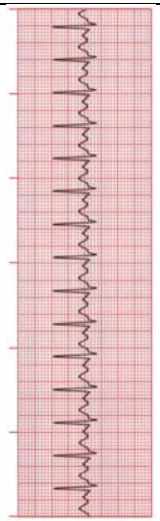
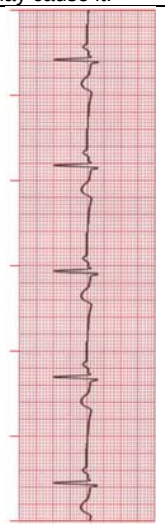
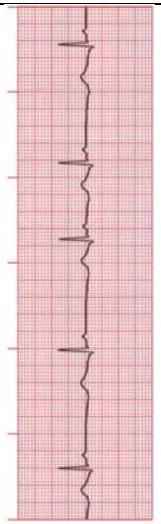
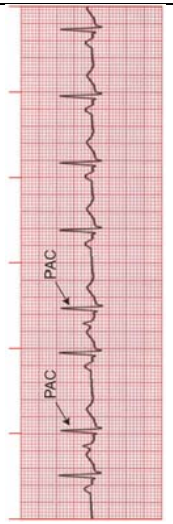
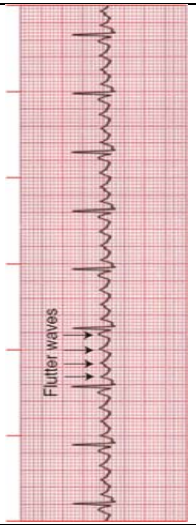
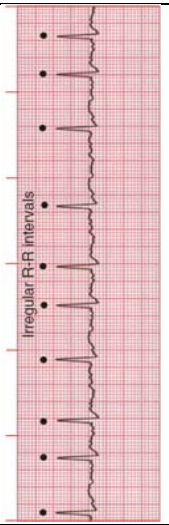
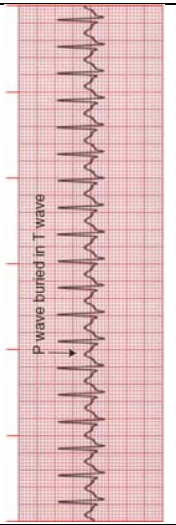
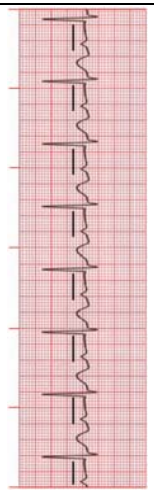
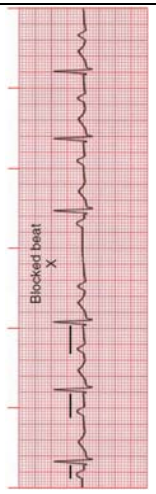
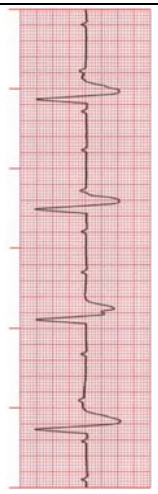
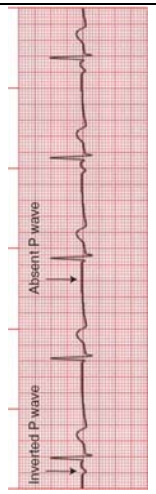
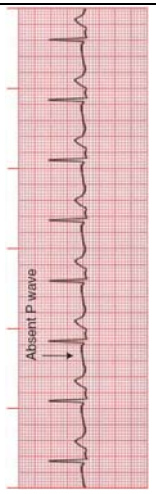
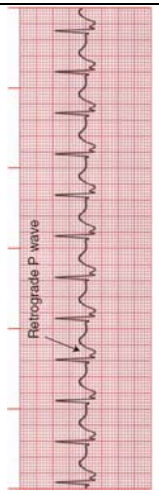
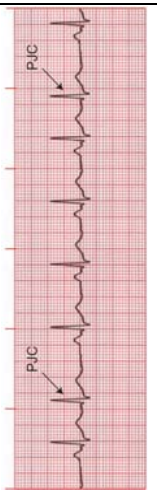
Rhythm	Normal Sinus Rhythm (NSR)	Dysrhythmias originating Sinus Node			Dysrhythmias originating in the Atria			
		Sinus Tachycardia	Sinus Bradycardia	Sinus Arrhythmia	Premature Atrial Complex (PAC)	Atrial Flutter	Atrial Fibrillation (A-fib)	Supraventricular Tachycardia (SVT)
Rate bpm	60 - 100	**> 100**	**< 60**	60 – 100 Frequently: ↑ w/inspiration ↓ w/expiration	Depends on rate of underlying rhythm	May be Normal/Tachy	**Usually Tachy**	**> 150**
Regularity	Regular	Regular	Regular	**Irregular;** varies w/respiration	**Irregular whenever a PAC occurs**	Atria - Regular Ventricles - Reg or Irreg	**Irregular**	Regular
P wave	Normal/Upright/ Rounded	Normal/Upright/ Rounded	Normal/Upright/ Rounded	Normal/Upright/ Rounded	P wave is present; in PAC may have different shape	**Sawtooth pattern on P waves. More P waves than QRS**	**No true P waves; chaotic atrial activity**	**P waves hidden or not present**
P-R interval	0.12 – 0.20 sec	0.12 – 0.20 sec	0.12 – 0.20 sec	0.12 – 0.20 sec	**Varies in PAC**, otherwise normal	**Variable**	**Absent**	**Absent**
QRS	< 0.12 sec	< 0.12 sec	< 0.12 sec	< 0.12 sec	< 0.12 sec	< 0.12 sec	< 0.12 sec	< 0.12 sec
Drugs	n/a	Treat the underlying cause, i.e. fluid replacement, relief pain, reduce fever,…	If symptomatic: **Atropine** **Epi 1:10,000**	Do NOT require tx unless accompanied by slow heart rate that causes blood flow compromise, if so admin **Atropine**			**Amiodarone**	**Amiodarone**
Clinical Tip	A normal ECG does not exclude heart disease	May be caused by exercise, anxiety, fever, hypoxemia, hypovolemia, or cardiac failure. It is the response to the body's demands for increase O_2.	It is normal in athletes and during sleep. In acute MI, it may be protective and beneficial of the slow rate may compromise cardiac output. Certain medications, such as beta blockers, may cause it.	The SA node discharges irregularly. The pacing rate varies w/respiration, especially in children and elderly people.	Stimuli originates within atria, but not in the SA. In patients w/heart disease, frequent PACs may precede paroxymal SVT, A-fib, or A-flutter.	Its presence may be the first indication of cardiac disease. s/s depend on ventricular response rate.	Rapid, erratic electrical discharge comes for multiple points in the atria => ineffective atrial contraction => ↓stroke volume ↓cardiac ouput It is usually a chronic arrhythmia associated w/heart disease. s/s depend on ventricular response rate.	The rate is so fast that the P waves may not be seen. It may be related to caffeine intake, nicotine, stress, or anxiety in healthy adults.
								

	Dysrhythmias originating in the AV Junction							
Rhythm	**1st Degree AV Block**	**2nd Degree AV Block (Type 1) Mobitz I or Wenckebach**	**2nd Degree AV Block (Type 2) Mobitz II**	**3rd Degree AV Complete Heart Block**	**Junctional**	**Accelerated Junctional**	**Junctional Tachycardia**	**Premature Junctional Complex (PJC)**
Rate bpm	60 – 100	**Normal or Brady**	**< 60 (Brady)**	**40 – 60**	**40 – 60**	60 – 100	**> 100**	Depends on rate of underlying rhythm
Regularity	Regular	**Irregular**	**Irregular**	Atria- Reg. (60-100) Vent.-Reg.(40-60) **But atria and ventricles act independently**	Regular	Regular	Regular	**Irregular whenever a PJC occurs**
P wave	Normal/Upright/ Rounded	Normal/Upright/ Rounded	Normal/Upright/ Rounded **More P waves than QRS**	Normal/Upright/ Rounded	**P waves absent, inverted (bcos signal comes from junction), or buried**	**P waves absent, inverted (bcos signal comes from junction), or buried**	**P waves absent, inverted (bcos signal comes from junction), or buried**	**P waves absent, inverted (bcos signal comes from junction), or buried**
P-R interval	**> 0.20 sec**	**Lengthening until beat is dropped**	Normal or long on conducted beats	**None Atria independent of Ventricles**	**None or Short (< 0.12 sec)**	**None or Short (< 0.12 sec)**	**None or Short (< 0.12 sec)**	**None or Short (< 0.12 sec)**
QRS	< 0.12 sec	< 0.12 sec	< 0.12 sec	< 0.12 sec	< 0.12 sec	< 0.12 sec	< 0.12 sec	< 0.12 sec
Drugs		**Amiodarone and Lidocaine are CONTRAINDICATED for 2nd and 3rd degree blocks!!!**						No tx if asymptomatic.
Clinical Tip		This rhythm may be caused by meds such as beta blockers, digoxin, and calcium channel blockers. Ischemia involving right coronary artery is another cause.	**Each QRS has P wave in the same place. But there are more P waves than QRS.** Often occurs w/cardiac ischemia or an MI.		It is like a NSR, but: - no P waves - 40-60 bpm	It is like a NSR, but: - no P waves	s/s of decreased cardiac output may be seen in response to the rapid rate.	It looks like PAC, but it doesn't have P wave!
								

	Dysrhythmias originating in the Ventricles						Asystole
Rhythm	**Trigeminal PVCs: every 3rd beat is a PVC.**	**Ventricular Tachycardia (3 or more consecutive PVCs beats)**	**Ventricular Fibrillation**	**Bundle Branch Blocks (BBB)**	**Idioventricular**	**Accelerated Idioventricular**	
Rate bpm	Depends on rate of underlying rhythm	**> 100**	**Rapid/Chaotic (300-600)**	Depends on rate of underlying rhythm	**20-40**	**> 40**	**0**
Regularity	**Irregular whenever a PVC occurs**	Regular	**Extremely Irregular**	Regular	Regular	Regular	na
P wave	**No P wave associated w/the PVC**	**No P waves**	**No P waves**	Normal/Upright/ Rounded	**No P waves**	**No P waves**	**No P waves**
P-R interval		na	na	Normal (0.12 – 0.20 sec)	na	na	**None**
QRS	**≥ 0.12 sec (wide) / Bizarre**	**≥ 0.12 sec (wide)**	**≥ 0.12 sec (wide) / Bizarre**	**≥ 0.12 sec (wide)**	**≥ 0.12 sec (wide)** (This is the main difference w/Junctional rhythm)	**≥ 0.12 sec (wide)** (This is the main difference w/Junctional rhythm)	**None**
Drugs	**Lidocaine w/malignant PVC's** (ensure HR > 60bpm and BP > 90 too)	**Pulseless**: **Epi 1:10,000** **Amiodarone** **Lidocaine** **Pulse**: **Lidocaine**	**Epi 1:10,000** **Amiodarone** **Lidocaine**				**Epi 1:10,000** **Atropine**
Clinical Tip	Look at underlying rhythm. Can appear in couplets, triplets, or short runs of VT. Can be multi-focal or uni-focal. Caused by random firing within the ventricles. No atrial firing => no P wave. Patients may sense the occurrence of PVCs as skipped beats bcos the ventricles are partially filled; the PVC frequently doesn't generate a pulse.	It is important to confirm the presence or absence of pulses bcos VT may be perfusing or not perfusing. This is a shockable rhythm, therefore before shocking the patient, check if there is a pulse: - If pulse => do NOT shock - If NO pulse => Shock	This is a shockable rhythm. There is no pulse or cardiac output. Rapid intervention is critical. **Because artifact can mimic VF, always check patient's pulse before beginning treatment for VF!!!**	The signal originates at the Atria => there are P waves, but the block is in the bundle branch on the way down to the ventricle, => you can see the block within the QRS. Commonly occurs in coronary artery disease.	It is also called Agonal rhythm.	Idioventricular rhythms appear when supraventricular pacing sites are depressed or absent. Diminished cardiac output is expected if the heart rate is slow.	Always confirm Asystole by checking the ECG in 2 different leads. Total absence of ventricular electrical activity, therefore: - no ventricular rate - no pulse - no cardiac output If atrial electrical activity present, it is called 'P-wave' asystole.