Pediatric Tachycardia Administrative Guideline (Age < 14)

**History**
- Past medical history
- Medications or Toxic Ingestion
- Drugs (nicotine, cocaine)
- Congenital Heart Disease
- Respiratory Distress
- Syncope or Near Syncope

**Signs and symptoms**
- Heart Rate: (Child >180 bpm, Infant > 220 bpm)
- Pale/cyanotic/diaphoretic
- Hypotension/ALOC
- Pulmonary congestion/tachypnea
- Syncope

**Differential**
- Heart disease (Congenital)
- Hypo/Hyperthermia
- Hypovolemia or Anemia
- Anxiety / Pain / Emotional stress
- Fever / Infection / Sepsis
- Hypoxia, Hypoglycemia
- Medication / Toxin / Drugs (see HX)
- Trauma

**Tachycardia with serious signs or symptoms**

**Hypotension, poor perfusion, or ALOC**

**Cardioversion for shockable rhythm:**

- 0.5 J / kg for shock #1,
  - Increase to 1 J/kg, repeat if needed
  - Increase to 2 J/kg (max 360 J) and repeat shock

**Consider Sedation:**
- Midazolam 0.1 mg/kg IV/IO/IM/IN (max 2.5 mg initial dose)
- May repeat if needed to maximum 5 mg IV/IO/IM/IN

**Narrow Complex ≤ 0.08s**

**Sinus Tachycardia**

**SVT**

- Infants usually >220 bpm
- Children usually >180 bpm

**If in wide complex (>0.08 s):**

**Conversion of rhythm**

**Pulseless at any time refer to Cardiac Arrest AG**

**B**
- Identify and treat underlying cause
  - Consider 20 mL/kg fluid bolus with reassessment every 100 mL for signs of fluid overload.

**P**
- Administer O₂ to maintain Sat >94%
  - Vital sign assessment, including temperature if available

**B**
- Age specific vagal maneuvers
  - Consider 20 mL/kg NS/LR bolus with reassessment every 100 mL
  - Administer adenosine 0.1 mg/kg adenosine IV/IO (max 6 mg) followed by 10 mL saline flush
  - May repeat x 1 at 0.2 mg/kg (max 12 mg)

**P**
- If no response or history or WPW
  - Administer amiodarone 5 mg/kg (max 150 mg) over 20 minutes

**P**
- Consider SVT with aberrancy:
  - Administer adenosine 0.1 mg/kg adenosine IV/IO (max 6 mg)
  - May repeat x 1 at 0.2 mg/kg adenosine IV/IO (max 12 mg)
  - Always follow with 10 mL flush
  - If no response or VT or WPW is considered:
    - Administer amiodarone 5 mg/kg (max 150 mg) over 20 minutes

**P**
- Torsades de pointes:
  - Administer magnesium sulfate 25 mg/kg IV/IO over 10 minutes
  - Cardiac arrest: Slow IV push over 2-3 min

**P**
- 12 lead EKG, repeat vital signs, monitor
- Notify receiving facility or contact Medical Direction

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Pediatric Tachycardia - University EMS Administrative Guidelines
Education/Pearls

Children may present atypically when exhibiting elevated heart rates. Serious signs and symptoms include respiratory distress or failure, signs of shock or poor perfusion (mottled skin, perioral cyanosis), AMS, or sudden collapse with rapid, weak pulse. Generally, the maximum sinus tachycardia rate is (220 - the patient’s age in years) beats/minute (bpm). If available, continuous pulse oximetry is indicated for all unstable tachycardias.

- **Narrow Complex Tachycardia (≤ 0.08 seconds)**
  - SVT: > 90% of children with SVT will have a narrow QRS (≤0.08 seconds.) P waves absent or abnormal. R-R waves not variable. Usually abrupt onset. Infants usually > 220 bpm. Children usually > 180 bpm.
  - Atrial Flutter: Will have saw-tooth atrial waves. Rate can vary depending on conduction. May be irregular if variable block/conduction is present.
  - Atrial Fibrillation: In children, may represent Wolff-Parkinson-White. Adenosine is **contraindicated**.

- **Wide Complex Tachycardia (≥ 0.08 seconds):**
  - SVT with aberrancy - Monomorphic and regular wide complex tachycardia
  - VT: Uncommon in children. Rates may vary from near normal to > 200 bpm. Most children with VT have underlying heart disease, cardiac surgery, long QT syndrome, or cardiomyopathy.
    - **Amiodarone 5 mg/kg over 20-60 minutes** is the recommended agent.
    - The presence of caption or fusion beats is diagnostic.

- **Torsades de Pointes (Polymorphic Ventricular Tachycardia):**
  - Rate is typically 150 to 250 bpm.
  - Associated with long QT syndrome, hypomagnesaemia, hypokalemia, and many cardiac drugs. May quickly deteriorate to VT.
    - **Administer Magnesium Sulfate 40 mg/kg IV or IO over 10 minutes. In cardiac arrest give over 2 minutes.**

- **Vagal Maneuvers:**
  - Breath holding.
  - Blowing a glove into a balloon.
  - Have child blow out “birthday candles” or through an obstructed straw.
  - Infants: May put a bag of ice water over the upper half of the face, using care not to occlude the airway.

**Pediatric Notes:**

- Separating the child from the caregiver may worsen the child's clinical condition.
- Pediatric paddles should be used in children < 10 kg or Broselow-Luten color Purple if available.
- Monitor for respiratory depression and hypotension associated if Midazolam is used to facilitate cardioversion.
- Document all rhythm changes with monitor strips and obtain monitor strips with each therapeutic intervention.