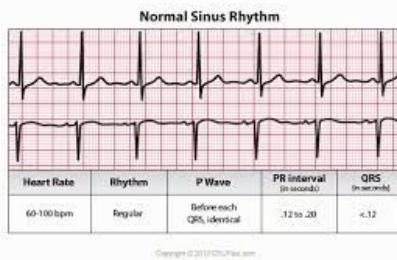


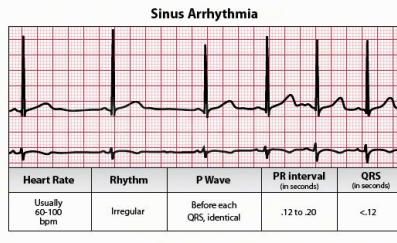
Normal Rhythms

Normal Sinus Rhythm Sinus Arrhythmia

Normal Sinus Rhythm



Sinus Arrhythmia



Inc. prevalence w/ younger age

Rhythm based on breathing, r/t changes in intrathoracic pressure:

- Inspiration = *HR inc.* / Expiration = *HR dec.*

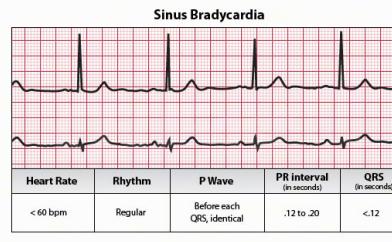
Irregular Rhythms

Sinus Bradycardia Sinus Tachycardia

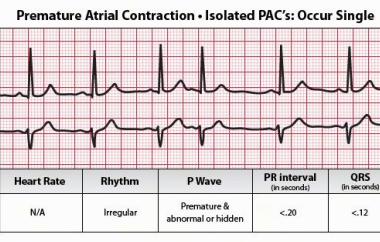
Premature Atrial Contractions (PAC)

Arrhythmias r/t changes in CO & perfusion

Sinus Bradycardia



Premature Atrial Contractions (PAC)



Low HR = give atropine! - *epi, pacemaker* (temporary/permanent)

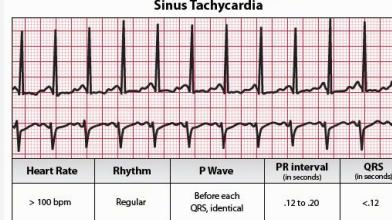
Usually no symptoms, not treated unless symptoms present - *AMS, cyanosis, extreme syncope/fatigued, hypotensive, SOB*

Treated by treating cause - can occur after: *vagal nerve stimulation, beta-blockers, digoxin, inferior wall MI (back of heart), hyperkalemia, hypothyroid, falls asleep*

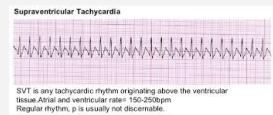
Beat not coming from SA node (ectopic focus)

Not usually treated, told to dec. cause - treated if more frequent/several consecutive. Causes: *MI, stretching of cardiac muscle, alcohol, smoking, HF & pericarditis, meds, irritability of cardiac muscle*

Sinus Tachycardia



Supraventricular Tachycardia (SVT)



P-waves = *buried in T-waves, hard to see*
PR interval = *usually not possible to measure*

QRS = *normal (0.06-0.10) but may be wide if abnormally conducted through ventricles*

Person symptomatic

Perfusion and CO affected

Treat with *adenosine & flush w/ 20 mL NSS*

→ *heart restarts*

Causes: *anxiety, caffeine, amphetamines, irritability of atrial muscle*



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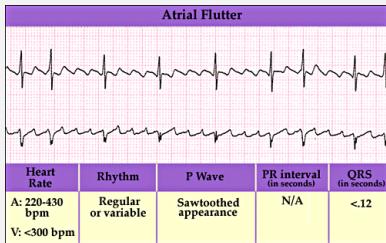
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More Rhythm Disorders

Atrial Flutter

Atrial Fibrillation

Atrial Flutter



Saw-toothed appearance

Ectopic pacemaker

Causes: *pulmonary emboli, CHF, pericarditis, cardiac ischemia*

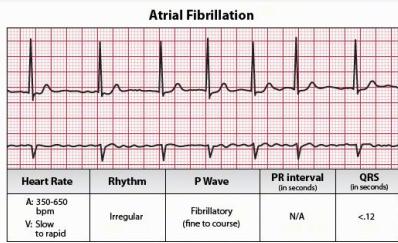
Can walk around if low rate

Want to control rate - digoxin, CCB, anti-arrhythmics; override pacing to fix rhythm, ablation therapy

May see ratio of beats to QRS's

Similar shape = coming from same site

Atrial Fibrillation



Biggest concern = blood pooling → clots (a fib → NSR = clots → stroke/PE)

Dec. CO < 30%

Not effective beats, rapid & chaotic

Causes: *MI, CHF, cardiomyopathy (anything that causes heart to expand)*

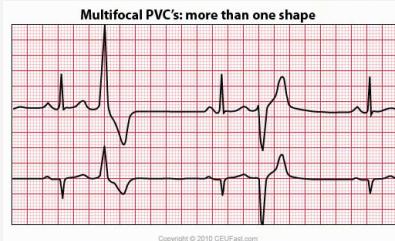
Ventricular Rhythms

Premature Ventricular Contractions (PVC)

Ventricular Tachycardia

Ventricular Fibrillation

Premature Ventricular Contractions (PVC)



Unifocal: 1 ectopic site on ventricle

Multifocal: 1+ site on ventricle - more dangerous!

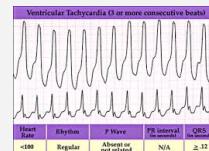
Inc w/... age, *ischemia, CHF, hypokalemia, acidosis, hypomagnesemia, stress, caffeine, nicotine*

Symptoms: *palpitations*

Runs of PVCs → V-tach

May not treat if limited number

Ventricular Tachycardia



Usually w/ significant heart disease (CHF, MI)

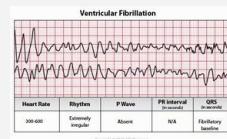
Causes: anything that inc. automaticity of heart

Symptoms: r/t dec. CO

Treatment: anti-arrhythmics (amiodarone, lidocaine, cardizem); beta-blockers (control rate); betapace (controls rate & rhythm); cardiovert (ICD)

If not treated → V-fib

Ventricular Fibrillation



Ventricles quivering

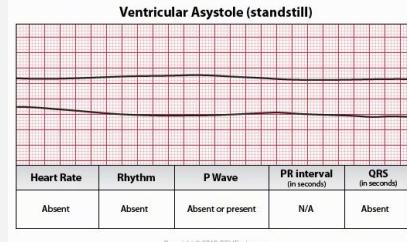
O₂ demand is through the roof → ischemia

Treatment: defibrillate

Causes: *CAD, MI, CHF, hypokalemia, hypomagnesemia*

Pt is often... unconscious, no pulses, no BP, acidotic, may seize

Asystole



Cannot shock → CPR & epi

Occurs w/ myocardial hypoxia

Atrioventricular (AV) Blocks

First Degree

Second Degree

Third Degree

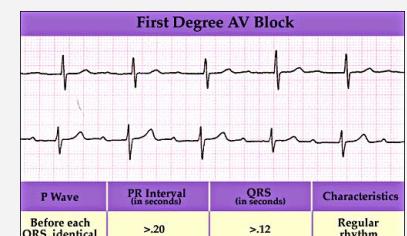
Bundle Branch

Diagnosis: EKG

Asymptomatic unless HR is too low

Treatment (w/ slow HR): *O₂, atropine, pacemaker*

First Degree AV Block



Causes: *ischemia, MI*

Not usually treated

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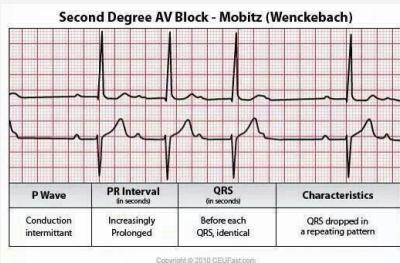


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Second Degree AV Block

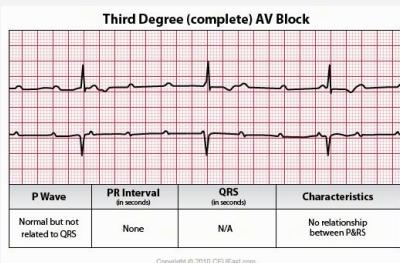


Causes: *MI, digoxin, Lyme's disease*

Symptoms: usually none unless HR is too low

Treatment: *atropine, pacemaker*

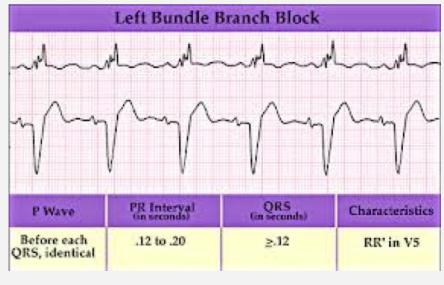
Third Degree (Complete) AV Block



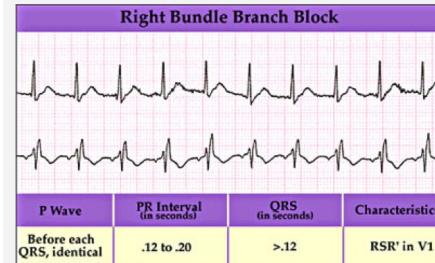
Causes: *ischemia, CAD, MI*

Treatment: *pacemaker*

Left Bundle Branch Block



Right Bundle Branch Block



Defibrillation vs. Cardioversion

Defibrillation: shock heart in emergency

Cardioversion: sync w/ heart, want normal rhythm

- Want to medicate beforehand
- Fibrillate in middle → shock & defib.

External Defibrillator Vests



Worn 24/7 except showers

Ablation Therapy

Want to go in & stop abnormal beats

3 Types - all cause destruction to area of heart causing problem

- *Chemical*
- *Mechanical* (cut, lasers)
- *Radiofrequency*

Used w/ electrophysiology/conduction problems

Evaluation of Treatment

Improved CO Improved tissue perfusion

Improved EKG

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