Diagnostic Approach to Arrhythmias (abnormal cardiac rate and rhythm on ECG or Cardiac Monitor)

Tachy-arrhythmias (>100bpm)
- Wide QRS on ECG (>120ms)
  - (slow ventricular depolarization)
  - SVT with conduction delay (“aberrancy”) (responds to/stops with vagal maneuvers; QRS morphology constant regardless of heart rate)
    - SVT w/ BBB
    - R/o A-fib if irregular
    - Antidromic AVRT (ventricular contractions via accessory path only) (Tx Wide-complex tachy as VT until proven otherwise)
- Narrow QRS on ECG (<120ms)
  - (fast ventricular depolarization)
  - Supra-ventricular Tachy (SVT)
    - Sudden-onset, constant palpitations
    - ECG: P-waves abnormal

Brady-arrhythmias (<60 bpm)
- Regular Rhythm
  - PR interval > 200ms
  - 2nd deg AV block
  - No P-waves
  - Escape rhythms due to SA block/arrest (Junctional, Idio-Ventricular)
- Irregular Rhythm
  - Sinus pauses, chonotropic incompetence
  - Sick Sinus Syndrome
  - Tachy-Brady syndrome (w/ A-fib/A-flutter)

Ventricular Tachy (VT)
- Hx of MI (esp Anterior STEMIs): re-entrant circuit around ventricular scar
- Hx of other structural heart diseases:
  - HF, ventricular hypertrophy, valve disease, congenital abnormality
  - Hx of Long-QT syndromes (genetic, potassium imbalance, etc)
- ECG: P-waves unrelated to QRS complexes, V1-V6 concordance of QRS complexes (all deflecting + or –)
- Sustained VT = dangerous! Could lead to 0 cardiac output

Supra-ventricular Tachy (SVT)
- Sudden-onset, constant palpitations
- ECG: P-waves abnormal

Ventricular Fibrillation (VF)
- Triggered by V-tach in a pt w/ Serious underlying heart dx
- 0 cardiac output, fatal!
- Tx: immediate defibrillation! Anti-arrhythmics (prevent recurrence); ICD (Long-term; only tx that ↓ mortality)

Atrial Fibrillation (Afib)
- No distinct P-waves, chaotic baseline (not isoelectric)
- Caused by ectopic foci near pulmonary veins

Multifocal Atrial Tachycardia (MAT)
- 3+ P-wave shapes; isoelectric baseline btw P-waves
- Caused by severe pulmonary disease/hypoxemia

Sinus Tachy
- 100-180
- Can be normal
- Atrial rate may ↓

Re-entrant SVTs (AVRT, AVNRT)
- 140-250 (paroxysmal)
- Hidden in QRS, or retrograde
- May abruptly stop

Focal Atrial Tachycardia
- 130-250 (paroxysmal)
- Different shape, due to ectopic pacemaker
- Doesn’t usually stop tachy AV block may ↑

Atrial Flutter w/ variable block
- 180-350 “saw-toothed”
- AV block may ↑

Are P-waves present?
- Relationship btw P-waves and QRS?

Is QRS normal or wide?
- P-waves: present? Shape? Rate?
- Relationship btw P-waves + QRS?
- Response to vagal maneuvers?