



# Foundations Frameworks

## Approach to Tachydysrhythmias

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1. **Stable vs Unstable:** this is the first question you must ask for any tachy or bradydysrhythmias
  - a. SBP < 90, altered mental status, poor perfusion, CP/SOB = unstable
  - b. Unstable: synchronized electrical cardioversion
    - i. 100-200 J biphasic or 360 J monophasic
    - ii. Consider providing procedural sedation as situation allows
2. **Evaluate for P waves:**
  - a. **If normal P waves present**, this is likely sinus tach
    - i. Treat sinus tach as indicated with fluids, identify and treat underlying cause
3. **Narrow vs Wide and Regular vs Irregular**
  - a. **Wide (> 120 msec):**
    - i. **Regular: Treat as V Tach** (rather than SVT with bundle branch block)
      1. Treatment
        - a. Synchronized Electrical Cardioversion: sedation and cardioversion, V-tach has a propensity to degenerate to V-fib
        - b. Could also consider medical treatment if stable
          - i. Procainamide - 17 mg/kg total dose given (12 mg/kg if renal failure)
          - ii. Amiodarone - 150 mg over 10 min (15 mg/min), followed by 1 mg/min drip over 6hrs (360 mg total)
          - iii. Lidocaine 1-1.5 mg/kg IV q5 min, repeat prn up to 300 mg/hr
      2. Alternative diagnoses in suspected V Tach
        - a. Consider severe acidosis, hyperkalemia, and TCA/Na channel blocker toxicity
        - b. Especially in slow V-tach (rate close to 100-120)
        - c. Give Ca and Bicarb
        - d. Lidocaine, Amiodarone, Procainamide all worsen Na channel blockade – avoid using these when not true V tach
    - ii. **Irregular:** Likely A fib with bundle branch block, but beware of **A-fib with WPW** accessory pathway
      1. A-fib w/ WPW: a-fib sends rapid signals down through WPW pathway
      2. Can cause rates of 200 or higher and can degenerate into V-fib
      3. Look for wide, irregular rhythms with very fast rates (> 200 or more) with a changing morphology (from combinations of nodal and accessory signals activating the ventricles)
      4. Treatment of A-fib with WPW: synchronized electrical cardioversion vs procainamide (1 gm infused over an hour), avoid AV nodal blockers as this can enhance conduction through accessory pathway

**b. Narrow (< 120 msec)**

**i. Regular**

**1. Atrial Flutter**

- a. Look for flutter waves and a consistent, non-variable HR in the 130-150's
- b. Treat similarly to atrial fibrillation with rate vs rhythm control based on time of onset and anticoagulation
- c. Can use trial of adenosine to slow down and show flutter waves if hard to distinguish SVT vs Aflutter

**2. AVNRT**

- a. Retrograde P-waves before, after, or buried in QRS; HR typically 160-180's
  - b. Vagal maneuvers
  - c. Adenosine 6 mg IV push, can give repeat doses of 12 mg
    - i. Need  $\geq$  20G IV in an antecubital vein
    - ii. Do not push through central line
  - d. IV diltiazem or beta blocker if above unsuccessful
  - e. Synchronized electrical cardioversion if unstable or above unsuccessful
- 3. Sinus Tach:** may be hard to see P-waves, look for variable rate, improvement in rate with fluids, find and treat underlying cause

**ii. Irregularly Irregular: Atrial Fibrillation (vs A-flutter with variable conduction)**

1. Rate vs rhythm control
2. Rhythm control: Time of onset < 48 hr (or conservatively 12 hr) or already anticoagulated -> consider chemical vs electric cardioversion
  - a. Procainamide 1 gm over 1 hour
  - b. Electrical cardioversion with procedural sedation
3. Rate control: beta blocker vs calcium channel blocker
  - a. Metoprolol 5 mg IV up to 3 doses; 25 mg IR or 50 mg ER to transition to oral therapy once HR controlled
  - b. Esmolol: 0.5 mg/kg over 1 min bolus IV, 50-300 mcg/kg/min drip
  - c. Diltiazem: 0.25 mg/kg bolus, 5 mg/hour drip
  - d. Amiodarone: 150 mg over 10 min, can repeat dose at 1 hr if HR not controlled; maintenance infusion 1 mg/min for first 6 hrs, 0.5 mg/min for additional 18 hrs
  - e. No definitive evidence that one is better than other, consider using home medication type (CCB or BB) in PO/IV form
  - f. Consider anticoagulation in these patients if they are high risk for stroke CHADSVASC2 score (can also discuss anticoagulation with cardiologist)

**References:**

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