

Advanced Cardiovascular Life Support (ACLS)

Summary of Major Changes in the 2005 Guidelines

- Emphasis on delivery of effective chest compressions.
- A single compression-to-ventilation ratio (30:2) for all single rescuers for all victims.
- Each rescue breath should be given over 1 second with visible chest rise.
- New recommendation that single shocks, followed by immediate CPR, be used for defibrillation of VF cardiac arrest.
- Rhythm checks (and pulse checks) should be performed every 2 minutes, to minimize interruptions in chest compressions.

Primary ABCD Survey

Focus: Basic CPR and Defibrillation.

- A = Airway - non-invasive techniques (head tilt-chin lift, jaw thrust, oral airway, nasal airway).
- B = Breathing - positive-pressure ventilation (bag-mask, mouth-to-mouth).
- C = Circulation - CPR until defibrillator arrives (check pulses - carotid better than femoral).
- D = Defibrillation - assess cardiac rhythm for VF/VT and provide defibrillating shock if needed.

Secondary ABCD Survey

Focus: Advanced Assessments & Invasive Therapy.

- A = Airway - ETT, LMA, Combitube.
- B = Breathing - positive-pressure ventilation via invasive airway device (hand-bag or ventilator)
- C = Circulation - CPR to circulate blood and medications.
 - Establish IV access
 - EKG for rhythm analysis
 - Vasopressors and/or antiarrhythmics as needed.
- D = Differential Diagnosis - find and treat reversible causes (“6 H’s & 6 T’s”).

CPR Basics

- Push hard, push fast (100 compressions/min)
- Ensure full chest recoil
- Minimize interruptions in chest compressions
- One cycle = 30 compressions + 2 breaths
- Five cycles = ~2 minutes
- Avoid hyperventilation
- After the airway is secured, CPR is no longer given in “cycles.” Breathing is continuous at 8-10 bpm; CPR is continuous, checking for rhythm every 2 minutes.

Differential Diagnosis

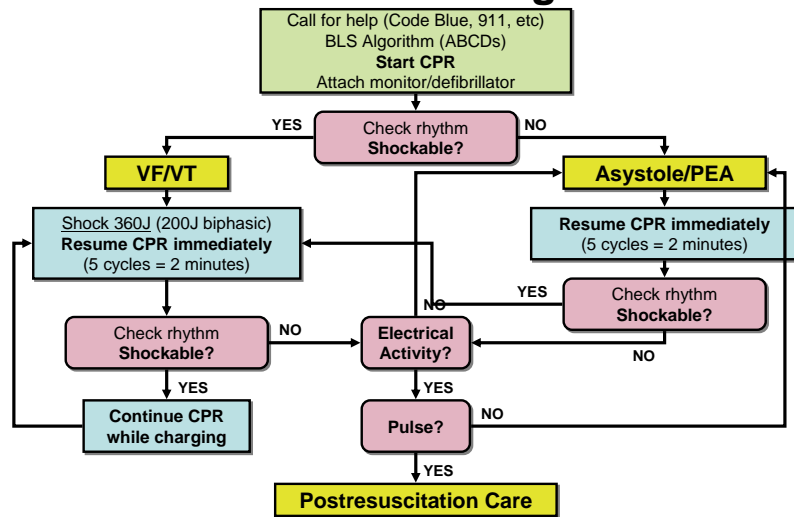
6 H's

- Hypovolemia
- Hypoxia
- Hydrogen ion (acidosis)
- Hyper-/Hypokalemia
- Hypoglycemia
- Hypothermia

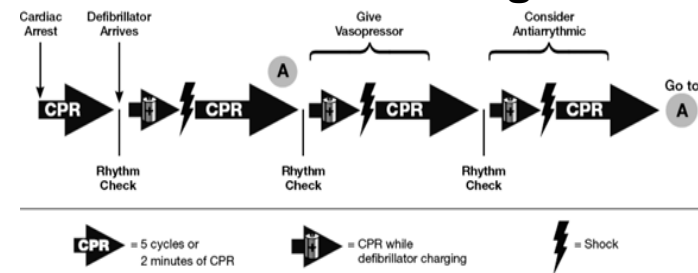
6 T's

- Toxins & Tablets
- Tamponade
- Tension pneumothorax
- Thrombosis - coronary (ACS)
- Thrombosis - pulmonary (PE)
- Trauma

Pulseless Arrest Algorithm



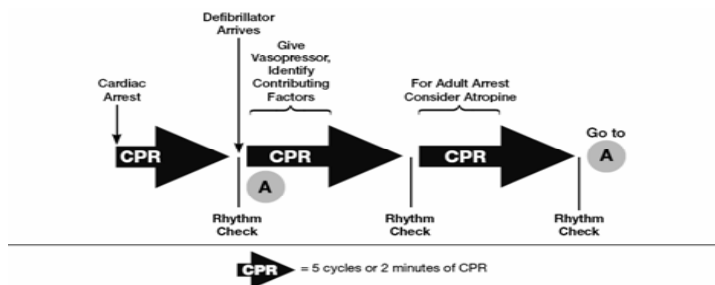
VF/Pulseless VT Algorithm



When IV access is present:

- Vasopressin 40 units x1 or Epinephrine 1 mg q3-5min
- Amiodarone 300 mg x1, may repeat 150 mg x1
- Lidocaine 1-1.5 mg/kg, then 0.5-0.75 mg/kg (max 3 mg/kg)
- Magnesium 1-2 g for torsades de pointes

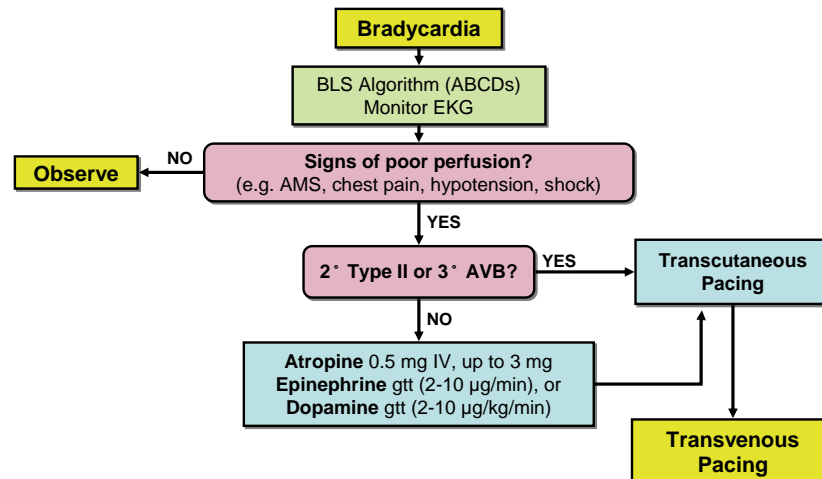
Asystole/PEA Algorithm



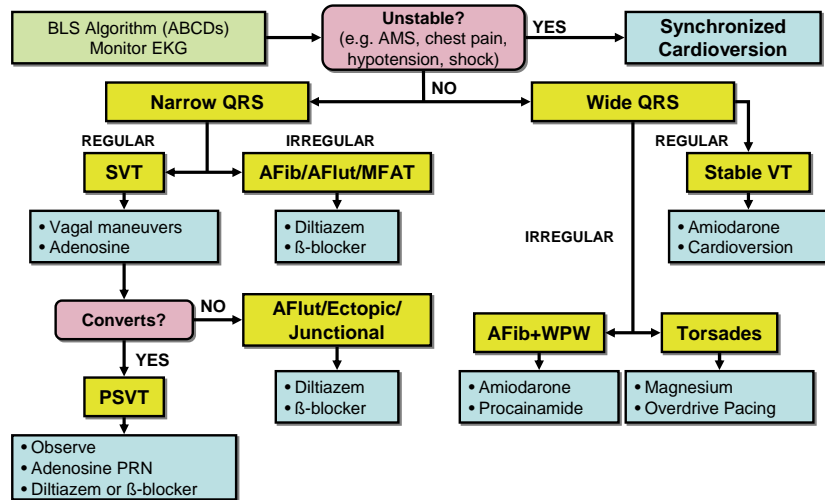
When IV access is present:

- Epinephrine 1 mg q3-5min, or Vasopressin 40 units x1
- Atropine 1 mg q3-5min (up to 3 doses)

Bradycardia Algorithm



Tachycardia Algorithm



References

- American Heart Association. 2005. 2005 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation*, **112**: IV-1–IV-211.
- Field JM (ed), Hazinski MF (ed), and Gilmore D (ed). *Handbook of Emergency Cardiovascular Care: for Healthcare Providers*. American Heart Association, 2006.