Adult Cardiac Arrest Algorithm for Patients With Suspected or Confirmed COVID-19 (VF/pVT/Asystole/PEA)

Text in cascading boxes describes the actions that a provider should perform in sequence during cardiac arrest of an adult with suspected or confirmed COVID-19. Arrows guide providers from one box to the next as they perform the actions. Some boxes have multiple arrows that lead outward, each to a different treatment pathway depending on the outcome of the most recent action taken. Pathways are hyperlinked.

Box 1

There are 2 icons in this box, one signifying the use of personal protective equipment (PPE) appropriate for aerosol-generating procedure (AGP): respirator (eg, N95), along with gown, gloves, and eye protection, and the other signifying the use of a high-efficiency particulate air (HEPA) filter.

Start CPR

- Give oxygen (this step includes suspected AGP, on the basis of current studies)
- Attach monitor/defibrillator

Is the rhythm shockable?
If Yes, it is shockable, proceed to Box 2.
If No, it is nonshockable, proceed to Box 9.

Box 2

The patient has ventricular fibrillation (VF)/pulseless ventricular tachycardia (pVT); proceed to Box 3.

Box 3

Deliver shock. (This step includes suspected AGP, on the basis of current studies.) Proceed to Box 4.

Box 4

CPR 2 minutes

- IV/IO access

Is the rhythm shockable?
If Yes, it is shockable, proceed to Box 5.
If No, it is nonshockable, proceed to Box 12.

Box 5

Deliver shock. (This step includes suspected AGP, on the basis of current studies.) Proceed to Box 6.

Box 6

CPR 2 minutes

- **Epinephrine** every 3 to 5 minutes
- Consider advanced airway (this step includes suspected AGP, on the basis of current studies), capnography

Is the rhythm shockable?
If Yes, it is shockable, proceed to Box 7.
If No, it is nonshockable, proceed to Box 12.

Box 7

Deliver shock. (This step includes suspected AGP, on the basis of current studies.) Proceed to Box 8.

Box 8

CPR 2 minutes

- **Amiodarone** or **lidocaine**
- Treat reversible causes

Is the rhythm shockable?
If Yes, it is shockable, return to Box 5.
If No, it is nonshockable, proceed to Box 12.

Box 9
The patient has asystole/pulseless electrical activity; **give epinephrine as soon as possible**. Proceed to Box 10.

Box 10
CPR 2 minutes
- IV/IO access
- **Epinephrine** every 3 to 5 minutes
- Consider advanced airway (this step includes suspected AGP, on the basis of current studies) and capnography

Is the rhythm shockable?
If Yes, it is shockable, proceed to Box 5 or Box 7.
If No, it is nonshockable, proceed to Box 11.

Box 11
CPR 2 minutes.
- Treat reversible causes.

Is the rhythm shockable?
If Yes, it is shockable, proceed to Box 5 or Box 7.
If No, it is nonshockable, proceed to Box 12.

Box 12
- If no signs of return of spontaneous circulation (ROSC), go to Box 10 or Box 11
- If ROSC, go to Post–Cardiac Arrest Care
- Consider appropriateness of continued resuscitation

Sidebar for the Adult Cardiac Arrest Algorithm for Patients With Suspected or Confirmed COVID-19

CPR Quality
- Push hard (at least 2 inches [5 centimeters]) and fast (100 to 120 per minute) and allow complete chest recoil.
- Minimize interruptions in compressions.
- Avoid excessive ventilation.
- Change compressor every 2 minutes, or sooner if fatigued.
- If no advanced airway, use a 30-to-2 compression-to-ventilation ratio.
- Quantitative waveform capnography
  - If P_{ETCO_2} is low or decreasing, reassess CPR quality.

Shock Energy for Defibrillation
- **Biphasic**: Manufacturer recommendation (eg, initial dose of 120 to 200 Joules); if unknown, use maximum available. Second and subsequent doses should be equivalent, and higher doses may be considered.
- **Monophasic**: 360 Joules

Drug Therapy
- **Epinephrine IV/IO dose**: 1 milligram every 3 to 5 minutes
- **Amiodarone IV/IO dose**: First dose: 300 milligram bolus. Second dose: 150 milligrams.
  or
  Lidocaine IV/IO dose: First dose: 1 to 1.5 milligrams per kilogram. Second dose: 0.5 to 0.75 milligram per kilogram.

Advanced Airway
- **Rapidly apply PPE before AGPs.**
- Provide endotracheal intubation or supraglottic advanced airway.
- **For all ventilation, use a HEPA filter.**
- Perform waveform capnography or capnometry to confirm and monitor ET tube placement.
- Once advanced airway is in place, give 1 breath every 6 seconds (10 breaths per minute) with continuous chest compressions.

Return of Spontaneous Circulation
- Pulse and blood pressure
- Abrupt sustained increase in P_{ETCO_2} (typically 40 millimeters of mercury or greater)

- Spontaneous arterial pressure waves with intra-arterial monitoring

Reversible Causes

- Hypovolemia
- Hypoxia
- Hydrogen ion (acidosis)
- Hypokalemia or hyperkalemia
- Hypothermia
- Tension pneumothorax
- Tamponade, cardiac
- Toxins
- Thrombosis, pulmonary
- Thrombosis, coronary