**Start CPR**

- **Give Oxygen**
- **Attach Monitor/Defibrillator**

**Give Oxygen**

- Attach oxygen
- Maintain sufficient oxygen delivery: 
  - During CPR: 
    - 21-23% for 2 minutes
    - 100% thereafter

**Attach Monitor/Defibrillator**

- Start continuous cardiac monitoring
- If the rhythm is ventricular fibrillation (VF) or pulseless ventricular tachycardia (VT), proceed with defibrillation

**Check Rhythm**

- Check for abnormal rhythms
- If an abnormal rhythm is detected, perform CPR

**2 minutes**

- Continue CPR
- Repeat the sequence

**Return of Spontaneous Circulation (ROSC)**

- Return of spontaneous circulation
- CPR should be replaced by advanced airway if possible

**Post-Cardiac Arrest Care**

- Continue CPR
- If VF/VT
  - Drug therapy
  - IV/IO access
  - Epinephrine every 3–5 minutes
  - Amiodarone for refractory VT
- Consider Advanced Airway
- Quantitative waveform capnography

**Drug Therapy**

- Epinephrine IV/IO Dose
  - 1 mg every 3–5 minutes
  - First dose: 300 mg bolus
  - Second dose: 150 mg
- Amiodarone IV/IO Dose
  - First dose: 300 mg bolus
  - Second dose: 150 mg

**Advanced Airway***

- Supraglottic advanced airway or endotracheal intubation
- Waveform capnography to confirm and monitor ET tube placement
- 10 breaths per minute with continuous chest compressions

**CPR Quality**

- Push hard (2" to 2.4" or 5–6cm) and fast (100–120/min) and allow complete chest recoil.
- Minimize interruptions in compressions.
- Avoid excessive ventilation
- Rotate compressor every 2 minutes
- If no advanced airway, 30:2 compression-ventilation ratio
- Quantitative waveform capnography
- If PETCO <10 mm Hg, attempt to improve CPR quality
- If relaxation phase(diastolic) pressure <20 mm Hg, attempt to improve CPR quality.

**Return of Spontaneous Circulation (ROSC)**

- Pulse and blood pressure
- Abrupt sustained increase in PETCO₂ (typically ≥ 40 mm Hg)
- Spontaneous arterial pressure waves with intra-arterial monitoring

**Shock Energy**

- Biphasic: Manufacturer recommendation (eg. initial dose of 120–200 J); if unknown, use maximum available.
- Second and subsequent doses should be equivalent, and higher doses may be considered
- Monophasic: 360 J

**Reversible Causes**

- Hypovolemia
- Hypoxia
- Hydrogen ion (acidosis)
- Hypo-/Hyperkalemia
- Hypothermia
- Hypertension
- Tension pneumothorax
- Tamponade, cardiac
- Toxins
- Thrombosis, pulmonary
- Thrombosis, coronary

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** Bobrow BJ, Clark LL, Ewy GA, Chikani V, Sanders AB, Richman PB. Minimally Interrupted cardiac resuscitation by emergency medical services for out of hospital cardiac arrest. JAMA 2008;299:1158-1165

Version control: This document is current with respect to 2015 American Heart Association Guidelines for CPR and ECC. These guidelines are current until they are replaced on October 2020.
If you are reading this page after October 2020, please contact ACLS Training Center at support@acls.net for an updated document. Version 2018.10.a
Cardiac Arrest Algorithm

Start CPR

1. Give Oxygen
   - Attach Monitor/Defibrillator

2. VF/VT
   - Rhythm Shockable?
     - Yes
       - Shock*
       - CPR 2 min
       - IV/IO access
     - No
       - Asystole/PEA
       - CPR 2 min
       - IV/IO access
       - Epinephrine every 3–5 min
       - Consider advanced airway, capnography

3. Shock*
   - CPR 2 min
   - IV/IO access
   - Epinephrine every 3-5 min
   - Consider advanced airway, capnography

4. Rhythm Shockable?
   - Yes
     - CPR 2 min
     - Epinephrine every 3-5 min
     - Consider advanced airway, capnography
     - If no signs of return of spontaneous circulation (ROSC), go to 10 or 11.
   - No
     - Asystole/PEA
     - CPR 2 min
     - IV/IO access
     - Epinephrine every 3–5 min
     - Consider advanced airway, capnography

5. Shock
   - CPR 2 min
   - Epinephrine every 3-5 min
   - Consider advanced airway, capnography
   - If no signs of return of spontaneous circulation (ROSC), go to 10 or 11.

6. Rhythm Shockable?
   - Yes
     - CPR 2 min
     - Epinephrine every 3-5 min
     - Consider advanced airway, capnography
     - If ROSC, go to Post-Cardiac Arrest Care.
   - No
     - CPR 2 min
     - IV/IO access
     - Epinephrine every 3–5 min
     - Consider advanced airway, capnography
     - Go to 5 or 7

7. Shock
   - CPR 2 min
   - Amiodarone
   - Treat reversible causes

8. Rhythm Shockable?
   - Yes
     - Go to 5 or 7
   - No
     - CPR 2 min
     - IV/IO access
     - Epinephrine every 3–5 min
     - Consider advanced airway, capnography
     - Go to 5 or 7

9. Asystole/PEA
   - CPR 2 min
   - IV/IO access
   - Epinephrine every 3–5 min
   - Consider advanced airway, capnography

10. CPR 2 min
    - IV/IO access
    - Epinephrine every 3–5 min
    - Consider advanced airway, capnography

11. CPR 2 min
    - Treat reversible causes

12. If ROSC, go to Post-Cardiac Arrest Care.


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