Ideal Timing for Health Care Workers With COVID-19 to Return to Work in the Omicron Variant Pandemic

To the Editor:

During the COVID-19 pandemic, upsurges have sporadically occurred, with Japan facing its sixth wave, likely caused by the Omicron variant, in January 2022. In this latest wave of the pandemic in Japan, substantially more health care workers (HCWs) contracted COVID-19. On March 31, 2022, on the basis of scientific data from the National Institute of Infectious Diseases in Japan, the government declared the mandatory isolation period for all individuals with COVID-19 to be 10 days. However, labor shortages caused by COVID-19 have become a significant issue, making a shorter isolation period desirable to free the labor force, especially in health care, for continued employment. The Centers for Disease Control and Prevention in the United States recommended an isolation period of 5 days in February 2022. Nevertheless, from the fear that a shorter isolation period might increase the transmission of COVID-19 in the health care setting, each hospital in Japan adopted its own rules for when HCWs can return to work. Our hospital’s policy regarding infected HCWs includes a 10-day isolation with polymerase chain reaction (PCR) testing to assess viral RNA shedding. We herein assessed the follow-up PCR findings of infected HCWs to determine the ideal timing for them to return to work.

This study was conducted at Tokyo Metropolitan Tama Medical Center, a 790-bed tertiary care center in Tokyo, Japan. The study period was from January 11, 2022, to March 18, 2022. All HCWs were required to wear a surgical mask during their hospital stay and undergo follow-up off-site PCR testing (using nasopharyngeal swabs), which produced a qualitative value (ie, positive or negative) and a quantitative value (cycle threshold [Ct]) before they returned to work. Their follow-up testing was originally scheduled around 10 days after their COVID-19 diagnosis, but the timing varied owing to the limited availability of PCR testing. The study institution defined a PCR Ct value below 33 cycles to be the threshold for viral shedding. The institutional review board at Tokyo Metropolitan Tama Medical Center approved this study.

During the study period, 90 HCWs comprising 21 physicians (23.3%), 23 nurses (25.6%), and 46 other medical staff (51.1%) contracted COVID-19. However, the vast majority of COVID-19 cases among HCWs was traced to household transmission, and nosocomial outbreaks of COVID-19, defined as viral transmission among patients or HCWs through close contact in a hospital setting, did not occur at the study institution during the study period. Of all the infected HCWs, 79 (87.8%) were symptomatic. The first follow-up PCR was performed between day 4 and day 16 post-onset and revealed that 38 HCWs (42.2%) remained positive on PCR. The median Ct value was 36.2 (range, 22.5 to 39.9), and 10.0% (9/90) of the PCR specimens obtained from all symptomatic HCWs had a Ct value below 33 on the first follow-up PCR (Fig. 1).

This study demonstrated that approximately 10% of HCWs who contracted COVID-19 had a PCR Ct value below 33 around post-onset day 10, suggesting that they were still infectious. Several studies have assessed the duration of viral shedding of SARS-CoV-2 based on its culturable status. The time to culture conversion of the Omicron variant was examined in a few studies with a small sample size. However, viral culture testing is often unavailable in many hospitals, and the use of the PCR Ct value has been proposed as a practical, alternative method of assessing viral shedding. The cutoff Ct value for detecting viable viruses correlated with a range of 24 to 33 cycles. To ensure the safety of patients and HCWs, the highest cutoff value was adopted at the study institution.

It is still uncertain how early infected HCWs can safely return to work. Before the emergence of the Omicron variant, some infected HCWs still had a low Ct value when returning to work despite the absence of any nosocomial transmission among HCWs. As for the Omicron variant, the findings of this study raised the concern that some HCWs may remain infectious for 10 days after symptom onset. In the health care setting, the potential for COVID-19 transmission among HCWs, even if low, should not be underestimated for safety reasons, considering the possibility of rapid, nosocomial transmission. Ensuring that the Ct value is high before returning to work as means of lessening viral shedding may enhance other preventive measures, including mask-wearing and vaccination. If the isolation period is shortened to ease the shortage of HCWs, these measures need to be implemented.

This study has some limitations. First, the evaluation of the Ct value alone without viral culture results may not accurately reflect viral shedding, given the variation in the quality of PCR testing. However, PCR testing is generally more easily accessible and practical than conventional viral cultures in the real-world clinical setting. Second, because the results of consecutive PCR tests after diagnosis were unavailable, the exact proportion of low Ct values per day from symptom onset was unknown. An association between PCR Ct values and other factors potentially impacting the PCR results, such as comorbidities in the HCWs, was not examined in this study.

In conclusion, 10% of HCWs with COVID-19 remain potentially infectious for up to 10 days after symptom onset. Reconsidering changes in the policy of shortening the isolation period for infected individuals, especially HCWs, is necessary to ensure the public’s safety in the health care setting.

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FIGURE 1. Cycle threshold of the first follow-up polymerase chain reaction test in health care workers with COVID-19. Ct, cycle threshold; HCWs, health care workers. *Number of days from COVID-19 onset was defined as the number of days from symptom onset to follow-up PCR testing in symptomatic HCWs or the number of days from a positive test result to follow-up PCR testing in asymptomatic HCWs.

| The number of days from the onset | ≤ 7 | 8 | 9 | 10 | 11 | ≥ 12 |
|----------------------------------|-----|---|---|----|----|-----|
| The number of HCWs with Ct < 33  | 0   | 2 | 1 | 3  | 2  | 1   |
| The number of total HCWs         | 5   | 5 | 10| 18 | 28 | 24  |
| The lower limit of Ct value      | 33.7| 28.8| 32.4| 22.5| 31.5| 26.8|
| The upper limit of Ct value      | 39.5| 34.0| 39.4| 39.1| 39.6| 39.9|

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