# PEDIATRIC TREATMENT PROTOCOL

## CPR / ARRHYTHMIAS

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### BLS
- Compression rate 100-120/min
- Ventilation rate (compression-to-ventilation ratio)
  - Neonate: 20-30/min (3:1)
  - Pediatric: 10-12/min (15:2)*
- Use metronome or other real-time audiovisual feedback device
- Rotate compressor at least every 2 min
- Use mechanical compression device, if size-appropriate available
- O₂ and/or ventilate with BVM
- Monitor O₂ saturation
- Apply AED during CPR and analyze as soon as ready

### ALS
- Apply defibrillator pads during CPR. Defibrillate immediately for VF/pulseless VT.
- IV/IO SO
- Capnography SO PRN with waveform and value
- NG/OG tube PRN SO

### Team leader priorities
- Monitor CPR quality, rate, depth, full chest recoil, and capnography value and waveform
- Minimize interruption of compressions (<5 sec) during EKG rhythm checks
- Charge monitor prior to rhythm checks. Do not interrupt CPR while charging.

### VAD/TAH
- See Adjunct Cardiac Devices section

### Capnography
- If EtCO₂ rises rapidly during CPR, pause CPR and check for pulse

### Specific protocols (see below)
- Arrhythmias
  - Unstable bradycardia
  - Supraventricular tachycardia
  - Ventricular tachycardia
  - Ventricular fibrillation / pulseless VT
  - Pulseless electrical activity / asystole
- Return of Spontaneous Circulation
- Adjunct Cardiac Devices

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*Continuous compressions are an acceptable alternative for pediatric CPR*
UNSTABLE‡ BRADYCARDIA

- Obtain 12-lead EKG, when able

Infant/child (<9 years) with HR <60 BPM
OR
Child (9-14 years) with HR <40 BPM
- Ventilate with BVM

If no increase in HR after 30 sec of BVM ventilations
- If unconscious, begin CPR
- Epinephrine 1:10,000 per drug chart IV/IO SO, MR x2 q3-5 minutes SO.
  MR q3-5 minutes BHO.
- After 3 doses of epinephrine
  - Atropine per drug chart IV/IO SO, MR x1 in 5 min SO
  - Consider midazolam per drug chart IV/IO PRN pre-pacing BHO
  - Consider cardiac pacing BHO

‡Exhibiting any of the following signs/symptoms of inadequate perfusion, e.g.,
- Altered mental status (decreased LOC, confusion, agitation)
- Pallor, mottling, or cyanosis
- Diaphoresis
- Difference in peripheral vs. central pulses
- Delayed capillary refill
- Hypotension by age
  - <1 month: SBP <60 mmHg
  - 1 month – 1 year: SBP <70 mmHg
  - 1 year – 10 years: SBP <70 mmHg + (2x age in years)
  - ≥10 years: SBP <90 mmHg
SUPRAVENTRICULAR TACHYCARDIA

- Obtain 12-lead EKG

Infant/child (<4 years) with HR ≥220 BPM
  OR
Child (≥4 years) with HR ≥180 BPM

Stable (symptomatic)
- Consider VSM SO
- Fluid bolus per drug chart IV/IO SO
- Adenosine per drug chart rapid IV/IO, followed with 20 mL NS rapid IV/IO SO, MR x2 SO

Unstable‡ (or refractory to treatment)
- Consider midazolam per drug chart IV/IO pre-cardioversion BHPO
- Synchronized cardioversion at manufacturer’s recommended energy dose BHPO, MR x2 BHPO
  - If no manufacturer recommendation, synchronized cardioversion per drug chart BHPO, MR x2 BHPO

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- Diaphoresis
- Difference in peripheral vs. central pulses
- Delayed capillary refill
- Hypotension by age
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  - 1 month – 1 year: SBP <70 mmHg
  - 1 year – 10 years: SBP <70 mmHg + (2x age in years)
  - ≥10 years: SBP <90 mmHg
VENTRICULAR TACHYCARDIA

- Obtain 12-lead EKG

**Stable**
- Fluid boluses per drug chart IV/IO to maintain SBP appropriate for age SO
- Amiodarone per drug chart BHPO
  OR
- Lidocaine per drug chart BHPO

**Unstable‡**
- Consider midazolam per drug chart IV/IO pre-cardioversion BHPO
- Synchronized cardioversion at manufacturer’s recommended energy dose BHPO, MR x2 BHPO
  - If no manufacturer recommendation, synchronized cardioversion per drug chart BHPO, MR x2 BHPO
- After successful cardioversion
  - Check BP. If hypotensive for age§ and rales not present, fluid bolus per drug chart IV/IO SO, MR SO.
  - Obtain 12-lead EKG

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- Altered mental status (decreased LOC, confusion, agitation)
- Pallor, mottling, or cyanosis
- Diaphoresis
- Difference in peripheral vs. central pulses
- Delayed capillary refill

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- <1 month: SBP <60 mmHg
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- 1 year – 10 years: SBP <70 mmHg + (2x age in years)
- ≥10 years: SBP <90 mmHg
## VENTRICULAR FIBRILLATION / PULSELESS VT

- CPR
- Defibrillate as soon as monitor available/charged
- Defibrillate q2 min while VF/VT persists
- Epinephrine 1:10,000 per drug chart IV/IO q3-5 min SO

**Persistent VF/VT after 3 defibrillation attempts**
- Amiodarone per drug chart IV/IO, MR per drug chart x2 SO
  OR
- Lidocaine per drug chart IV/IO SO, MR per drug chart IV/IO q5 min SO
PULSELESS ELECTRICAL ACTIVITY / ASYSTOLE

- CPR
- Epinephrine 1:10,000 per drug chart IV/IO q3-5 min SO

**Suspected hyperkalemia**
- CaCl₂ per drug chart IV/IO SO
- NaHCO₃ per drug chart IV/IO BHO

**Suspected hypovolemia**
- Fluid bolus per drug chart IV/IO, MR x2 SO

**Suspected poisoning / OD**
- Consider treatment per Poisoning / Overdose Protocol (S-165) BHO

**Prolonged asystole / PEA**
- After >20 min, contact BH physician for direction
RETURN OF SPONTANEOUS CIRCULATION

- Ventilate PRN (goal of EtCO₂ = 40 mmHg)
- Obtain BP
  - If hypotensive§ and rales not present, fluid bolus per drug chart IV/IO SO, MR SO
    - If unresponsive to fluid boluses, push-dose epinephrine 1:100,000 (0.01 mg/mL) per drug chart IV/IO BHPO, MR q3 min BHPO
- Obtain 12-lead EKG
- Provide cardiac monitor data to agency QA/QI department

**Push-dose epinephrine mixing instructions**

1. Remove 1 mL normal saline (NS) from the 10 mL NS syringe
2. Add 1 mL of epinephrine 1:10,000 (0.1 mg/mL) to 9 mL NS syringe
The mixture now has 10 mL of epinephrine at 0.01 mg/mL (10 mcg/mL) concentration.

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