

Pediatric Tachyarrhythmia With a Pulse Algorithm

Suspected tachyarrhythmia in a child with a pulse
(Heart rate faster than expected for the child’s age and clinical condition)

 **INITIAL ASSESSMENT AND SUPPORT**

- Keep the airway open and administer oxygen
- Support breathing with positive-pressure ventilation when needed
- Connect the patient to a cardiorespiratory monitor
- Establish IV/IO access
- Obtain a 12-lead ECG, if available

 **PROBABLE SINUS TACHYCARDIA**

- Identify and treat potential causes (such as fever, pain, anxiety, hypoxia, hypovolemia, anemia, or sepsis)

Evaluate the rhythm
Probable sinus tachycardia?

Yes

No

Is there cardiopulmonary compromise?
Signs may include low blood pressure (hypotension), acute change in mental status, signs of shock

Yes

No

Evaluate QRS duration

Narrow (≤ 0.09 s)

Wide (> 0.09 s)

 **PROBABLE SVT**

- Give *adenosine* (if IV/IO access is present)
or
- Perform synchronized cardioversion

 **POSSIBLE VT**

- Perform synchronized cardioversion
- Consult an expert before giving additional antiarrhythmic drugs

Evaluate QRS duration

Narrow (≤ 0.09 s)

Wide (> 0.09 s)

 **PROBABLE SVT**

- Consider vagal maneuvers
- Then, give IV/IO *adenosine*

 **POSSIBLE VT OR SVT WITH ABERRANCY**

- Only if the rhythm is regular and the QRS is monomorphic, consider *adenosine*
- Seek expert consultation

MEDICATION DOSING

- **Adenosine IV/IO:**
 - First dose: 0.1 mg/kg (up to 6 mg)
 - Repeat if needed: 0.2 mg/kg (up to 12 mg)
 - Give each dose as a rapid push, immediately followed by an IV flush

CARDIOVERSION ENERGY

- **Synchronized cardioversion:**
 - Initial shock: 0.5–1 J/kg
 - If unsuccessful: increase to 2 J/kg
 - Provide sedation as needed without delaying cardioversion

PROBABLE SINUS TACHYCARDIA

- Normal, visible P waves
- Variable R-R intervals
- Heart rate usually < 220 /min in infants
- Heart rate usually < 180 /min in children

PROBABLE SVT

- Absent or abnormal P waves
- Regular R-R intervals
- Heart rate usually ≥ 220 /min in infants
- Heart rate usually ≥ 180 /min in children
- Often starts or stops abruptly

POSSIBLE VT

- Wide QRS complexes (> 0.09 s)
- Ventricular rate faster than expected for age
- P waves may occur independently of QRS complexes (AV dissociation)
- Fusion or capture beats support VT
- If the cause of a wide-complex tachycardia is uncertain, manage as VT

SVT WITH ABERRANCY

- SVT with a wide QRS (> 0.09 s) caused by abnormal conduction
- Regular rhythm with the same QRS shape on every beat
- Often a known history of SVT or a previous ECG with the same wide QRS
- If uncertain, manage as VT and obtain expert guidance