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