Pediatric Tachycardia Administrative Guideline (Age < 14)

History	Signs and symptoms	Differential
• Past medical history • Medications or Toxic Ingestion • Drugs (nicotine, cocaine) • Congenital Heart Disease • Respiratory Distress • Syncope or Near Syncope	• Heart rate: (child >180/bpm, Infant > 220/bpm) • Pale/cyanotic/diaphoretic • Hypotension/ALOC • Pulmonary congestion/tachypnea • Syncope	• 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

Yes → Hypotension, poor perfusion, or ALOC →

P — Cardioversion for shockable rhythm:

0.5 J/kg for shock #1,
- Increase to 1 J/kg for shock #2
- Increase to 2 J/kg (max 360 J) for any subsequent shock

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

No →

B — Administer O_2 to maintain SPO_2 >94%
Vital sign assessment, including temperature if available

P — IV/IO access, O_2, cardiac monitor, 12 lead ECG

Narrow Complex ≤ 0.08s

Sinus Tachycardia

B — Identify and treat underlying cause

P — Consider **20 mL/kg fluid bolus** with reassessment every 100 mL for signs of fluid overload.

SVT
Infants usually >220 bpm
Children usually >180 bpm

B — Age specific vagal maneuvers

P — Consider **20 mL/kg NS/LR bolus** with reassessment every 100 mL

Administer **adenosine 0.1 mg/kg** in proximal IV **(max 6 mg)**
May repeat **adenosine at 0.2 mg/kg** IV **(max 12 mg)**
follow by 10 mL saline flush

If no response or history of WPW administer **amiodarone 5 mg/kg** IV/IO **(max 150 mg)** over 20 minutes

Wide complex >0.08 s

B — Age specific vagal maneuvers

P — Consider SVT with aberrancy:
Administer **adenosine 0.1 mg/kg** in proximal IV **(max 6 mg)**
May repeat **adenosine at 0.2 mg/kg** IV **(max 12 mg)**
follow by 10 mL saline flush

If no response or VT or no history of WPW:
Administer **amiodarone 5 mg/kg** IV/IO **(max 150 mg)** over 20 minutes

P — Torsades de pointes:
Administer **magnesium sulfate 25 mg/kg** IV/IO over 15 minutes **(max dose 2 g)**

Cardiac arrest:
slow IVP over 2-3min

Conversion of rhythm

P — 12-lead ECG, repeat vital signs, monitor

Notify receiving facility or contact Medical Direction

Apneic or pulseless at any time, follow Cardiac Arrest AG

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 (QRS ≤ 0.08 seconds)
- Sinus tachycardia: P waves present. Variable R-R waves. Infants usually < 220 bpm. Children usually <180 bpm.
- 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 (QRS ≥ 0.08 seconds):
- SVT with aberrancy - Monomorphic and regular wide complex tachycardia. **May be seen in children with Wolf-Parkinson White (WPW) syndrome. If observed in WPW, the use of adenosine is contraindicated.**
- VT is 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 25 mg/kg IV or IO over 15 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.