2020 AHA GUIDELINES

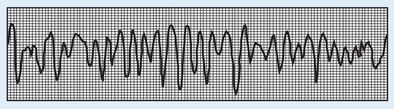
Pediatric Advanced Cardiac Life Support

DEFIBRILLATION

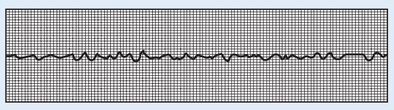
ARRHYTHMIA

Shockable

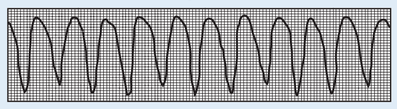
Coarse Ventricular Fibrillation (Coarse VF)



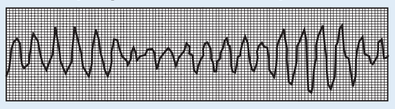
Fine Ventricular Fibrillation (Fine VF)



Ventricular Tachycardia – Pulseless



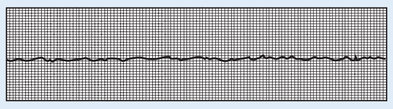
Polymorphic Ventricular Tachycardia



Not Shockable

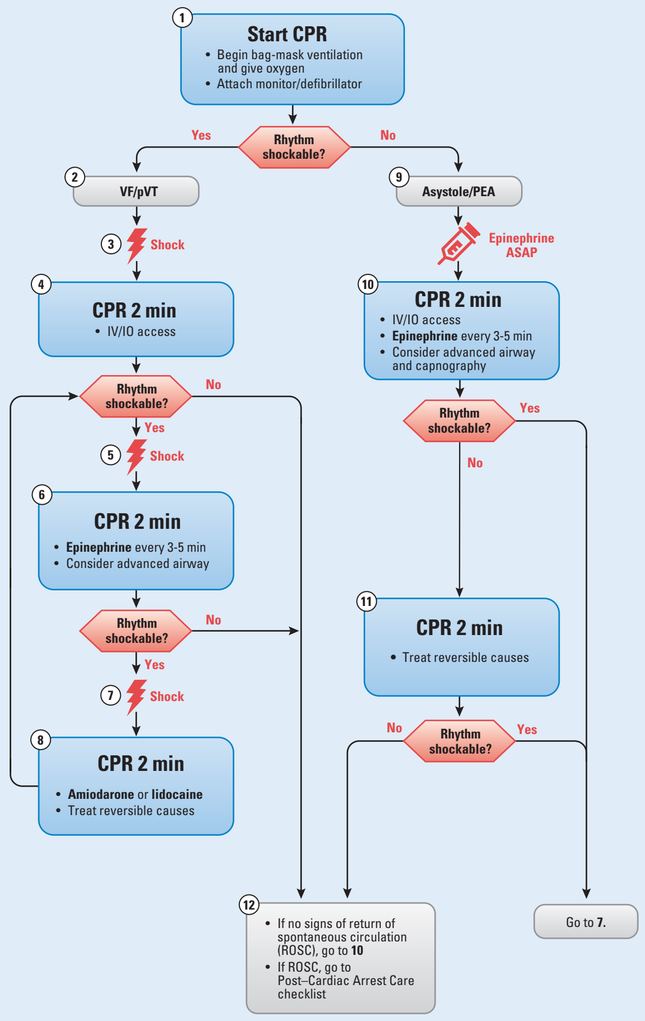
Pulseless Electrical Activity (PEA)

Asystole



PALS PROTOCOL

Pediatric Cardiac Arrest Algorithm[1]



CPR Quality

- Push hard (≥⅓ of anteroposterior diameter of chest) and fast (100-120/min) and allow complete chest recoil
- Minimize interruptions in compressions
- Change compressor every 2 minutes, or sooner if fatigued
- If no advanced airway, 15:2 compression-ventilation ratio
- If advanced airway, provide continuous compressions and give a breath every 2-3 seconds

Shock Energy for Defibrillation

- First shock 2 J/kg
- Second shock 4 J/kg
- Subsequent shocks ≥4 J/kg, maximum 10 J/kg or adult dose

Drug Therapy

- **Epinephrine IV/IO dose:** 0.01 mg/kg (0.1 mL/kg of the 0.1 mg/mL concentration). Max dose 1 mg. Repeat every 3-5 minutes. If no IV/IO access, may give endotracheal dose: 0.1 mg/kg (0.1 mL/kg of the 1 mg/mL concentration).
- **Amiodarone IV/IO dose:** 5 mg/kg bolus during cardiac arrest. May repeat up to 3 total doses for refractory VF/pulseless VT
  or
  Lidocaine IV/IO dose: Initial: 1 mg/kg loading dose

Advanced Airway

- Endotracheal intubation or supraglottic advanced airway
- Waveform capnography or capnometry to confirm and monitor ET tube placement

Reversible Causes

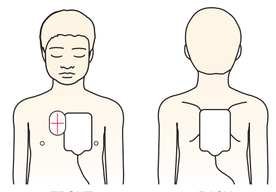
- **H**ypovolemia
- **H**ypoxia
- **H**ydrogen ion (acidosis)
- **H**ypoglycemia
- **H**ypo-/hyperkalemia
- **H**ypothermia
- **T**ension pneumothorax
- **T**amponade, cardiac
- **T**oxins
- **T**hrombosis, pulmonary
- **T**hrombosis, coronary

ZOLL PRODUCT OPERATION

MANUAL DEFIBRILLATION

With OneStep™ Pediatric CPR Electrodes

1. **Apply pediatric electrodes to patient**
   - Press firmly to bare skin, moving any air pockets to outer edges
2. **Select patient mode** (depending upon pad and cable configuration)
3. **Press ENERGY SELECT** Arrows up or down to select appropriate energy level
   - Set defibrillator energy levels based on site-specific protocols
4. **Push CHARGE button**
   - Charging message displays at bottom of screen and a distinctive charging tone sounds, indicating that unit is charging. When unit is fully charged, tone changes to a continuous charge ready tone, highlighted energy bar graph includes selected energy, and SHOCK button lights up.
5. **Stand clear**
6. **Press and hold SHOCK button on device until energy is delivered to patient**



HIGH-QUALITY CPR IS VITAL

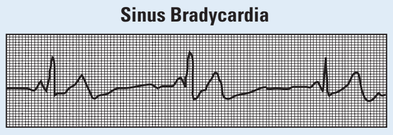
Components of high-quality CPR include:

- Ensuring chest compressions of adequate rate
- Ensuring chest compressions of adequate depth
- Allowing full chest recoil between compressions
- Minimizing interruptions in chest compressions
- Avoiding excessive ventilation

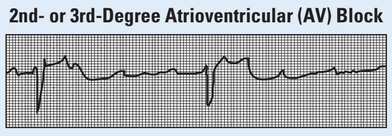
NON-INVASIVE PACING

ARRHYTHMIA

Sinus Bradycardia

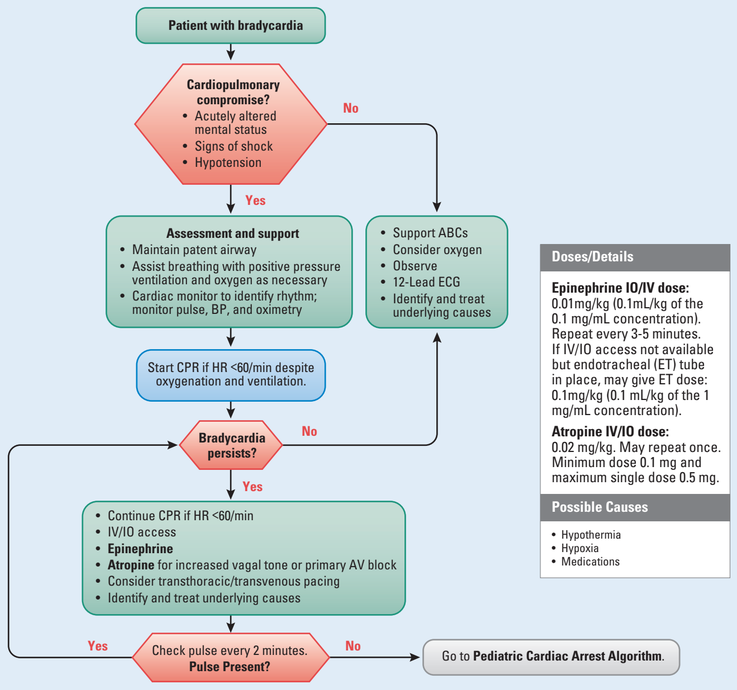


2nd- or 3rd-Degree Atrioventricular (AV) Block



PALS PROTOCOL

Pediatric Bradycardia With a PulseAlgorithm[1]



Doses/Details

Epinephrine IO/IV dose: 0.01mg/kg (0.1mL/kg of the 0.1 mg/mL concentration). Repeat every 3-5 minutes. If IV/IO access not available but endotracheal (ET) tube in place, may give ET dose: 0.1mg/kg (0.1 mL/kg of the 1 mg/mL concentration).

Atropine IV/IO dose: 0.02 mg/kg. May repeat once. Minimum dose 0.1 mg and maximum single dose 0.5 mg.

Possible Causes

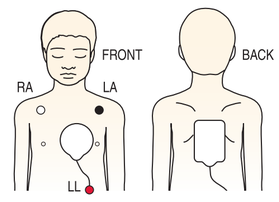
- Hypothermia
- Hypoxia
- Medications

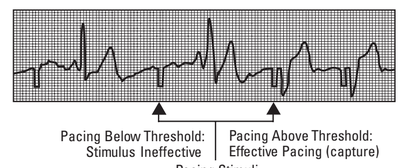
ZOLL PRODUCT OPERATION

NON-INVASIVE PACING

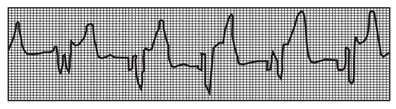
Non-invasive Pacing with Pediatric Electrodes

1. **Apply Pediatric Electrodes to Patient**
   - Press electrodes firmly to skin, moving any air pockets to outer edges
   - Apply 4 lead ECG electrodes
2. **Press PACER button to open pacing menu**
3. **Using Navigation keys, highlight Start Pacer and press Select button to initiate pacing**
4. **Using Navigation keys, highlight Output and press Select button**
   - Use Navigation keys to set Output until capture is achieved
5. **To adjust rate, use Navigation keys, highlight Rate, and press Select button**
   - Use Navigation keys to set device to desired rate





Effective Pacing: Note the widened positive QRS, which looks like an ectopic beat. Note the inverted T-waves and absence of P-waves.

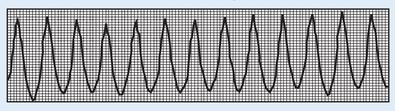


Effective Pacing: Note negative R-wave and large T-waves.

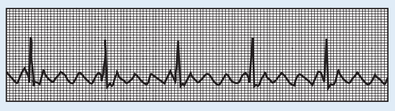
CARDIOVERSION

ARRHYTHMIA

Ventricular Tachycardia

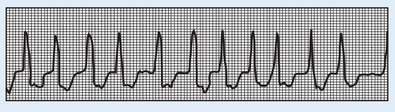


Atrial Flutter



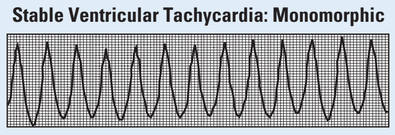
Supraventricular Tachycardia

Atrial Fibrillation (AF)



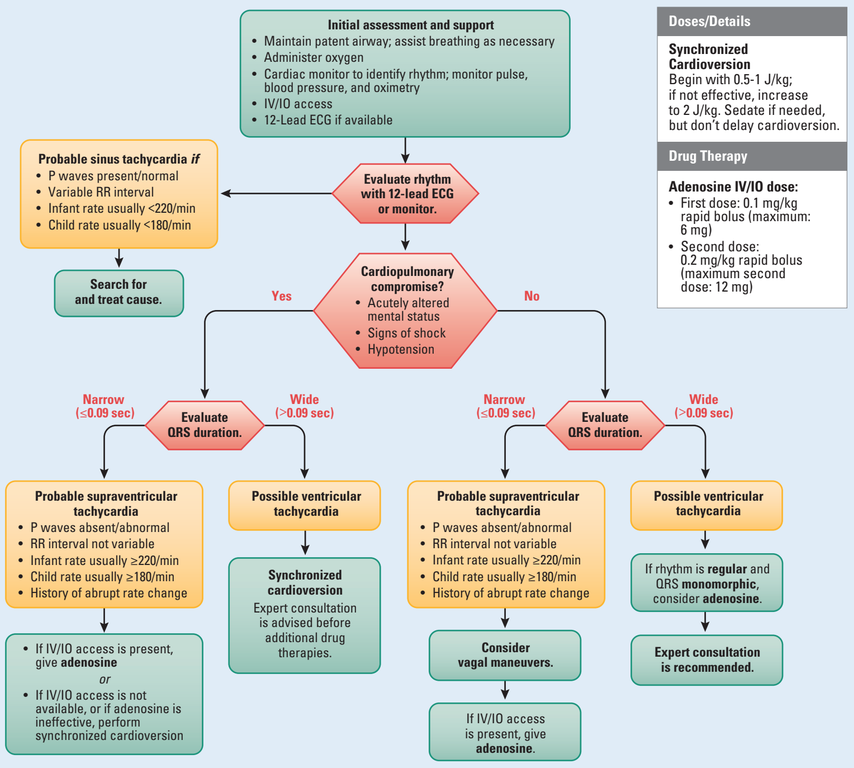
Narrow-Complex Supraventricular Tachycardia

Stable Ventricular Tachycardia: Monomorphic



PALS PROTOCOL

Pediatric Tachycardia With a PulseAlgorithm[1]



Doses/Details

Synchronized Cardioversion
Begin with 0.5-1 J/kg; if not effective, increase to 2 J/kg. Sedate if needed, but don't delay cardioversion.

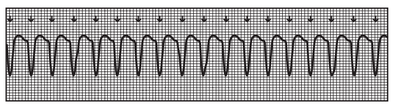
Drug Therapy

Adenosine IV/IO dose:
- First dose: 0.1 mg/kg rapid bolus (maximum: 6 mg)
- Second dose: 0.2 mg/kg rapid bolus (maximum second dose: 12 mg)

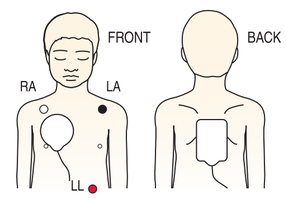
ZOLL PRODUCT OPERATION

SYNCHRONIZED CARDIOVERSION

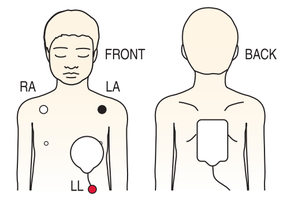
1. **Press SYNC Quick Access Key to enable synchronized mode on device**
   - Set energy levels based on site-specific protocols
2. **When in SYNC mode, unit displays markers (S) above ECG trace to indicate points in cardiac cycle (R waves) where discharge can occur. Verify that markers are clearly visible on monitor and their location is appropriate and consistent from beat to beat.**
3. **Apply pediatric electrodes to patient**
   - Press firmly to bare skin, moving any air pockets to outer edges
4. **Select patient mode** (depending upon pad and cable configuration)
5. **Press ENERGY SELECT arrows up or down to select appropriate energy level**
   - Set defibrillator energy levels based on site-specific protocols
6. **Push CHARGE button**
   - Charging message displays at bottom of screen and distinctive charging tone sounds, indicating that unit is charging. When unit is fully charged, tone changes to a continuous charge ready tone, highlighted energy bar graph includes selected energy, and SHOCK button lights up
7. **Stand clear**
8. **Press and hold SHOCK button on device until energy is delivered to patient**



ECG waveform with sync markers



Atrial Arrhythmias



Recommended Anterior/Posterior Placement

Ventricular Arrhythmias

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