To the Editor:

Globally, many different types of stations were built to enable testing of patients for COVID-19 while preventing exposures of medical personnel. In Taiwan, these were called non-exposure testing stations, and were kiosks that separated personnel from patients but included fixed gloves through which personnel could collect samples (Lee, 2020).

Overall, there are two major limitations for operating these testing stations. First, it is very difficult for medical personnel inside the stations to clean the outside zone by themselves (including the outside windows, gloves, tables, and chairs) without any additional assistance. Second, the sampling area in which the patient sits (or stands) might harbor some tiny fine droplets or aerosol particles that contain infectious virus, especially at those stations that do not have rigorous air circulation (i.e., inside a hospital or other buildings), and even outdoor sampling areas would need to be covered in the event of heavy rain or snow (Morawska et al., 2020). Although highly atomized disinfectants would be helpful in reducing the abundance of viruses in aerosol particles and the environment (by increasing humidity, chemical structure damage, or the scavenging effect) (Anand, 2020; Mecenas et al., 2020), they have not been widely applied in sampling stations.

To solve the two major limitations and save manpower, we have developed a simple outdoor semiautomatic sanitization system that can be controlled by medical staff remotely with a simple setting to trigger the disinfection control circuit. The control circuit has two control modes: a fixed time-triggered control mode and a manual continuous-triggered control mode, which controls the sanitization pump to dispense disinfectant and works with multiple disinfection nozzles set above the sampling station. All the physical layouts of this system are created with 3D printing to advance time-to-market turnaround. The spray particle size of this system can range from 3 to 7 µm with a high atomization degree. Therefore, the disinfectant can quickly (less than 1 s) and naturally dry after spraying, and its atomization range is designed to adequately cover the sampling zone (Fig. 1). In our observation test, we found that our system could cover 100% of the area of sample zone sanitization (in 10 s) compared to medical staff only (65%, 30 s) and staff and patient cooperation (92%, 90 s) (Fig. 2).
Notably, the 3D printing outdoor semiautomatic sanitization system is very easy to create and can even be made by the medical personnel. More importantly, it would be very useful in providing clean area for next patient, reducing concerns of the disease transmission.

Data availability
No data were used in this study.

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Conflicts of interest statement

The authors report that they have no potential conflicts of interest to disclose.

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