



## Standard Treatment Workflow (STW)

# TACHYARRHYTHMIA

### ICD-10-P29.11

#### SUSPECTING TACHYARRHYTHMIA SYMPTOMS

- Palpitations/chest discomfort
- Parents may report increased precordial activity or observe neck pulsations
- Unexplained lethargy
- Syncope/presyncope: Relatively rare in children but potentially serious

#### SIGNS

- Tachycardia out of proportion to clinical condition
- Irregular heart rate
- Unexplained heart failure

#### KEY QUESTIONS

- Is there hemodynamic instability?
- Can the heart rate be explained by clinical condition (Fever etc.)
- Is the arrhythmia incessant or episodic?
- Is there an underlying structural heart disease?
- Is this a re-entrant arrhythmia or does it involve an automatic focus?

## MANAGEMENT

### Hemodynamic Stability

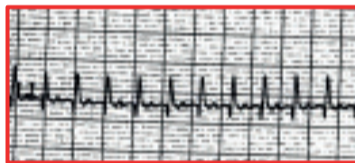
#### Stable

Common  
Stable/minimally distressed  
Good perfusion

#### Unstable

Uncommon  
Distressed  
In shock  
Poor perfusion; pulse not felt

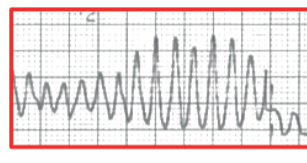
Narrow QRS  
tachycardia



Regular Wide  
QRS tachycardia



Irregular Wide  
QRS tachycardia



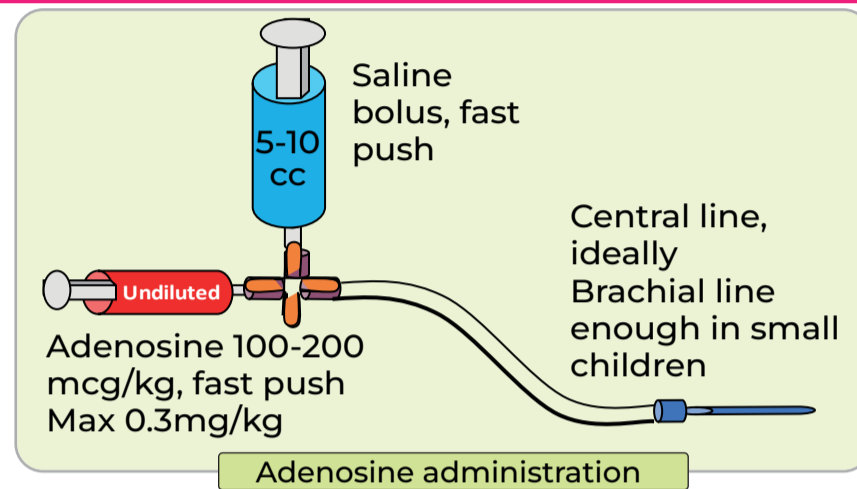
Synchronized  
Cardioversion 1J/Kg

Defibrillation  
2 J./Kg

#### Obtain

1. 12 lead ECG; Limb leads alone if child does not cooperate (If ECG machine is unavailable, a video recording of the monitor must be obtained)
2. Reliable I/V access; Proximal sites preferred

Obtaining ECG during arrhythmia is of great value as it enables precise diagnosis and treatment. All efforts must be made to document the tachyarrhythmia and its response to treatment



#### REGULAR TACHYCARDIA

##### Sinus tachycardia suggested by:

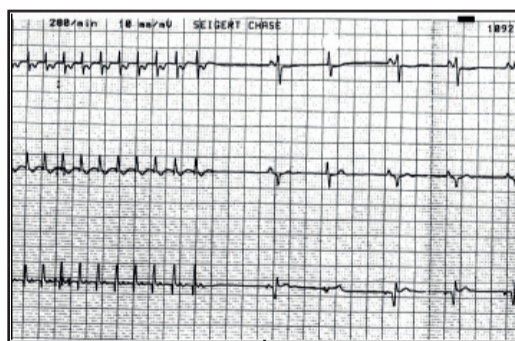
- Heart rates <220 -age
- Subtle variations in rates
- Associated fever/systemic illness other conditions
- Bronchodilators/ Adrenaline nebulization
- Normal p prior to every QRS

##### Tachyarrhythmia suggested by:

- Fixed rates often >220 -age
- Tachycardia not explained by clinical condition
- Abnormal ECG (p waves not clearly seen or different from sinus rhythm or dissociated)
- Adenosine administration with ECG record is often diagnostic

### Adenosine

#### Sudden termination

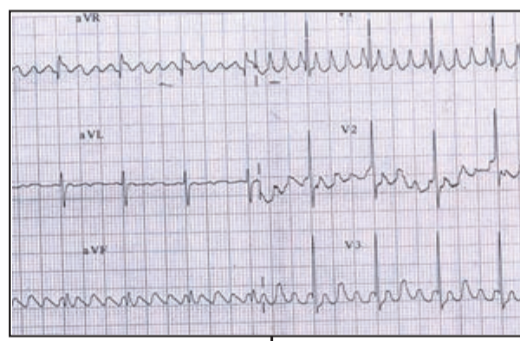


Re-entrant  
supraventricular  
tachycardia

#### No effect

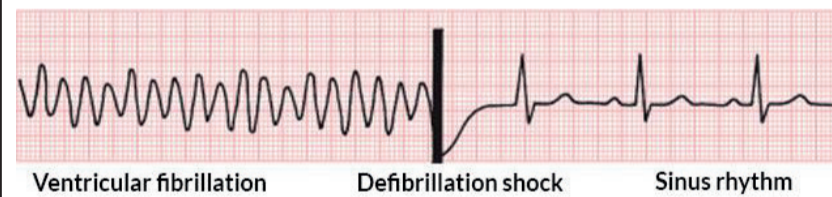
Sinus  
tachycardia,  
Junctional  
ectopic  
tachycardia,  
EAT

#### Slow and unmask



Atrial Flutter,  
ectopic atrial tachycardia  
(EAT)

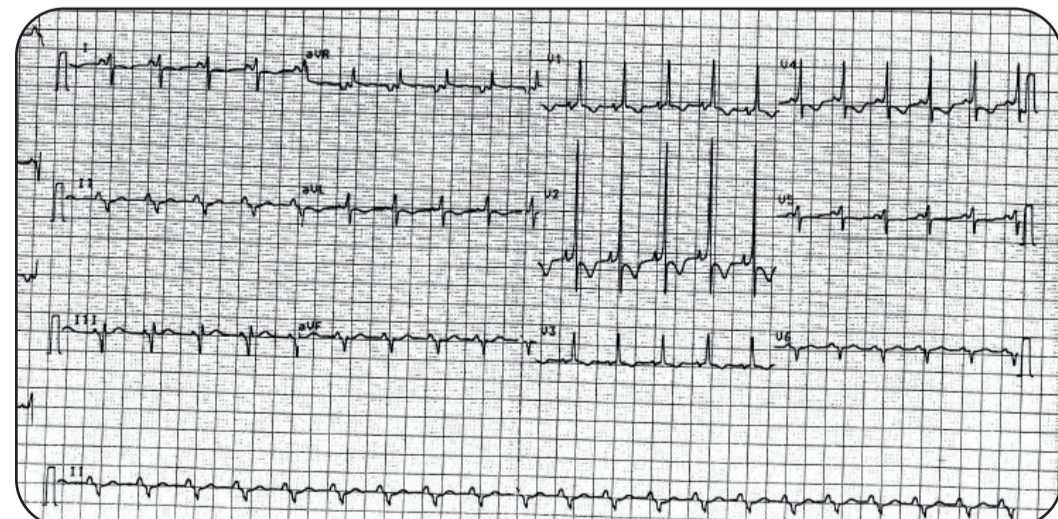
### Defibrillation



0.5-2 J/Kg synchronized for suspected SVT/VT  
2-4 J/Kg for VF; should not be synchronized

### Adenosine

- Proximal access
- Connect three-way to I/V port
- Adenosine 100-200 mcg/Kg rapid I/V push followed immediately by 5-10 ml saline bolus
- Always record Electrocardiogram (ECG) during administration
- Always record Electrocardiogram (ECG) after treating the arrhythmia also



12 lead ECG recorded after termination of the tachycardia showing a clear substrate in the form of pre-excitation

## ABBREVIATIONS

**EAT:** Ectopic Atrial Tachycardia

**SVT:** Supraventricular Tachycardia

**VT:** Ventricular Tachycardia

## REFERENCES

1. Hanash CR, Crosson JE. Emergency diagnosis and management of pediatric arrhythmias. J Emerg Trauma Shock. 2010 Jul;3(3):251-60. doi: 10.4103/0974-2700.66525. PMID: 20930969; PMCID: PMC2938490.
2. Mani Ram Krishna, Rhythm disorders in children, in Kumar RK, Prabhu SS, Jain S, Venkatesh S, Ahamed Z, IAP Specialty Textbook of Pediatric Cardiology, Jaypee brothers, New Delhi, India, 3rd edition, 2021, pp 922-952

**ALWAYS TRY IDENTIFY AND DOCUMENT THE ARRHYTHMIA PRIOR TO TREATMENT**