[COVID-19]) that extends bilaterally with basal and peripheral involvement of the lung.[1] Computed tomography (CT) has been the most widely recommended and used imaging modality for screening thus far[2]; however, it has significant downsides, including the need for extensive sterilization of equipment after use with highly contagious COVID-19 virus, along with cost and excessive radiation. Lung ultrasonography has been previously established as an excellent method of diagnosing and monitoring pneumonia and acute respiratory distress syndrome, particularly when compared with chest radiograph,[3,4] and thus has potential as an inexpensive and effective imaging modality in the early diagnosis and monitoring of patients with COVID-19.

The literature of lung ultrasonography in COVID-19 patients is scarce but promising. Huang et al[5] showed in a small preliminary study that 75% of observed patients with COVID-19 had identifiable lesions in the bilateral lower lobes. This study examined 20 patients with noncritical illness, using a 3 to 17-MHz high-frequency linear array to characterize lung lesions, and found a few identifying characteristics: numerous bilateral B lines, subpleural pulmonary consolidations, and poor blood flow. These findings were highly consistent with findings on CT. In addition, they determined that COVID-19 subpleural lesions differed significantly from similar ones observed in bacterial pneumonia, pulmonary abscess, tuberculosis, atelectasis, and cardiogenic pulmonary edema,[5] an example of which is that B lines in COVID-19 appear to be more fixed, fused, and obtuse compared with those in cardiogenic pulmonary edema.[5] Peng et al[6] also examined 20 patients with COVID-19, using lung ultrasonography, and described similar characteristic findings that typically appeared in a multilobar distribution: focal B lines were the main early feature, followed by alveolar interstitial syndrome in progressive stages, and then A lines during convalescence. Pleural effusions were rarely observed at any stage. A third preliminary study performed by Poggiali et al,[7] using ultrasonography and CT, evaluated 12 patients who presented with symptomatic COVID-19. They reported good consistency between B lines on ultrasonography and ground-glass opacities on CT in all 12 patients, with both modalities identifying organizing pneumonia in 4 of them.

As observed with the early clinical evidence, lung ultrasonography in COVID-19 patients was able to identify characteristic lesions that were highly consistent with findings on CT. Although CT is still considered the preferred imaging modality, ultrasonography may be useful in evaluating for early lung changes in emergency department patients with suspected COVID-19 or in monitoring progression of confirmed cases. In resource-limited settings, ultrasonography could theoretically be applied as a triaging tool in which patients with identified lesions are prioritized for CT imaging, with the hope of reducing the number of contagious patients entering the scanner. There is still an obvious need for more clinical evidence before definitive conclusions can be made; however, that should not stop clinicians from using ultrasonography early during this pandemic.

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Fight COVID-19 Beyond the Borders: Emergency Department Patient Diversion in Taiwan

To the Editor:

The World Health Organization declared the novel coronavirus disease 2019 (COVID-19) outbreaks a global

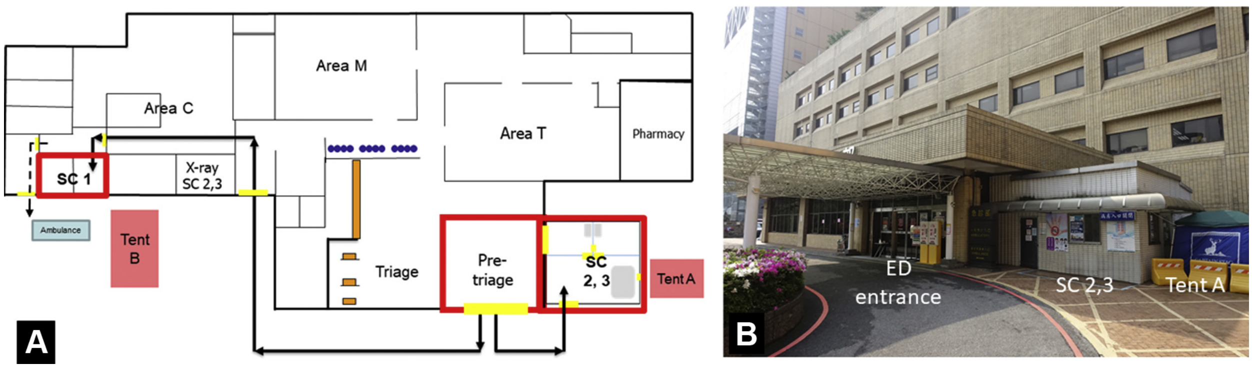

Figure. Flow of patients with a history of travel, occupation, cluster, and contact (arrows). *A*, Red squares represent the pretriage unit and the special clinics, possible contaminated areas. Yellow rectangles represent doors. Area C denotes the critical and resuscitation area. Area M denotes the area for medical patients. Area T denotes the area for trauma patients. Dashed lines depict patient traffic (special clinic 1) to the ward. *B*, The entrance to special clinics 2 and 3 and tent A. *SC*, Special clinic.

pandemic.[1,2] To avoid contamination and to protect health care workers, we designed a unique patient diversion strategy at the emergency department (ED) of the National Taiwan University Hospital. It was composed of 1 pretriage unit, 3 special clinics, and 2 tents (Figure). Personal protective equipment included an N95 mask covered by a surgical mask, a hair cap, a goggle, a facial shield, gloves, a gown, and shoe coverings.

The pretriage unit was located at the main entrance, including 1 nurse, 2 security guards, and 1 administrative officer. One guard was responsible for entry-gate control with an infrared thermal camera, and the other for patient traffic outside the ED. The officer checked immigration records from health insurance cards. If patients had any history of travel, high-risk occupation, cluster, or contact with patients with suspected COVID-19 and fever or respiratory symptoms, the nurse led pediatric patients to the special clinic 2 and adult patients to special clinic 3. If a patient with a positive history of travel, high-risk occupation, cluster, or contact with patients with suspected COVID-19 presented with respiratory distress, he or she was sent to a negative-pressure room, special clinic 1. Every patient was required to use hand hygiene and wear a surgical mask.

Special clinic 3 was a well-ventilated separate room staffed by 2 emergency physicians and nurses. One nurse provided nursing services and the other staying outside conducted specimen, medicine, and checkout delivery.

The patient stayed inside special clinic 3 at a distance of more than 6 feet from others. The nurse accompanied the patient to and from the isolated radiograph room. The physician talked to the patient by intercom. If pneumonia was suspected, the patient was transferred to tent B until admission; otherwise, he or she received a throat swab at tent A. Given instructions to self-quarantine, patients were discharged without entering the main area. If the swab result was positive, health authorities called the patient back for admission.

Staff removed personal protective equipment and washed hands in the anteroom. The nurse used a fluorescent agent to check the thoroughness of hand washing.

Special clinic 2 was the same as special clinic 3, except the physicians were ED pediatricians. One person wearing a surgical mask treated pediatric patients.

Special clinic 1 was the same as special clinic 3, except staffed by different emergency physicians and nurses. Patients received a radiograph inside the clinic. If they needed intubation, video-assisted laryngoscopy was used and gowns were changed to a level C protective suit.

This design separated patients at risk of COVID-19 infection from uninfected patients to restrict contaminated areas. Our experience allowed us to use the existing hospital for the current outbreak instead of a separate building.

From January 21 to March 27, 2020, average daily visits to special clinics 1, 2, and 3 were 3, 4, and 17, respectively. Four new cases of COVID-19 infection were diagnosed; no nosocomial infection was identified.

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A Protection Tent for Airway Management in Patients With COVID-19 Infection

To the Editor:

Airway management is clinically challenging. Along with a proper environment and the use of personal protection equipment, several modules have been proposed to enhance safety during advanced airway management for patients with coronavirus disease 2019 infection.[1,2] The process of intubation is a high-risk period for aerosol-based transmission, especially when clinicians are in close proximity to the patient's airway.[3,4] We therefore developed a novel, low-cost, easy-to-make protection tent to provide a protective barrier between clinicians and the patient, containing possible aerosol during intubation.

The concept of the protection tent was inspired by an umbrella and a raincoat. The tent consists of 2 components, including the frames and film (Figure, *A*). We used 2 L-shaped, solid-iron frames as a skeleton, set along

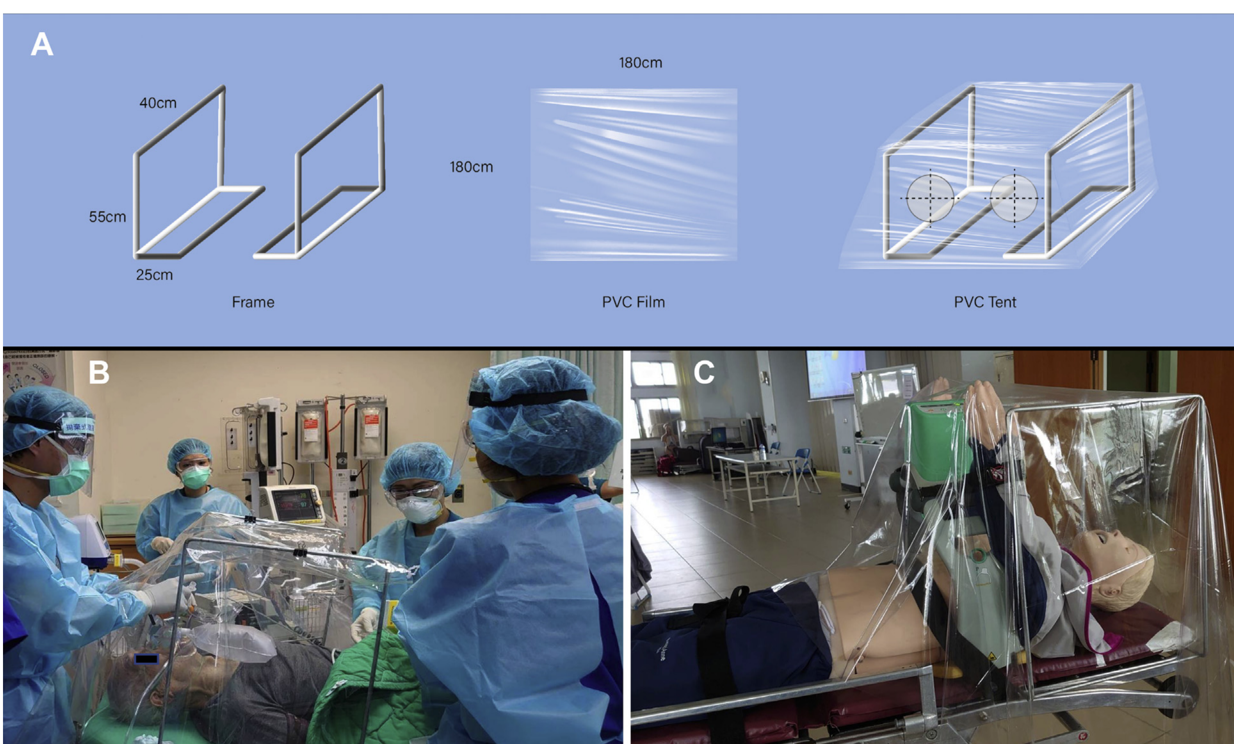

Figure. *A*, The tent consists of the frames and film. Compared with rigid hoods, the tent provides a more flexible and expansible space, allowing clinicians to operate video laryngoscopes (*B*). The tent can be an accessory for mechanical resuscitation devices (*C*).