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Letter to the Editor

Protective barrier box to mitigate exposure to airborne virus particles with minimum personal protective equipment when obtaining nasal PCR samples



Sir,

Although nasal polymerase chain reaction (PCR) is an essential method for diagnosing coronavirus disease 2019

(COVID-19), obtaining nasal PCR samples results in exposure to airborne virus droplets, containing severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), produced by coughs or sneezes. Personal protective equipment (PPE) should be utilized to reduce the risk of exposure, including gowns, non-sterile gloves, protective masks (e.g. N95 masks) and face shields [1]. However, the possibility of PPE shortages should be considered. To reduce the risks associated with intubation of patients with COVID-19, an ‘aerosol box’ has been reported [2]. We developed a protective barrier box, composed of a soft plastic shield, similar to a telephone box, to mitigate the risk of exposure during PCR sample collection (Figure 1).

The patient enters the PCR box to prevent the spread of infectious particles outside the box. Medical staff can obtain the nasal PCR sample through two arm holes on one side of the box. If a cough or sneeze generates aerosols, the plastic shield can reduce the exposure of the medical staff. Additionally, the PPE necessary to perform sampling can be minimized to a gown, non-sterile gloves and a medical mask, and only glove exchange is thought to be necessary to perform nasal sampling on the next patient. Although contamination after use was indicated as a disadvantage of the aerosol box [3], this PCR box has been designed to be cleaned easily by wiping with disinfectant after sampling.

In preparation for the next epidemic, we must develop these types of protective devices which can reduce the risk of exposure and reduce the need for PPE.

Conflict of interest statement

None declared.

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Figure 1. Protective barrier box. The box is 900 mm (width) × 2000 mm (height) × 900 mm (depth) in size, and is constructed using a steel frame and soft plastic. On one wall of the box, two arm holes allow access for sampling.

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