

The following are proposals from the WUSM Student COVID-19 Recovery Think Tank. They are based on data reviewed up to April 7, 2020 and thus subject to change. These proposals do not necessarily reflect the intuitional policies or opinions of Washington University School of Medicine.

Returning To Work

Proposals:

- I. We propose that someone be considered to have tested negative if he or she has had 2 consecutive negative nasopharyngeal swab RT-PCR tests for SARS-CoV2 spaced more than 24 hours apart. We currently propose that serological testing should not be used as a sole criterion for return to work (briefly, seropositivity does not necessarily imply non-infectivity, full explanation found in our proposals regarding utility of serological testing).
- II. Upon returning to work, we propose all providers continue to wear appropriate PPE as indicated for each patient encounter, including COVID-19 patients. Any provider who may have tested negative but subsequently develops symptoms concerning for COVID-19, including respiratory symptoms (shortness of breath, cough) and fever, should immediately self-quarantine and be re-tested for SARS-CoV2.
- III. We propose that any symptomatic person, regardless of if they are a healthcare provider, who has tested positive for SARS-CoV2 be allowed to return to work after resolution of fever without antipyretics, improvement in respiratory symptoms for at least 24 hours, having tested negative for SARS-CoV2, and self-quarantine for at least 14 days following the first presentation of symptoms.
- IV. For asymptomatic healthcare providers who have had a high risk of exposure to SARS-CoV2, defined as working without sufficient PPE with a patient who later tests positive for COVID19 or a PPE failure in an encounter with a COVID-19 patient, we propose that the provider self-quarantine for at least 14 days since his or her last possible exposure. If the provider remains asymptomatic throughout this period, he or she may then return to work. In our opinion, the potential risk of false negatives from testing in asymptomatic providers precludes effective use of testing in this context as the sole criterion to return-to-work.
- V. For all symptomatic providers who test negative for SARS-CoV2 and have another established etiology for their symptoms, such as another positive finding on a respiratory viral panel, we propose that they return to work following policies established for those etiologies.
- VI. For all symptomatic providers who test negative for SARS-CoV2 but do not have another established etiology for their symptoms, we propose that they self-quarantine for at least 14 days following presentation of symptoms. The provider may then return to work if he or she has had resolution of fever without antipyretics and improvement in respiratory symptoms for at least 24 hours.
- VII. For healthcare providers who have previously tested positive for SARS-CoV2 but have since satisfied conditions to return to work, we propose that they be given an option to return to work caring strictly for COVID-19 patients.**

Discussion:

Determination of when COVID-19 patients can safely return to work is of critical importance in recovery from the pandemic. Currently (as of 4/7/2020), the CDC recommends two strategies [1]. In the

test-based strategy, people can work after resolution of fever without antipyretics, improvement in respiratory symptoms, and 2 consecutive negative nasopharyngeal swab specimens. In the non-test-based strategy, patients can return to work if it has been at least 3 days since resolution of symptoms or at least 7 days have passed since symptoms first appeared. These national-level policies are like those implemented in Italy, China, and Singapore, though the times proposed in the USA are shorter [2]. In Italy, asymptomatic patients who test positive are expected to quarantine for 14 days. In China, patients are expected to self-quarantine for 14 more days after clearance of virus (2 consecutive negative nasopharyngeal swabs). In Singapore, patients are expected to self-quarantine for 14 days since last possible exposure.

Asymptomatic transmission is a major concern for COVID-19. This has also caused worry about transmission to healthcare providers [3-4] and from healthcare providers to others [5], even if the data suggests most places are doing their best to reduce transmission from healthcare providers to others. Two early case studies regarding asymptomatic transmission documented symptom development (or COVID-19 positive tests) in others up to 13 days after exposure to the asymptomatic carrier [6-7]. Additionally, there is an early observation suggesting that though median incubation time of SARS-CoV2 from exposure to fever presentation was 5.7 days, 97.5% of cases developed symptoms by **11.5** days [8]. It is currently unclear what the utility of testing is in determining return to work status. One challenge is that the optimal time to test asymptomatic individuals after potential exposure to rule out disease is unknown. One retrospective study for patients suspected to have COVID-19 (symptom status not specified) who underwent multiple rounds of testing estimated that the median time between a first negative test and subsequent positive test was 7 days [9]. Further, though NP swabs may have a sensitivity of ~50-75% [10], which is like the sensitivity of the rapid flu test [11], the risk of false negatives is high enough that there remains risk for an asymptomatic provider who tested negative to return to work. If testing is insufficient to clear an asymptomatic provider to return to work, then we do not propose testing be used in this context and instead propose self-quarantine for 14 days since their last exposure. The duration of 14 days is similar to Barnes-Jewish Hospital's current recommendation for contact tracing in St. Louis: individuals who have been directly exposed to a COVID-19 patient should self-quarantine for 14 days since their last exposure [12].

We acknowledge that there is a balance among many factors, including availability of PPE, providers, COVID19-testing, and incidence of COVID19 patients. As such, many institutions have enacted their own return-to-work policies independent of the national CDC recommendations. Across the state of New York, where testing is limited and case burden is high, healthcare providers with risk of exposure but remain asymptomatic for 72 hours can return to work [13]. At Rutgers Health, asymptomatic employees are not tested [14] and may be able to return to work immediately with a mask on [15]. For University of Michigan, they do not recommend asymptomatic employees be tested, and it appears they can return to work normally. However, if they do test positive, they should quarantine for at least seven days and can return to work if they have been asymptomatic for 72 consecutive hours [16]. An optional COVID19 test is offered for affected University of Washington healthcare providers, where 72 hours of quarantine is sufficient for returning to work without testing [17-18] University of Chicago allows asymptomatic providers to return to work directly [19]. For University of Pennsylvania [20] and University of California San Francisco [21], asymptomatic healthcare providers are expected to self-quarantine for 14 days before returning to work. For Partners Healthcare (including Massachusetts General Hospital), and Johns Hopkins University, there is indirect evidence suggesting a policy for

asymptomatic healthcare providers is to self-quarantine of 14 days before returning to work [22-23]. Currently the recommendation at Barnes-Jewish Hospital is that asymptomatic healthcare providers with a high risk of exposure do not receive testing and continue working with a mask on for 14 days [24]. If there is symptom development, then healthcare provider is asked to stop working.

The risk of either relapse or reinfection of COVID-19 is of great concern when considering return to work. An early case report found that a patient from Wuhan China was exposed around January 13, 2020, developed sore throat and cough on January 23, 2020, and was diagnosed with COVID-19 by RT-PCR on January 24, 2020 [25]. RT-PCR tests were negative on January 28 and January 30, but the patient remained in the hospital, and on February 2, 2020, the patient again tested positive for COVID-19 by RT-PCR. Eventually the patient was discharged on February 9, 2020 after testing negative on all subsequent RT-PCR tests. Another case study looked at four healthcare providers who had two negative RT-PCR [26]. After 5 days of self-quarantine, all four of these patients were asymptomatic, but had positive RT-PCR tests, which remained true across three different time points and different kits. As such, it is less likely that the results are explained by false positives alone. Given the small sample size from these case reports, it is possible that these patients were discharged too early from false negative test results, and indeed, the accuracy of nasopharyngeal swabs is dependent on sample collection. It is also true that these patients appeared to be asymptomatic despite the new positive test for SARS-CoV2 by RT-PCR. While viral RNA does not necessarily imply the presence of infectious virus, it cannot be excluded as a possibility. As such, though these case studies represent a small proportion of all cases, currently, reinfection or relapse from COVID-19 cannot be fully ruled out.

We have proposed that healthcare providers, who have tested positive for COVID-19 but have since met criteria for returning to work, be given an option to provide care strictly for confirmed COVID-19 patients. In our opinion, in this patient population, there is a much-reduced risk of transmitting disease to someone who does not already have COVID-19 or worsening their disease. There is also a much-reduced risk to the provider of becoming newly infected with COVID-19 from patient exposure. Together, these measures may reduce the number of providers and patients that might be newly exposed to COVID-19 and help combat the pandemic. We acknowledge that caring for patients during a pandemic is very stressful for providers [27-29], and thus we suggest that this measure not be mandatory. However, healthcare providers who do select this option should be recognized for their choice [30].

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