

## Pediatric Cardiac Arrest Algorithm for Patients With Suspected or Confirmed COVID-19

Text in cascading boxes describes the actions that a provider should perform in sequence during cardiac arrest of a pediatric patient 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

- Begin bag-mask ventilation and 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) or 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 or 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)

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 or pulseless electrical activity; **give epinephrine as soon as possible**. Proceed to [Box 10](#).

## Box 10

### CPR 2 minutes

- IV or 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 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 7](#).

If No, it is nonshockable, proceed to [Box 12](#).

## Box 12

- If there are no signs of return of spontaneous circulation, proceed to [Box 10](#).
- If return of spontaneous circulation is achieved, go to Post-Cardiac Arrest Care checklist.

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

### CPR Quality

- Push hard (at least one third of the anteroposterior diameter of the chest) and fast (100 to 120 per minute) and allow complete chest recoil.
- Minimize interruptions in compressions.
- Change compressor every 2 minutes, or sooner if fatigued.
- If no advanced airway, use a 15-to-2 compression-to-ventilation ratio.
- If advanced airway, provide continuous compressions and give a breath every 2 to 3 seconds.

### Shock Energy for Defibrillation

- First shock: 2 Joules per kilogram
- Second shock: 4 Joules per kilogram
- Subsequent shocks: at least 4 Joules per kilogram, up to a maximum of 10 Joules per kilogram or adult dose

### Drug Therapy

- **Epinephrine IV or IO dose:** 0.01 milligram per kilogram (0.1 milliliter per kilogram of the 0.1 milligram per milliliter concentration). Maximum dose: 1 milligram. Repeat every 3 to 5 minutes. If no IV or IO access, may give endotracheal dose of 0.1 milligram per kilogram (0.1 milliliter per kilogram of the 1 milligram per milliliter concentration)
- **Amiodarone IV or IO dose:** 5 milligrams per kilogram bolus during cardiac arrest. May repeat up to 3 total doses for refractory VF or pVT

*or*

**Lidocaine IV or IO dose:** Initial: 1 milligram per kilogram loading dose

### Advanced Airway

- **Rapidly apply PPE before AGPs.**
- Provide endotracheal intubation or supraglottic advanced airway.
- Perform waveform capnography or capnometry to confirm and monitor ET tube placement.
- **For all ventilation, use a HEPA filter.**

### Reversible Causes

- Hypovolemia
- Hypoxia
- Hydrogen ion (acidosis)

- Hypoglycemia
- Hypokalemia or hyperkalemia
- Hypothermia
- Tension pneumothorax
- Tamponade, cardiac
- Toxins
- Thrombosis, pulmonary
- Thrombosis, coronary