Administering Cardiopulmonary Resuscitation to Personal Protective Equipment–Protected Health Care Worker During COVID-19

To the Editor

We were forced to address the following questions during the coronavirus disease 2019 (COVID-19) pandemic. How do we treat a health care worker (HCW) suffering a syncopal attack while inside the operating room (OR) during an operation on a COVID-19 patient? Where should the HCW be doffed if they do not gain consciousness immediately? What sequence should be followed for doffing of the unconscious HCW? What if the HCW gets COVID-19 infection after this incident? How does the risk of infection affect the delivery of cardiopulmonary resuscitation (CPR)? While many concerns regarding patient care have already been addressed,[1] some concerning the safety of the HCW remains.

These questions came to mind as one of our nurses, who was fully donned with personal protective equipment (PPE), suffered a syncopal attack during an emergency lower segment cesarean delivery being done for a COVID-19 suspected case. She had a palpable carotid pulse and was breathing regularly. Code blue was activated, and she was carried outside the OR. She regained consciousness after removing the hood of the PPE and the N95 mask. Fortunately, postoperatively, the patient was reported COVID-19 negative by real-time reverse-transcriptase polymerase chain reaction (RT-PCR).

Several modifications to the Basic Life Support (BLS) and Advanced Cardiac Life Support (ACLS) protocols have been conceived at our institute (Supplemental Digital Content, Figure 1, http://links.lww.com/AA/D170). The first concern is the site of resuscitation. A breach in PPE is inevitable during any form of resuscitation and exposing the victim to an aerosol-containing environment will increase the risk of his/her being infected. While it seems ideal to move the unresponsive HCW to a safer, well-ventilated area, away from patients for further management, in a life-threatening situation, this delay in commencing resuscitation may be fatal. In a critical scenario, the benefit of avoiding a delay outweighs the risk of contracting the infection. Therefore, we base this decision on the clinical condition of the unresponsive HCW. If both the pulse and breathing are present, the victim is moved away from the aerosol-containing environment for resuscitation. If either or both pulse and/or breathing is absent, resuscitation is commenced at site.

The second concern is that palpation of the pulse and assessment of breathing may be difficult under the PPE. We suggest inserting 2 fingers under the hood to palpate the carotid pulse. Chest rise may sometimes be difficult to appreciate, hence, other signs of breathing such as fogging of goggles and the expansion and collapse of the N95 mask with respiration may be observed.

Third, CPR is strenuous and challenging to perform in a PPE, more so for those already spent from duty. Therefore, a 6-membered standby team has been created to serve both as emergency responders and to take over the duties of the fallen HCW after resuscitation when code blue is activated. Till they arrive, the accompanying HCWs continue resuscitation as per the BLS and ACLS algorithm. We also advocate good communication between resuscitators for switching roles as early as required, to avoid dehydration, physical exhaustion, and compromised performance.

Finally, we have made suggestions regarding the initial management and removal of the victim's PPE. The doffing process is aerosol generating, hence we favor cutting open the PPE parts with scissors or a blade and removing them gently to minimize contamination. The hood is removed by making a cut on either side of the neck, extending to the earlobe. The triple layer mask is removed by cutting the strings on either side. The goggles are gently pulled over the head. The N95 mask is removed by cutting the elastic bands on both sides. This mask is to be removed only when necessary. To expose the chest, the suit is unzipped or cut open in the midline. If an intravenous access is required, the gloves are removed and, if required, sleeves are cut open lengthwise.

If both pulse and breathing are present, as in our setting, the cause is likely to be heat syncope. In this case, the victim is taken to a cooler area and the hood, surgical mask, and goggles are removed. The suit may need to be opened if still unresponsive. The N95 mask is removed last and only if necessary. If pulse is present but breathing labored or absent, the hood, surgical mask, goggles, and N95 mask are removed. The airway is opened by head tilt and chin lift maneuvers and breathing is assisted by bag and mask ventilation. We do not advocate mouth to mouth breathing as it would lead to a breach in PPE of the resuscitator. If pulse is absent, the suit is unzipped or cut open first and chest compressions started immediately. The

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headgear is cut subsequently to expose the airway. If there is a breach in PPE of the victim or resuscitator, they are quarantined and tested subsequently.

Additionally, during training, we emphasize to our HCWs to maintain good hydration and a healthy diet to help them to adapt to the stress of working in the PPE. Prompt communication of unease is also urged to avoid such critical situations.

This pandemic has brought forward exceptional problems and each of them is a stepping-stone to the formation of newer and safer practices to protect patients and HCWs alike.

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DOI: 10.1213/ANE.0000000000005135