Contra Costa County Emergency Medical Services

Wide Complex Tachycardia

**History**
- Medications (e.g., Aminophylline, Adderall, diet pills, thyroid supplements, decongestants, and Digoxin)
- Diet (e.g., caffeine and chocolate)
- Drugs (e.g., nicotine and illegal drugs)
- Past medical history
- History of palpitations/heart racing
- Syncope/near syncope
- Renal failure
- Missed dialysis

**Signs and Symptoms**
- Heart rate > 150
- Systolic BP < 90
- Dizziness, chest pain, shortness of breath, altered mental status or diaphoresis
- CHF
- Potential presenting rhythm:
  - Atrial/sinus tachycardia
  - Atrial fibrillation/flutter
  - Multifocal atrial tachycardia
  - Ventricular tachycardia

**Differential**
- Heart disease (e.g., WPW or valvular)
- Sick sinus syndrome
- Myocardial infarction
- Electrolyte imbalance
- Exertion, pain, or emotional stress
- Fever
- Hypoxia
- Hypovolemia or anemia
- Drug effect/overdose (see History)
- Hypothyroidism
- Pulmonary embolus

---

**Assess symptom severity**

**Unstable**
- HR typically > 150

- Cardiac monitor
- Consider sedation pre-cardioversion
- Midazolam 1mg IV/IO
  - May repeat if needed in 1-2mg increments
  - Maximum 5mg
- EtCO₂ monitoring
- Establish IV/IO
- Synchronized cardioversion 360J
  - If any delay in synchronized cardioversion and the patient is critical, defibrillate 360J
  - Contact Base Hospital for further direction if recurrent or resistant to initial three (3) shocks
- 12-Lead ECG
  - or
  - repeat if rhythm change

**Stable**
- Cardiac monitor
- Establish IV/IO
- 12-Lead ECG
- EtCO₂ monitoring

- If symptomatic, consider
  - Amiodarone 150mg IV/IO drip over 10 minutes
  - May repeat x 1 dose if needed

- If rhythm change, repeat 12-Lead ECG

**Notify receiving facility. Contact Base Hospital for medical direction, as needed.**
Pearls

- Most important goal is to differentiate the type of tachycardia and if STABLE or UNSTABLE.
- If at any point the patient becomes unstable, move to the unstable arm of the algorithm.
- For ASYMPTOMATIC patients (or those with only minimal symptoms, such as palpitations) and any tachycardia with a rate of approximately 100 – 120 with a normal blood pressure, consider CLOSE OBSERVATION or fluid bolus rather than immediate treatment with an anti-arrhythmic medication. For example, a patient’s “usual” atrial fibrillation may not require emergent treatment.
- In unstable patients with fever or other signs of sepsis, the underlying cause of the rapid heart rate is more likely to be fever and hypovolemia. This is particularly true in wide irregular tachycardia which is frequently underlying A fib with a bundle branch block. Initial efforts should focus on treating appropriately for underlying sepsis.
- In Polymorphic VT: (torsade de pointes) etc., the variation in QRS morphology may make it difficult to synchronize. If you cannot synchronize, move to defibrillation.
- In wide irregular rhythm such as A Fib with left or right bundle etc, synchronized cardioversion at 360J is more likely to yield first shock conversion.
- Typical sinus tachycardia is in the range of 100 to (200 – the patient’s age) beats per minute.
- Symptomatic tachycardia usually occurs at rates of 120 – 150 and typically > 150 beats per minute. Patients who are symptomatic with heart rates < 150 likely have impaired cardiac function, such as CHF.
- Serious Signs/Symptoms include: Hypotension; acutely altered mental status; signs of shock/poor perfusion; chest pain with evidence of ischemia (e.g. STEMI, T-wave inversions, or depressions); and acute CHF.
- Search for underlying cause of tachycardia such as fever, sepsis, dyspnea, etc.
- Monitor for respiratory depression and hypotension associated with Midazolam.
- Continue pulse oximetry and EtCO₂ monitoring is required for all wide complex tachycardia patients.
- Providers must export all monitor data to EHR when caring for and treating wide complex tachycardia patients.

Torsades de pointes or torsade depointes (TdP or simply torsade(s)) is a specific type of polymorphic ventricular tachycardia that exhibits distinct characteristics on the electrocardiogram (ECG). If this does not occur, possible adverse outcomes include palpitations, dizziness, lightheadedness (during shorter episodes), fainting (during longer episodes), and sudden cardiac death.