a significant number of positive results for people who were not demonstrating any symptoms of COVID-19.

A [study of a COVID-19 outbreak at a homeless shelter in Boston](#) (JAMA Research Letter, April 27) found that universal SARS-CoV-2 testing of shelter residents shortly after the outbreak yielded a 36% positivity rate. The majority of individuals with newly identified infections had no symptoms and no fever at the time of diagnosis, suggesting that symptom screening in homeless shelters may not adequately capture the extent of disease transmission in this high-risk setting. These results support testing of asymptomatic shelter residents if a symptomatic individual with COVID-19 is identified in the same shelter.

A [study of SARS-CoV-2 transmission in residents in a skilled nursing facility in King County, Washington](#) (NEJM, April 24) found that, among 76 residents who participated in point-prevalence surveys, 48 (63%) tested positive. Of these 48 residents, 27 (56%) were asymptomatic at the time of testing; 24 subsequently developed symptoms. More than half of residents with positive test results were asymptomatic at the time of testing and most likely contributed to transmission. Transmission from asymptomatic residents infected with SARS-CoV-2 most likely contributed to the rapid and extensive spread of infection to other residents and staff. Infection-control strategies focused solely on symptomatic residents were not sufficient to prevent transmission after SARS-CoV-2 introduction into this facility.

### **Reliability and accuracy of antibody tests**

A [study evaluating the reliability and accuracy of serological tests](#) (COVID-19 Testing Project, April 24) examined 11 test currently on the market and one in-house test. Tests examined include 10 lateral flow assays: Biomedomics, Bioperfectus, DecomBio, DeepBlue, Innovita, Premier, Sure, UCP, VivaChek, Wondfo and 2 enzyme-linked immunosorbent assays: Epitope and in-house. Researchers examined the percent of positive specimens from people who had a positive PCR test by days since symptom onset as well as the percent of positive specimens from people who were positive for other viruses and/or had a negative PCR result. The researchers note that their study reinforces the need for additional research using standardized samples.