

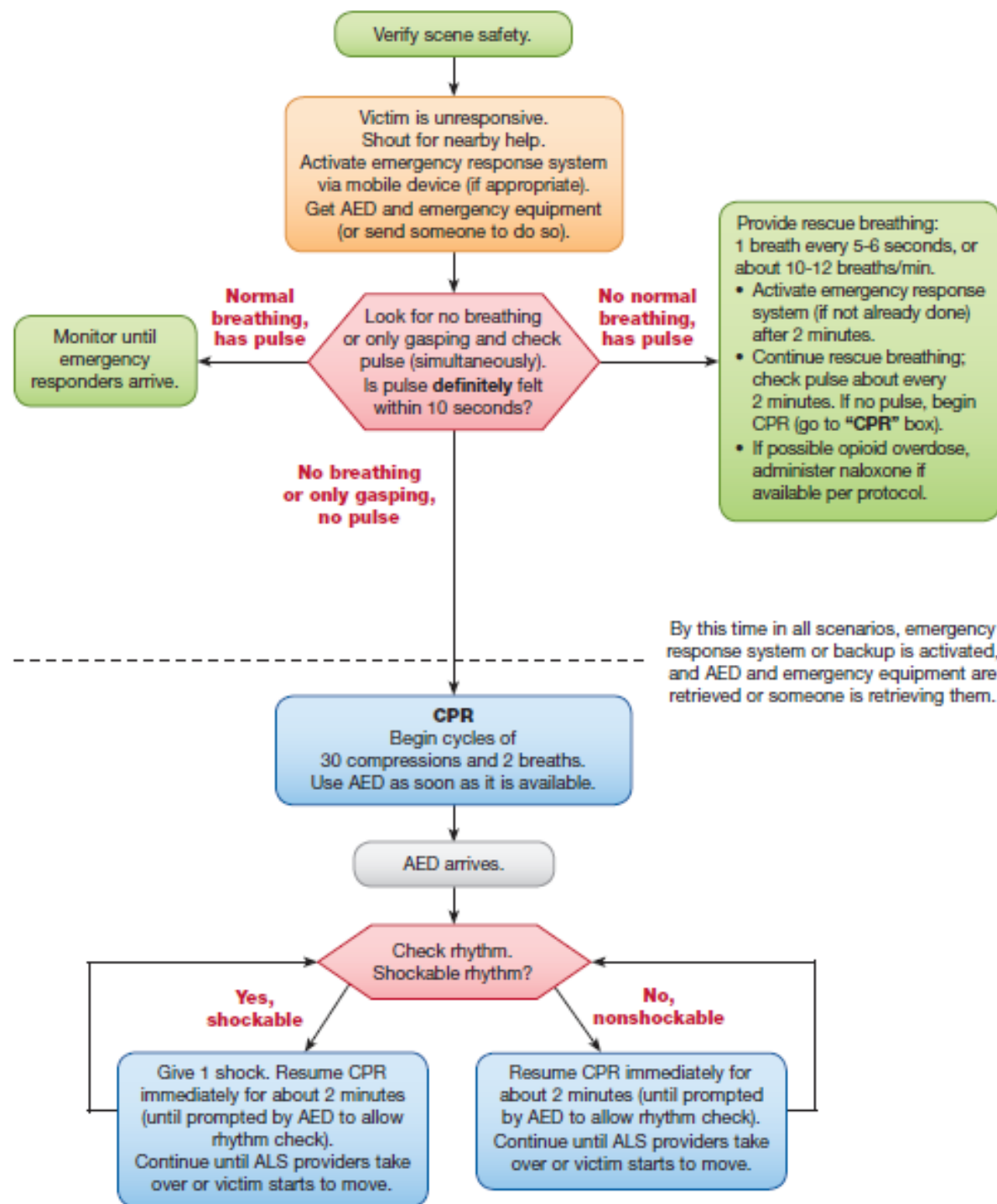
2015

**American Heart Association
Guidelines for CPR & ECC**



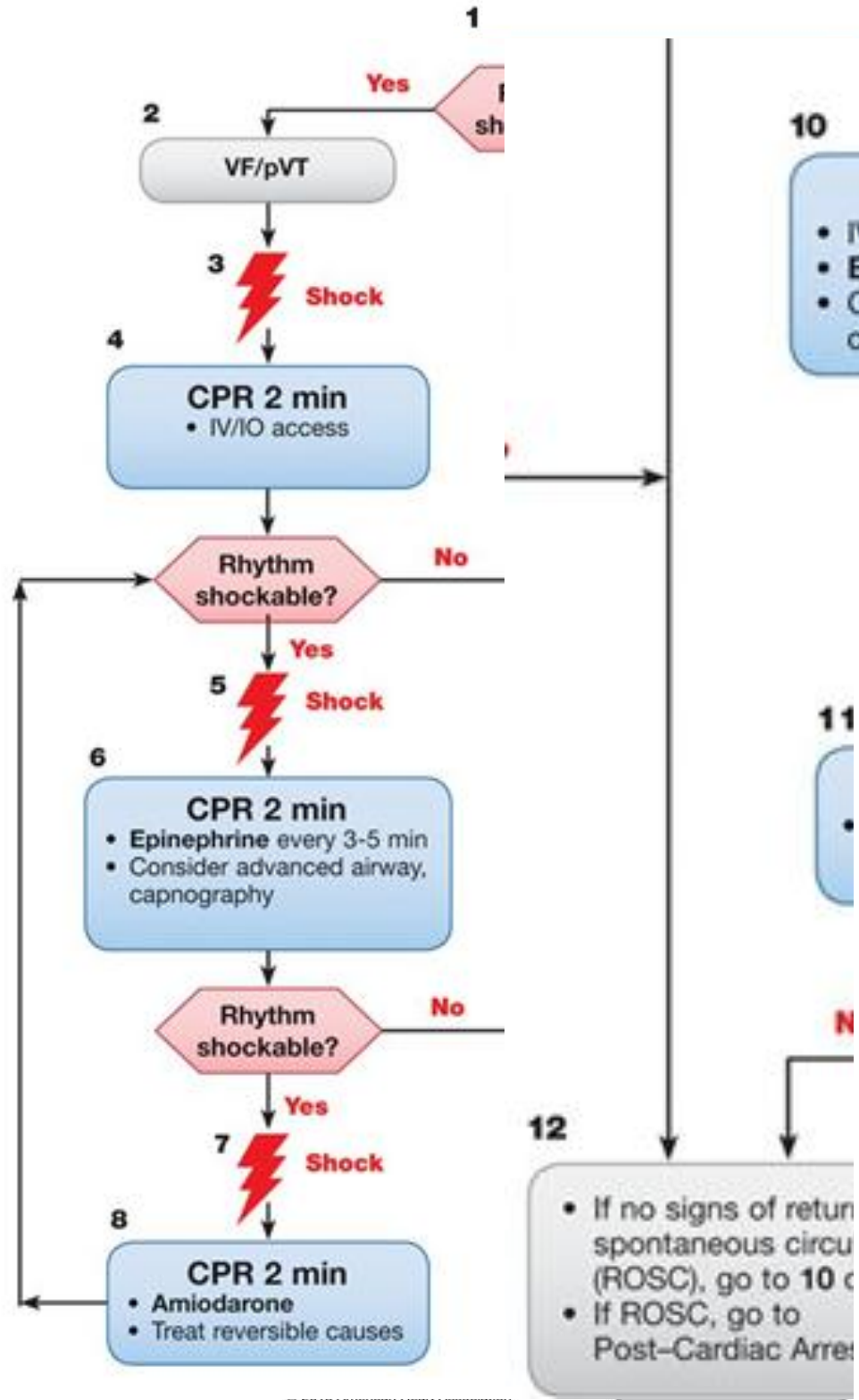
Adult Advanced Cardiovascular Life Support

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Figure 1. BLS Healthcare Provider Adult Cardiac Arrest Algorithm—2015 Update.



CPR Quality

- Push hard (at least 2 inches [5 cm]) and fast (100-120/min) and allow complete chest recoil.
- Minimize interruptions in compressions.

Advanced Airway

Reversible Causes

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

Adjuncts to CPR:

Oxygen Dose During CPR

- May be reasonable to use the maximal feasible inspired oxygen concentration during CPR (Class IIb, LOE C)

Adjuncts to CPR:

Monitoring Physiologic Parameters During CPR

- Monitor and optimize CPR quality, guide vasopressor therapy, and detect ROSC
- May be reasonable to use physiologic parameters (Class IIb, LOE C)
 - Quantitative waveform capnography
 - Arterial relaxation diastolic pressure
 - Arterial pressure monitoring
 - Central venous oxygen saturation

Adjuncts to CPR:

Ultrasound During Cardiac Arrest

- A qualified sonographer

And

- Does not interfere standard protocol
 - May be considered as an adjunct
 - Its usefulness has not been well established
 - (Class IIb, LOE C)

Adjuncts for Airway Control and Ventilation: **BMV vs Any Advanced Airway During CPR**

- Both may be used during IHCA and OHCA (Class IIb, LOE C)
- Trained HCPs may use SGA device or ETT as the initial advanced airway (Class IIb, LOE C)
- The **choice** of bag-mask device versus advanced airway insertion, then, will be determined by the **skill and experience of the provider**

Adjuncts for Airway Control and Ventilation: Clinical Assessment of Tracheal Tube Placement

- Continuous waveform capnography is recommended in addition to clinical assessment as the most reliable method (Class I, LOE C)
- Reasonable alternative (Class IIa, LOE C)
 - Non-waveform CO2 detector
 - Esophageal detector device
 - Ultrasound used by an experienced operator

Adjuncts for Airway Control and Ventilation:

Ventilation After Advanced Airway Placement

- Excessive ventilation in the setting of cardiac arrest may be associated with worse outcome
- 1 breath every 6 seconds (10 breaths/min) while **continuous chest compressions** are being performed (Class IIb, LOE C)

Defibrillation Strategies for VF/pVT: Waveform Energy and First-Shock Success

- **Biphasic** waveforms are preferred to monophasic defibrillators (Class IIa, LOE B)
- **Manufacturer's recommended energy dose** is reasonable (Class IIb, LOE C)
- If this is not known, defibrillation at the **maximal dose** may be considered (Class IIb, LOE C)

Defibrillation Strategies for VF/pVT: Energy Dose for Subsequent Shocks

- Fixed vs escalating based on manufacturer's instructions is reasonable (Class IIa, LOE C)

Defibrillation Strategies for VF/pVT: Single Shocks vs Stacked Shocks

- A **single-shock** strategy (as opposed to stacked shocks) is reasonable for defibrillation (Class IIa, LOE B)

Antiarrhythmic Therapy for Refractory VF/pVT

- Refractory VF/pVT refers to VF or pVT that persists or recurs after **1 or more shocks**
- Establishing **vascular access** to enable drug administration should not compromise the quality of CPR or timely defibrillation

Antiarrhythmic Therapy for Refractory VF/pVT

- Amiodarone
 - May be considered for VF/pVT (Class IIb, LOE B)
- Lidocaine
 - May be considered as an alternative to amiodarone (Class IIb, LOE C)
- Magnesium
 - Not recommended for routine use in adult patients (Class III: No Benefit, LOE B)

Antiarrhythmic Drugs After Resuscitation

- Inadequate evidence to support the routine use of **lidocaine** or **β -blocker** after cardiac arrest
- May be considered (Class IIb, LOE C)
- Insufficient evidence to recommend for or against the routine initiation or continuation of **other antiarrhythmic** medications

Vasopressors in Cardiac Arrest:

Standard Dose Epinephrine

- 1 mg every 3 to 5 minutes
- May be reasonable for patients in cardiac arrest (Class IIb, LOE B)

Vasopressors in Cardiac Arrest:

Standard vs High-Dose Epinephrine

- 0.1 to 0.2 mg/kg
- **Not recommended** for routine use in cardiac arrest (Class III: No Benefit, LOE B)
- Except in special circumstances, such as **(2010)**
 - β -blocker overdose
 - Calcium channel blocker overdose
 - Titrated to real-time physiologically monitored parameters

Vasopressors in Cardiac Arrest:

Epinephrine vs Vasopressin

- Vasopressin offers no advantage as a substitute for epinephrine in cardiac arrest (Class IIb, LOE B)
- Vasopressin has been removed from Algorithm

Vasopressors in Cardiac Arrest: Epinephrine vs Epinephrine/Vasopressin Combination

- Epinephrine/vasopressin combination offers no advantage as a substitute for standard-dose epinephrine in cardiac arrest (Class IIb, LOE B)

Vasopressors in Cardiac Arrest:

Timing of Administration of Epinephrine

- Nonshockable rhythm
 - May be reasonable to administer epinephrine **as soon as soon as possible** (Class IIb, LOE C)
- Shockable rhythm
 - **Insufficient evidence** to make a recommendation as to the optimal timing of epinephrine, particularly in relation to defibrillation

Steroids

- No data to recommend for or against the routine use of steroids alone for IHCA patients
- IHCA
 - Combination of intra-arrest vasopressin, epinephrine, and methylprednisolone and post-arrest hydrocortisone may be considered (Class IIb, LOE C)
- OHCA
 - Uncertain benefit (Class IIb, LOE C)

Prognostication During CPR:

End-Tidal CO₂

- Intubated patients
 - ETCO₂ \leq 10 mmHg after 20min of CPR may be considered as **one component** to decide when to end resuscitative efforts, but it should not be used in isolation (Class IIb, LOE C)
- Non-intubated patients
 - Specific ETCO₂ cutoff value at any time during CPR **should not** be used as an indication to end resuscitative efforts (Class III: Harm, LOE C)

Extracorporeal CPR (ECMO)

- Insufficient evidence to recommend the routine use of ECPR
- If rapidly implemented, ECPR may be considered for patients with reversible etiology of the cardiac arrest during a limited period of mechanical cardiorespiratory support (Class IIb, LOE C)