

Interim guidance on resuscitation of suspected or confirmed COVID-19 patients

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Why?

- Balance the immediate needs of patients with safety of the rescuers
- The challenge is to ensure that patients with or without COVID-19 who experience cardiac arrest get the best possible chance of survival while maintaining the safety of the rescuer

COVID-19 cv impact

- Illness related:
 - Hypoxemic respiratory failure from ARDS
 - Myocardial injury
 - Arrhythmias
 - Shock
- Treatment related:
 - QT prolongation from hydroxychloroquine and azithromycin

HCW

- Highest exposure
- Shortage of PPE
- CPR highly aerosolizing:
 - Chest compressions
 - PPV
 - Intubation
- High stress events
- Immediate need for patient care may result in lapses in infection control practices

General principles in resuscitating COVID-19 patients

- Reduce provider exposure to COVID -19
 - Rationale:
 - HC force is already strained
 - No need for additional burden
 - Strategy:
 - All should wear proper PPE before entering
 - Limit number of personnel
 - Mechanical chest compression device
 - Clearly communicate COVID status to new personnel before arriving at the scene

General principles in resuscitating COVID-19 patients

- Prioritize oxygenation and ventilation strategies with lower risk of aerosolization risk
 - Rationale:
 - Intubating with a cuffed tube and a HEPA filter on the machine carries a lower risk than any other form of PPV
 - Strategies:
 - Attach HEPA filter to any device administering mechanical or manual breaths before starting (in the path of the exhaled gas)
 - Intubate at the earliest feasible moment following rhythm analysis and defibrillation (HEPA filter ready circuit with a cuffed tube)
 - Minimize the likelihood of failed intubations:
 - Most skilled
 - Pausing chest compressions
 - Video laryngoscope whenever available
 - Before intubation, use a bag-mask device (or T-piece in neonates) with a HEPA filter and a tight seal, or, for adults, consider passive oxygenation with nonrebreathing face mask (NRFM), covered by a surgical mask
 - If intubation is delayed use an LMA
 - MINIMIZE DISCONNECTIONS

General principles in resuscitating COVID-19 patients

- Consider the appropriateness of starting and continuing with the cpr
 - Rationale:
 - Don't waste human effort and resources where it can be diverted to better outcomes.... because the mortality is high. 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.
 - Strategies:
 - Discuss advanced directives ahead of time
 - Healthcare systems and EMS agencies should institute policies to guide front-line providers in determining the appropriateness of starting and terminating CPR for patients with COVID-19. risk stratification and communication with families

Situation and setting specific considerations

- OHCA: if in an endemic area consider all are positive
 - Lay rescuer considerations:
 - Bystander CPR increases survival historically
 - No access to PPE
 - Those with several comorbidity more likely to become critically ill
 - If at home the lay rescuer is already exposed
 - Adult:
 - Perform at least hand only CPR if capable and willing
 - Put a piece of cloth as a mask on rescuer or on patient
 - Peds:
 - Mouth to mouth ventilation (higher incidence of respiratory arrest) if capable and willing
 - Use an automatic defibrillator whenever available

Situation and setting specific considerations

- EMS:
 - Telecommunication dispatch:
 - Screen for COVID-19 symptoms or close contacts
 - Provide education to lay rescuer
 - Inform dispatch of need for proper donning when COVID is suspected
 - Transport:
 - No family members
 - If no ROSC consider not getting patient to hospital

Situation and setting specific considerations

- IHCA (for COVID +)
 - Pre-arrest:
 - Advanced directives
 - Assess need for intubation ahead
 - If at risk proactively move to negative pressure room
 - Arrest: close the door
 - Intubated:
 - Increase FIO₂ to 1
 - Put on PCV targeting a 6ml/kg TV
 - Adjust trigger to OFF
 - RR: adults: 10, peds: 30
 - Adjust PEEP balancing lung volumes and venous return
 - Prone: if no tube put in supine and continue, if intubated proceed with CPR. If supine is needed while intubated, avoid disconnections

Situation and setting specific considerations

- Maternal and neonatal considerations:
 - Neonatal: unclear if newly born babies are infected or likely to be infectious when mothers have suspected or confirmed COVID-19, providers should don appropriate PPE.
 - initial steps of neonatal resuscitation are unlikely to be aerosol-generating
 - Suction of the airway after delivery should not be performed routinely for clear or meconium-stained amniotic fluid.
 - Endotracheal instillation of medications, such as surfactant or epinephrine, are aerosol-generating procedures, especially via an uncuffed tube. Intravenous delivery of epinephrine via a low-lying umbilical venous catheter is the preferred route of administration during neonatal resuscitation
 - Incubators do not protect from aerosolization of the virus

Situation and setting specific considerations

- Maternal:
 - Changes of pregnancy may increase the risk of acute decompensation in critically ill pregnant patients with COVID-19.
 - Preparation for perimortem delivery, to occur after 4 minutes of resuscitation, should be initiated early in the resuscitation algorithm to allow the assembly of obstetrical and neonatal teams with PPE even if ROSC is achieved and perimortem delivery is not required.