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burnout. The primary limitation of our study is the sample size and response rate. Further study is warranted to better evaluate the scope of this problem.

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The Effect on the Out-of-Hospital System of Patients With Out-of-Hospital Cardiac Arrest During the COVID-19 Outbreak in One City in China



To the Editor:

The city of Hangzhou is a metropolis with a population of greater than 12 million. Since the onset

of the coronavirus disease 2019 (COVID-19) pandemic in China at the end of December 2019, the municipal government adopted a strict policy to control the epidemic, including locking the whole city down on January 24, 2020. This lockdown time was even earlier than that for Wuhan. We tried to determine whether there was a considerable effect on the out-of-hospital system with patients with out-of-hospital cardiac arrest during the COVID-19 outbreak in one city in China.

In Hangzhou, the management of emergency patients is based on an out-of-hospital system; more than 7,000 patients need out-of-hospital medical care, including approximately 140 to 160 patients with out-of-hospital cardiac arrest every month. The return of spontaneous circulation (ROSC) rate of patients with out-of-hospital cardiac arrest was approximately 4.5% before the COVID-19 outbreak in Hangzhou. Although only 181 cases have been confirmed in the city to date, COVID-19 has greatly influenced the out-of-hospital system and significantly affected out-of-hospital management of patients with cardiac arrest. We analyzed data from the Hangzhou out-of-hospital medical care system database. As shown in [Figure 1](#), the number of patients with out-of-hospital cardiac arrest has not significantly decreased since the pandemic began. However, the ROSC rate decreased to only 0.4% and advanced life support for patients with out-of-hospital cardiac arrest and with out-of-hospital emergency physicians was only 2.3% in February 2020 ([Figure 2](#)); the ROSC rate was still low even when the city reopened.

There are 3 possible reasons for the significant decrease. First, COVID-19 patients were not spread across the city of Hangzhou, but the out-of-hospital medical system had the task of transferring patients with confirmed and suspected cases to a designated hospital, which overloaded systems operations. Second, the World Health Organization has categorized cardiopulmonary resuscitation as an aerosol-generating procedure, requiring the wearing of respirator masks and other personal protective equipment.¹ Health care workers in the out-of-hospital system were provided with FFP2/FFP3 protective face masks before evaluation of or contact with any subject. Additionally, surgical gowns and eye protection were used if the patient's symptoms were suggestive of respiratory disease. Delaying the delivery of chest compressions and defibrillation for up to several minutes so that health care workers can don personal protective equipment reduces the likelihood of patient survival.^{2,3} Our physicians chose to transfer the patients to the hospital as soon as possible, with only chest

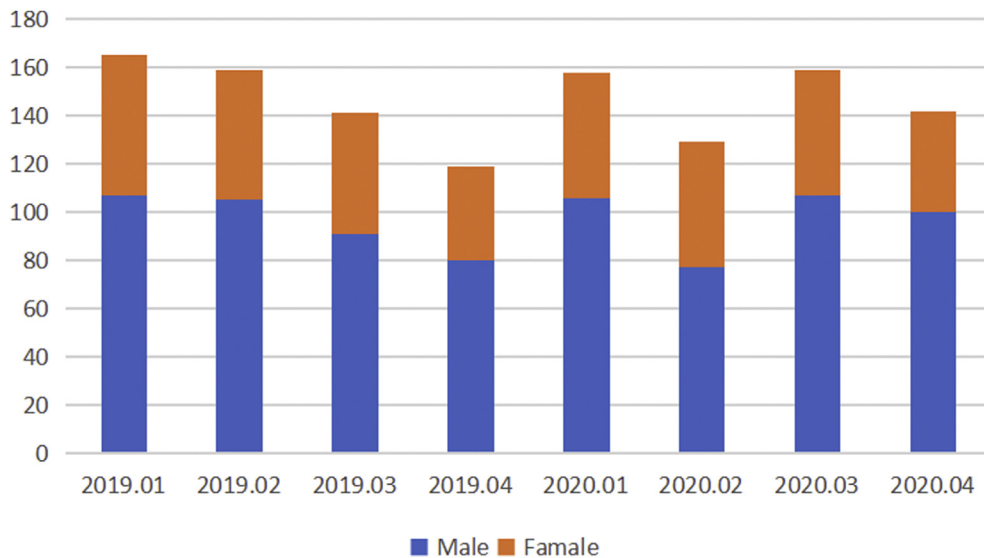


Figure 1. Cases variation of out-of-hospital cardiac arrest during the epidemic

compressions and drug therapy for them, and with no ventilation to avoid aerosol generation. Third, patients with out-of-hospital cardiac arrest tend to be older than other patients; many of them stayed in their home alone and would not have been found if they had had a cardiac arrest. Some of the relatives of such patients decided not to have them resuscitated after the out-of-hospital medical staff arrived during the COVID-19 outbreak.

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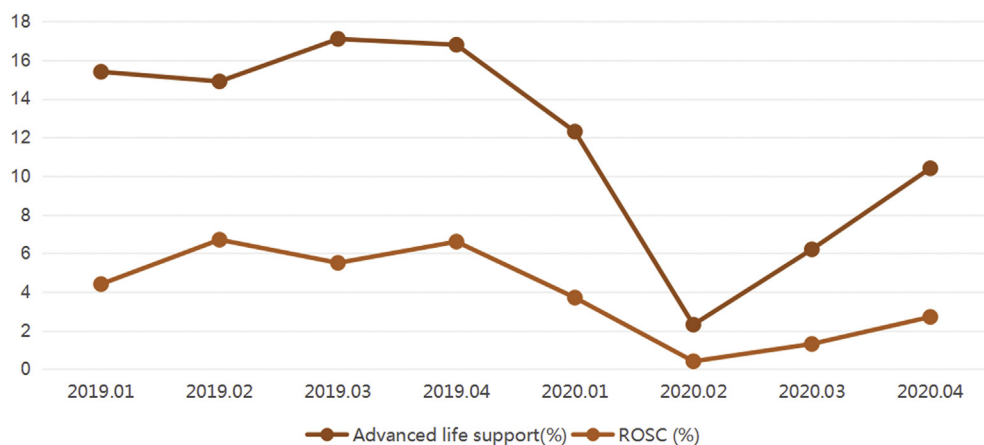


Figure 2. Comparison of the management of cardiac arrest during the COVID-period (January to April 2020) and the reference period (2019).

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Personal Protective Equipment–Conserving Chest Radiography Setting During the COVID-19 Pandemic



To the Editor:

A chest radiograph has been one of the first tests used for patients with fever or respiratory symptoms during the coronavirus disease 2019 (COVID-19) pandemic. Radiology preparedness for COVID-19 is both time and personal protective equipment (PPE) consuming, currently requiring technologists to wear PPE to perform radiography for patients with suspected or confirmed disease.

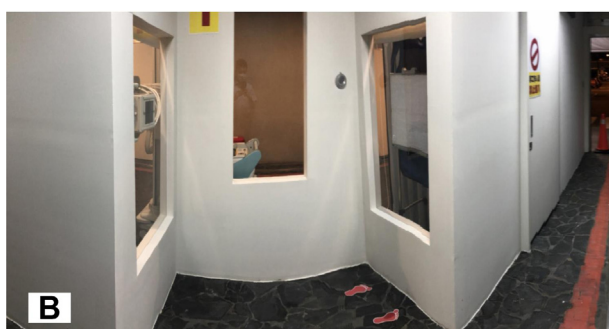
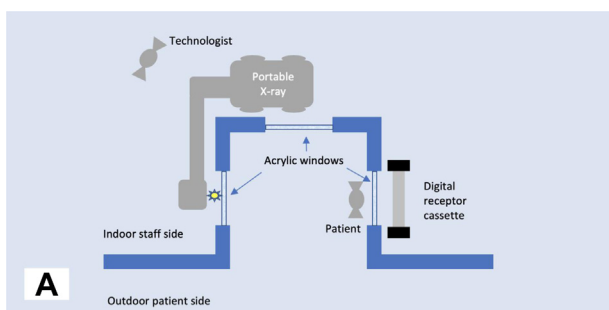


Figure. A, Schematic view. B, A PPE-conserving chest radiography booth segregates patients from technologists by walls with built-in acrylic windows.

We describe a PPE-conserving chest radiography booth with acrylic windows, which has been implemented in the outdoor screening station outside our emergency department. The U-shaped radiography booth has 2 sides separated by walls with built-in acrylic windows (Figure). On the patient side is an outdoor open space in which the patient stands and faces an acrylic window with a radiographic digital receptor holder located behind it. The staff side is indoors in a closed area protected by physical barriers, where a portable radiography machine and mobile radiation-shielding barriers are located. Technologists communicate with patients through an audio system, and they can adjust the position of both the portable radiographic generator and the digital receptor cassette without having direct contact with patients and without wearing PPE. The radiographs acquired possess good diagnostic image quality without increasing the radiation dose because of the 2 acrylic windows that separate the patients from the technologists. In addition to increased safety, the radiography booth can be time saving, facilitating the screening process by removing the need for technologists to wear PPE to perform radiography.

The radiography booth is limited to ambulatory patients; however, the majority of patients with suspected COVID-19 infection present with mild symptoms that can be managed in an ambulatory setting. Integrating the radiography booth into the screening station can prevent potential transmission of COVID-19 to health care workers, conserve essential PPE, and accelerate the screening process during the pandemic.

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