

AHA updates CPR guidelines to address patients with COVID-19

Edelson DP, et al. *Circulation*. 2020;doi:10.1161/CIRCULATIONAHA.120.047463.
April 15, 2020

As the risk for COVID-19 exposure during CPR for out-of-hospital or in-hospital cardiac arrest is a serious concern for emergency medical services personnel, health care workers and lay bystanders, the American Heart Association issued an interim update to its guidance for CPR in adults, children and neonates with suspected COVID-19 infection.

“CPR remains a critical component of care for many of our patients, particularly during this pandemic, but it does place rescuers at increased exposure,” **Dana P. Edelson, MD, MS**, hospitalist and executive medical director for rescue care at the University of Chicago and an author of the update, said in a press release. “This guidance draws on evolving science and expert opinion to help health systems and providers mitigate that risk with the hopes of maintaining the survival gains for cardiac arrest achieved over the past 2 decades.”

Minimizing provider exposure

The updated guidance emphasized the need to reduce provider , as unnecessary exposure may further decrease the already strained health care workforce. These new tenets include:

- All rescuers should don personal protective equipment (PPE) before entering a scene to protect against both airborne and droplet particles.
- Personnel on the scene should be limited only to those essential for patient care.
- Rescuers should consider replacing manual chest compressions with mechanical CPR for patients who meet the manufacturer’s height and weight criteria.
- COVID-19 status should be communicated to any new providers before arrival on the scene or when transferring the patient to a second setting.

Oxygenation/ventilation strategies

“The administration of CPR involves performing numerous aerosol-generating procedures, including chest compressions, positive pressure ventilation and establishment of an advanced airway,” the authors wrote in the statement published in *Circulation*. “During those procedures, viral particles can remain suspended in the air with a half-life of approximately 1 hour and be inhaled by those nearby.”

The interim guidance addressed the risk for COVID-19 exposure during intubation. The AHA indicated that if a patient is intubated with a cuffed endotracheal tube connected to a

ventilator with a high-efficiency particulate air (HEPA) filter in the path of exhaled gas and an in-line suction catheter, the resultant closed circuit will have less risk for particle aerosolization than other forms of positive-pressure ventilation. The guidance also recommended that:

- If available, attach a HEPA filter in the path of any exhaled gas for manual or mechanical ventilation devices before administering any breaths.
- Before intubation, use a bag-mask device (or T-piece in neonates) with a HEPA filter and tight seal.
- For adults, consider passive oxygenation with nonrebreathing face mask covered by a surgical mask.
- Consider manual ventilation, if intubation is delayed, with a supraglottic airway or bag-mask device with a HEPA filter.

Starting or continuing CPR

The writing group stated that emergency medical services (EMS) providers should consider not transferring a patient with known or suspected COVID-19 to a hospital if return of spontaneous circulation is not achieved, given the low likelihood of survival plus the added risk for exposure to hospital providers.

“While the outcomes for cardiac arrest in COVID-19 are as of yet unknown, the mortality for critically ill COVID-19 patients is high and rises with increasing age and comorbidities, particularly cardiovascular disease,” the authors wrote. “Therefore, it is reasonable to consider age, comorbidities, and severity of illness in determining the appropriateness of resuscitation and balance the likelihood of success against the risk to rescuers and patients from whom resources are being diverted.”

Moreover, the panel stated that EMS agencies should assess patient risk factors to estimate the likelihood of survival.

During goals of care discussions with the patient or a proxy, risk stratification and policies must be clearly communicated, the authors wrote.

Encourage bystander CPR

“Bystander CPR has consistently been shown to improve the likelihood of survival from out-of-hospital cardiac arrest, which decreases with every minute that CPR and defibrillation are delayed,” the authors wrote. “Rescuers in the community are unlikely to have access to

adequate PPE and, therefore, are at increased risk of exposure to COVID-19 during CPR, compared to health care providers with adequate PPE.”

According to the AHA statement, approximately 70% of out-of-hospital cardiac arrests occur at home. Therefore, lay rescuers are likely to be household members who have already been exposed to the patient before cardiac arrest. Although older rescuers or those with comorbidities are at greater risk for becoming critically ill if exposed, household member CPR is still encouraged if the party involved is willing and able. The updated tenets during these conditions include:

- For adults, lay rescuers should perform at least hands-only CPR after recognition of a cardiac arrest event, especially if they are household members and were exposed to the patient at home.
- For children, lay rescuers should perform chest compressions and consider mouth-to-mouth ventilation, if willing and able, especially if they are household members and were exposed to the patient at home.
- Since defibrillation is not expected to be a highly aerosolizing procedure, lay rescuers should use an automated external defibrillator, if available, to assess and treat patients.

Neonatal and maternal care

The interim guidance also highlighted considerations for neonatal and maternal care during the COVID-19 pandemic.

The authors stated that routine neonatal care and initial steps of neonatal resuscitation are low risk for creating aerosolization and exposing providers to COVID-19.

After uncomplicated deliveries, suctioning of the airway should not be performed routinely for clear or meconium-stained amniotic fluid. Suctioning is an aerosol-generating procedure and may increase risk for exposure.

Moreover, the tenets of maternal cardiac arrest are unchanged for women with suspected or confirmed COVID-19, according to the statement.

“In arriving at this interim guidance, we reviewed existing AHA CPR recommendations in the context of the COVID-19 pandemic and considered the unique pathophysiology of COVID-19 with reversal of hypoxemia as a central goal,” the authors wrote. “We sought to balance the competing interests of providing timely and high-quality resuscitation to patients while simultaneously protecting rescuers.” – *by Scott Buzby*

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