Week in Review: 24-28 August 2020

BRIEF19

A daily review of covid-19 research and policy.

RESEARCH BRIEFING

How long is SARS-CoV-2 *really* contagious? A best-evidence update.

Defining the duration of infectivity of SARS-CoV-2 has major implications for public health and infection control practice in healthcare facilities. Prematurely releasing patients from isolation risks fueling spread. Unnecessarily prolonging isolation, however, is frustrating for patients, consumes PPE, can delay procedures and other medical care, locks up scarce private and airborne infection isolation rooms in hospitals, separates patients from social support, and may keep patients hospitalized longer than necessary. Policies that permit a timely but safe return to work for infected healthcare workers are also critical, particularly in hospitals facing staffing shortages.

Early in the pandemic, most hospitals required two negative coronavirus tests (via PCR) before discontinuing isolation in patients with covid-19, in accordance with guidance from the World Health Organization (WHO) and Centers for Disease Control and Prevention (CDC). Many patients, however, have persistently positive PCR tests for weeks to months following clinical recovery. PCR-based clearance strategies can lead to unnecessarily long isolation.

My colleagues and I recently published a review of the best available evidence in the medical journal *Clinical Infectious Diseases.* We summarize the evidence to date on SARS-CoV-2 infectivity and when it is safe to discontinue isolation. A growing number of studies now indicate that PCR positivity far outlasts infectious shedding as determined by cell culture, which is a better indicator for infectivity. Patients with SARS-CoV-2 are most contagious around the time symptoms appear and infectivity appears to rapidly decrease thereafter to near-zero after about 10 days in mild-moderately ill patients. In severely-critically ill and immunocompromised patients, contagion can last 15 days. The longest documented period a patient has been contagious virus thus far is 20 days from symptom onset. Persistently positive SARS-CoV-2 PCRs in recovered patients tend to be associated with low viral loads, which can be estimated from some kinds of PCR tests. Some patients who have recovered from covid-19 also alternate between positive and negative PCR tests. These cases generally reflect sampling variability and low levels of viral RNA fragments at the borderline of detection by PCR.

These data have informed a shift in CDC's recommendations away from a test-based strategy for discontinuing isolation. Instead, CDC recommends a more nuanced time-based approach based on severity-of-illness and immunocompetence. Specifically, CDC recommends 10 days of isolation from symptom onset (including >24 hours since resolution of fever without fever-reducing medications and an improvement in symptoms) for mild-moderately ill patients without severely immunocompromising conditions, and 10-20 days for patients with severe-critical illness or severely immunocompromising conditions.

For asymptomatic patients, 10 days of isolation is recommended from the first positive PCR test and up to 20 days for severely immunocompromised patients). Moreover, CDC recommends avoiding test-based clearance given the evidence that people with persistently positive PCR tests are not contagious. Test-based clearance should be reserved for rare cases when there is a need to discontinue isolation early, or potentially to inform a decision to prolong isolation for severely immunocompromised patients.

In our review, we note that additional data confirming these findings in larger and more diverse cohorts are needed to provide further reassurance as to the safety of discontinuing isolation for critically ill, substantially immunocompromised, and otherwise high-risk patients, and to define the optimal approach to retesting and isolation in patients who have recovered from covid-19. *28 August 2020*. *—Chanu Rhee, MD, MPH*

How many children have asymptomatic coronavirus infections? New data released.

A new study suggests that children with asymptomatic SARS-CoV-2 infection is relatively low in many parts of the United States. But the numbers are high enough that school closures may result, if children are as contagious as some recent studies imply.

As schools and other institutions reopen in the United States, one of the many debates has been centered on whether similar to influenza, children will serve as spreaders of covid-19, thereby exposing their fellow classmates and more importantly at-risk adult teachers. Aggressive screening methods may hopefully identify children who are ill without the need for universal testing, but what about those with asymptomatic infections who are still capable of spreading covid-19? A research letter published today in *JAMA Pediatrics* looked to add additional information that might be helpful to officials tasked with making decisions on whether schools should reopen and if and when closures should occur in the coming weeks and months.

Smaller previous focused studies assessed specific groups of children, such as those undergoing emergency surgery or cancer-related care. But those groups lacked the data to make broad conclusions that would be applicable to most children.

That led researchers from University of California-San Francisco to take data from 28 children's hospitals across the United States. Testing data was obtained during routine screening of children receiving elective medical and surgical care up until May 29, 2020. Of the 33,041 asymptomatic children tested across these facilities, only 250 were found to be positive for SARS-CoV-2. Asymptomatic prevalence of coronavirus infections in children across the 28 hospitals varied from 0 percent to 2.2 percent. The only factor which was associated with pediatric asymptomatic prevalence was the weekly incidence of covid-19 among the general population during a 6-week period where most of the testing occurred.

Overall, the most important result from this study is that researchers found a rather low "pooled prevalence" (0.65 percent) of positive tests among asymptomatic children being treated for medical or surgical care. Given the association found between weekly covid-19 cases in the communities studied and asymptomatic prevalence among children, these findings might be useful in helping to guide community policy.

What is unclear is whether a small number of infected children might contribute to a large number of infections. So-called "superspreaders" could portend a very short school year. *25 August 2020*. *—Christopher Sampson, MD, FACEP*

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Brief19 is a daily executive summary of covid-19-related medical research, news, and public policy. It was founded and created by frontline emergency medicine physicians with expertise in medical research critique, health policy, and public policy.