Pediatric Tachycardia
Wide Complex (> 0.09 sec)

History
- Past medical history
- Medications or Toxic Ingestion (Aminophylline, Diet pills, Thyroid supplements, Decongestants, Digoxin)
- Drugs (nicotine, cocaine)
- Congenital Heart Disease
- Respiratory Distress
- Syncope or Near Syncope

Signs and Symptoms
- Heart Rate: Child > 180/bpm
  Infant > 220/bpm
- Pale or Cyanosis
- Diaphoresis
- Tachypnea
- Vomiting
- Hypotension
- Altered Level of Consciousness
- Pulmonary Congestion
- Syncope

Differential
- Heart disease (Congenital)
- Hypothermia/ Hyperthermia
- Hypovolemia or Anemia
- Electrolyte imbalance
- Anxiety/ Pain/ Emotional stress
- Fever/ Infection/ Sepsis
- Hypoxia, Hypoglycemia
- Medication/ Toxin/ Drugs (see HX)
- Pulmonary embolus
- Trauma, Tension Pneumothorax

Assess tachycardia in context of clinical condition
Identify and treat underlying cause of tachycardia

Unstable / Serious Signs and Symptoms
AMS, shock, hypotension
HR Typically > 180 Child
HR Typically > 220 Infant

YES →

P	Cardiac Monitor
	Cardioversion Procedure
	0.5 – 1 J/kg Repeat and increase to **2 J/Kg** May increase to **4 J/Kg** Or adult maximum
	Consider sedation Do NOT delay cardioversion **Midazolam 0.1 – 0.2 mg/kg IV / IO / IN** May repeat if needed **Maximum Single Dose 2 mg** **Maximum Total Dose 5 mg**

NO

B	12 Lead ECG Procedure
P	Cardiac Monitor
	IV or IO Access Protocol UP 6

Single lead ECG able to diagnose and treat arrhythmia

12 Lead ECG not necessary to diagnose and treat, but preferred when patient is stable.

Regular Rhythm? NO → **Contact Medical Control**

YES

Probable Ventricular Tachycardia

P	**If QRS Regular and Monomorphic** **Adenosine 0.1 mg/kg IV / IO** **Maximum 6 mg** May repeat **Adenosine 0.2 mg/kg IV / IO** **Maximum 12 mg**
	Expert consultation recommended for further medication management and/ or cardioversion procedure

Notify Destination or Contact Medical Control

AT ANY TIME

Pulseless

Go to Pediatric Pulseless Arrest Protocol

Pediatric Cardiac Protocol Section

Pediatric Tachycardia
Wide Complex (> 0.09 sec)

Pediatric Cardiac Protocol Section

The most important decision point in care is whether the patient is stable or unstable:

- Unstable refers to patient condition in which a vital organ function is acutely impaired or cardiac arrest is ongoing or imminent.
- Symptomatic implies the arrhythmia is causing the presenting symptoms but the patient may be stable and not in imminent danger.
- This situation allows you more time to decide on the most appropriate intervention which often is supportive care only.

Midazolam:
Single Doses to a Maximum of 2 mg.
A **Total Dose of Midazolam 5 mg** may be given before contact of Medical Control.

Intranasal Midazolam Dose:
Mix **5 mg of Midazolam in 1 mL NS**
0.2 mg/kg IN (≥ 26 mg givne **5 mg**)
Split dose into each nostril
See chart to right:
Contact Medical Control for repeat dose.

Midazolam IN 5 mg in 1 mL NS			Midazolam IN 5 mg in 1 mL NS			Midazolam IN 5 mg in 1 mL NS		
Wgt kg	Dose mg	Volume mL	Wgt kg	Dose mg	Volume mL	Wgt kg	Dose mg	Volume mL
2	0.4	0.08	10	2	0.4	18	3.6	0.72
4	0.8	0.16	12	2.4	0.48	20	4	0.8
6	1.2	0.24	14	2.8	0.56	22	4.4	0.88
8	1.6	0.32	16	3.2	0.64	24	4.8	0.96

Pearls

- **Recommended Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Neuro**
- **Monomorphic QRS:**
  All QRS complexes in a single lead are similar in shape.
- **Polymorphic QRS:**
  QRS complexes in a single lead will change from complex to complex.
- **Use length-based or weight-based pediatric resuscitation system for medication, equipment, cardioversion, and defibrillation guidance. Pediatric paddles should be used in children < 10 kg.**
- **Rhythm should be interpreted in the context of symptoms and pharmacological or electrical treatment given only when symptomatic, otherwise monitor and reassess.**
- **12-Lead ECG:**
  12-Lead ECG is not necessary to diagnose and treat arrhythmia. A single lead ECG is often all that is needed.
  Obtain 12-Lead when patient is stable and/ or following a rhythm conversion.
  When administering adenosine, obtaining a continuous 12-Lead can be helpful later to physicians.
- **Unstable condition:**
  Condition which acutely impairs vital organ function and cardiac arrest may be imminent.
  If at any point patient becomes unstable move to unstable arm in algorithm
- **Document all rhythm changes with monitor strips and obtain monitor strips with each therapeutic intervention.**
- **Serious Signs and Symptoms:**
  Respiratory distress/ failure.
  Signs of shock/ poor perfusion with or without hypotension.
  AMS
  Sudden collapse with rapid, weak pulse
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- **Wide Complex Tachycardia (≥ 0.09 seconds):**
  SVT with aberrancy.
  VT: Uncommon in children. Rates may vary from near normal to > 200/ minute.
  Most children with VT have underlying heart disease / cardiac surgery/ long QT syndrome/ cardiomyopathy.
  Amiodarone 5 mg / kg over 20 – 60 minutes or Procainamide 15 mg / kg over 30 – 60 minutes IV / IO are recommended agents. They should not be administered together. Consultation with Medical Control is advised when these agents are considered.
- **Torsade's de Pointes/ Polymorphic (multiple shaped) Tachycardia:**
  Rate is typically 150 to 250 beats/ minute.
  Associated with long QT syndrome, hypomagnesaemia, hypokalemia, many cardiac drugs.
  May quickly deteriorate to VT.
  Separating the child from the caregiver may worsen the child's clinical condition.
- Monitor for respiratory depression and hypotension associated if Diazepam, Lorazepam, or Midazolam is used.
- Continuous pulse oximetry is required for all SVT patients if available.