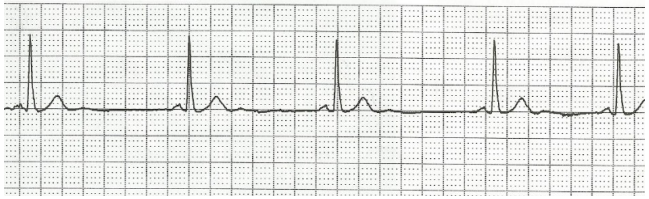
ECG Interpretation Build Your Study Guide

Rhythm	Identification & Characteristics	Causes / Treatment	Nursing Responsibility	Important Notes
	**Normal Sinus Rhythm**	**Normal Heart Rhythm**	**None**	**Rhythm: Regular Rate: 60-100 bpm Upright rounded P waves, PR interval within normal limits, & QRS duration within normal limits**
	**Sinus Bradycardia**	**Parasympathetic- Vagal dominance of the sinus node. Beta-Blockers, hypothyroidism, hypothermia, sinus node ischemia.**	**Monitor and document. Unstable bradycardia nursing intervention with medications and iv fluid.**	**Rhythm: Regular Rate: <60 bpm P wave upright and uniform, precedes each QRS complex.**
	**Atrial Fibrillation**	**CHF, angina, hypertension. Treatment: Medications (Amiodarone), Beta-blockers, warfarin & cardioversion.**	**Monitor cardiac strips, manage medications, educate**	**No coordinated P waves, irregular ventricular contraction rhythm.**
	**Atrial Flutter**	**Treatment: Calcium Channel blockers, beta-blockers, Cardioversion. Cause: Ischemic heart disease, MI, myocarditis, chest trauma, PE.**	**Medication Administration, anticipate cardioversion, monitor vitals.**	**Rapid Regular atrial rhythm due to an atrial macroreentrant circuit.**

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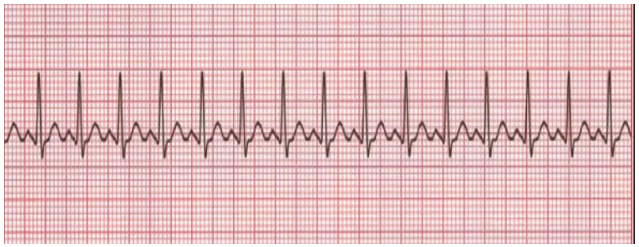
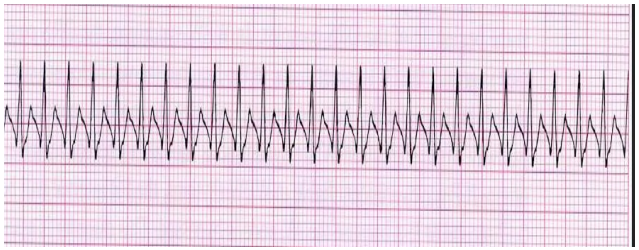
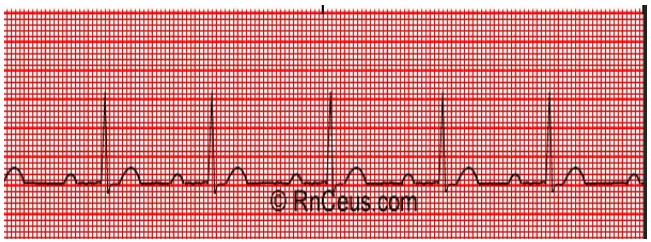
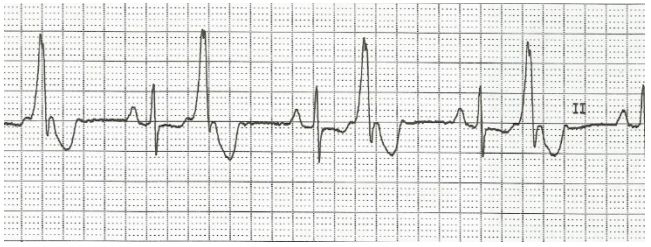
	**Sinus Tachycardia**	**Sympathetic dominance of the sinus node. CHF, Sepsis, Myocardial Ischemia, Hypovolemia, pericarditis, Pulmonary Embolism. Treatment: Medications (betablocker) rest, fluids.**	**Monitor, medication administration, anticipate cardiac procedures.**	**Rhythm: Regular >100bpm P wave upright, precedes QRS complex.**
	**Supraventricular Tachycardia**	**Treatment: Vagal maneuver, medications (Adenosine) Cause: Hypovolemia, hypoxia, trauma, tension pneumothorax.**	**Prepare for vagal maneuver, administer medications, monitor strip.**	**Narrow QRS complex**
	**1st Degree Atrioventricular Block**	**Cause: Beta blockers, ischemia, electrolyte (K) and MI. Treatment: Atropine if symptomatic HR <60 bpm**	**Monitor, apply oxygen, administer medications.**	**Delay in conduction at the level of the AV node.**
	**Bigeminy PVC**	**Cause: Stress, caffeine, acidosis, hyperthyroidism, cardiomyopathy. Treatment: Not all require treatment, medications such as amiodarone and beta blockers can be used.**	**Monitor, administer supplemental oxygen.**	**Every other beat is a PVC.**

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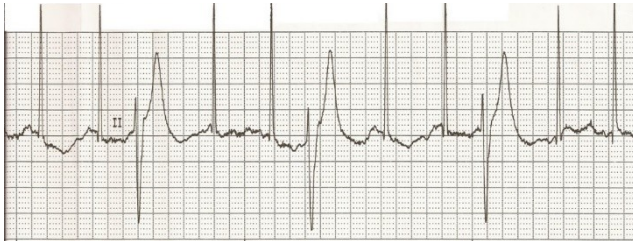
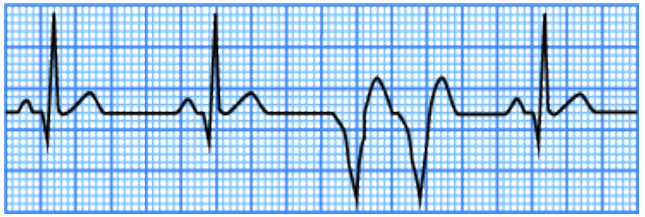
	AV-Paced Atrial Ventricular Paced	Treatment: Anticoagulants	Monitor, administer medications, and educate.	Ventricular pacing occurs exclusively in the right ventricle.
	Multifocal Couplet PVC's	Treatment: Beta-blockers, antiarrhythmics, calcium channel blockers. Causes: Certain medications, including decongestants and antihistamines. Alcohol or illegal drugs. Increased levels of adrenaline in the body that may be caused by caffeine, tobacco, exercise or anxiety	Monitor, administer medications, educate.	PVC's that generated from different portions of the heart.
	Unifocal Couplet PVC's	Treatment: Beta-blockers, antiarrhythmics, calcium channel blockers. Causes: Certain medications, including decongestants and	Monitor, administer medications, educate.	Two premature beats may have an identical morphology.

		antihistamines. Alcohol or illegal drugs. Increased levels of adrenaline in the body that may be caused by caffeine, tobacco, exercise or anxiety		
	**Ventricular Tachycardia Monomorphic**	**Seen in patients with underlying structural heart disease. There is typically a zone of slow conduction, most commonly the result of scarring or fibrillar disarray. Causes include prior infarct, any primary cardiomyopathy, surgical scar, hypertrophy, and muscle degeneration**. Treatment: Cardioversion	**Monitor, anticipate cardioversion.**	**Is a broad complex tachycardia originating in the ventricles. There are several different varieties of VT — the most common being** Monomorphic VT**.**

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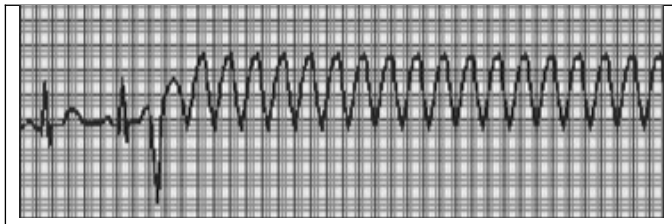
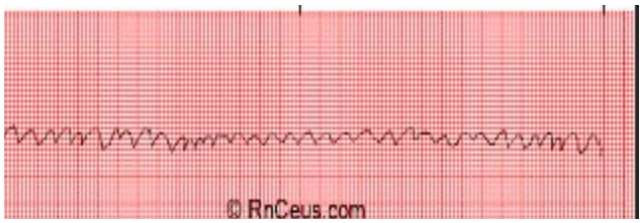
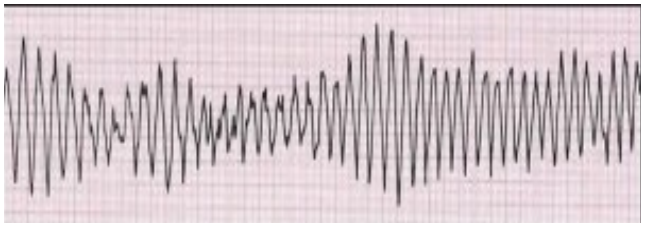
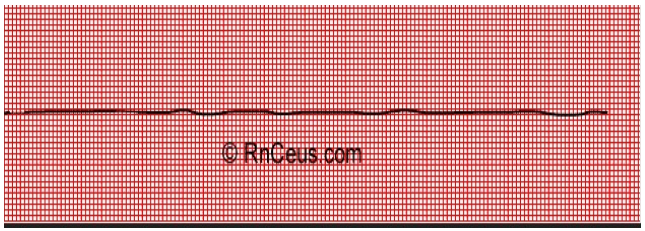
	R on T Phenomenon	MI	**Monitor**	is the superimposition of an ectopic beat on the **T** wave of a preceding beat

				**R interrupting T waves.**
	**Ventricular Fibrillation**	**Ischemic myocardium, acute coronary syndrome. Early defibrillation, electrolytes, vasopressins.**	**Monitor, medications**	
	**Torsades De Pointes Polymorphic**	**Drug induced (Digoxin)**	**Monitor EKG, magnesium, lidocaine.**	
	**Asystole**	End of life, hypoxia, ischemia, cardiac arrest. CPR if no DNR status.	**CPR, if DNR notify physician.**	**DEATH**

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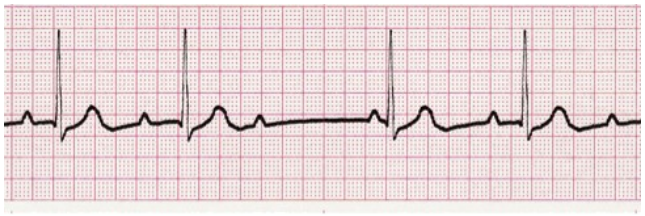
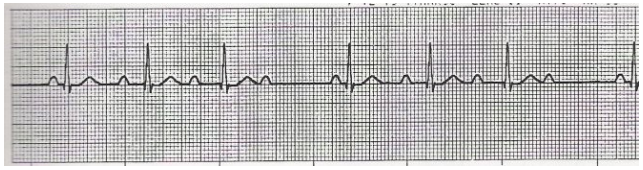
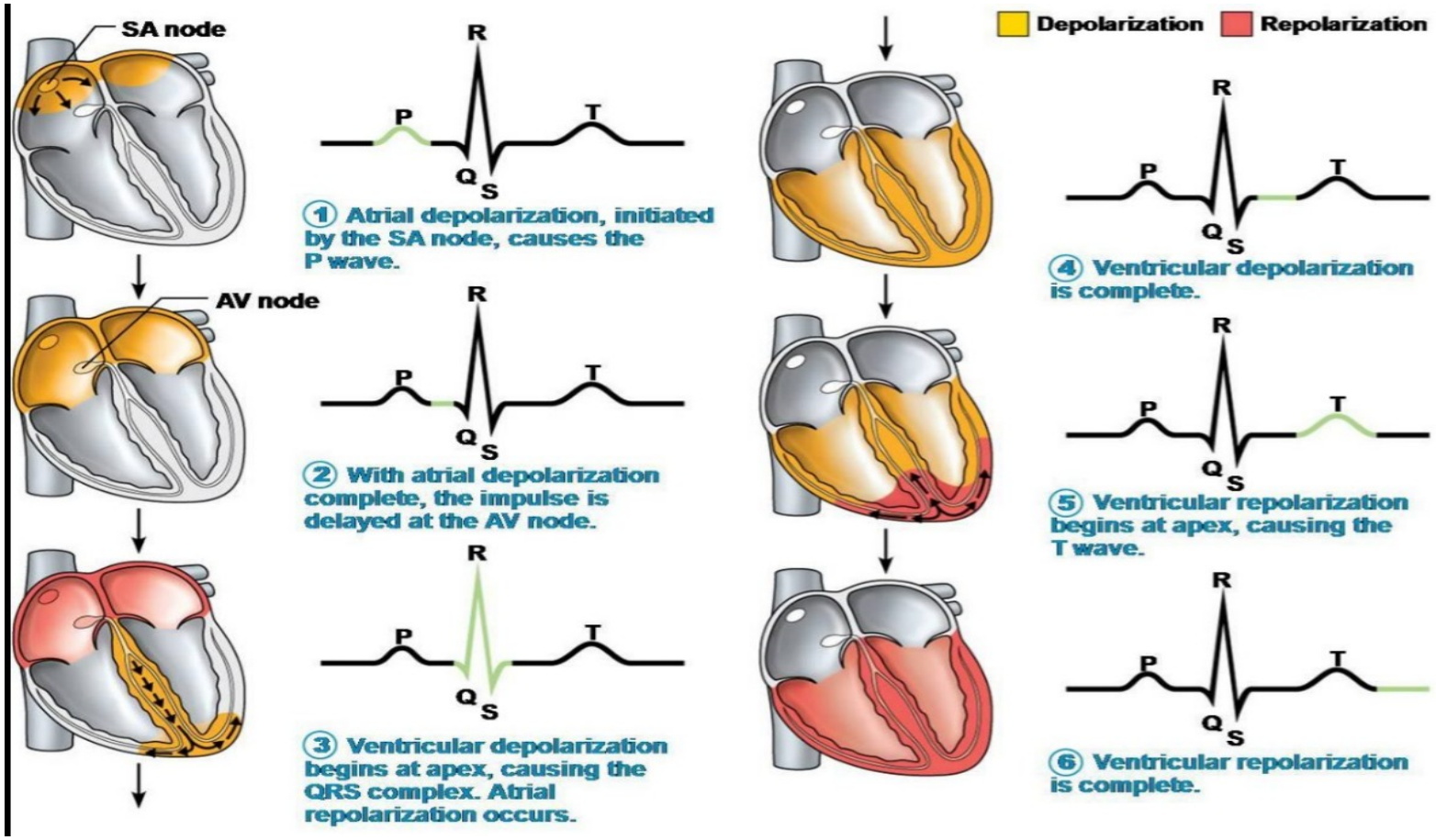
	**2nd degree AV heart block type 1**	**CHF, shock Treatment: transcutaneous pacing, atropine, epi, dopamine.**	**Monitor, Medications, Education.**	**Rate: atrial rate just slightly faster than ventricular (because of dropped beats); usually normal range ■ Rhythm: regular for atrial beats; irregular for ventricular (because of dropped beats); can show regular P waves marching through irregular QRS ■ PR: progressive lengthening of the PR interval occurs from cycle to cycle; then one P wave is not followed by a QRS complex (the "dropped beat") ■ P waves: size and shape remain normal; occasional P wave not followed by a QRS complex (the "dropped beat") ■ QRS complex: ≤0.10 sec most often, but a QRS "drops out" periodically**
	**2nd degree AV block Mobitz II**	**Prepare for transvenous pacer ■ Use transcutaneous pacing if available as a bridge to transvenous pacing (verify patient tolerance and mechanical capture; use sedation and analgesia as needed) If signs/symptoms are severe and**	**Monitor, prepare and educate patient of procedure.**	Atrial Rate: usually 60-100 beats/min ■ Ventricular rate: by definition (due to the blocked impulses) slower than atrial rate ■ Rhythm: atrial = regular; ventricular = irregular (because of blocked impulses) ■ PR: constant

		unresponsive to TCP, and transvenous pacing is delayed, consider catecholamine infusions: ■ Dopamine 5 to 20 µg/kg per min ■ Epinephrine 2 to 10 µg/min ■ Isoproterenol 2 to 10 µg/min		and set; no progressive prolongation as with type I—a distinguishing characteristic. ■ P waves: typical in size and shape; by definition some P waves will not be followed by a QRS complex ■ QRS complex: narrow (≤0.10 sec) implies high block relative to the AV node; wide (>0.12 sec) implies low block relative to the AV node
	**Third degree AV block with junctional escape pacemaker.**	**Same as above**	**Educate, monitor, medications.**	■ Atrial rate: usually 60-100 beats/min; impulses completely independent ("dissociated") from ventricular rate ■ Ventricular rate: depends on rate of the ventricular escape beats that arise: — Ventricular escape beat rate slower than atrial rate = third-degree heart block (20-40 beats/min) — Ventricular escape beat rate faster than atrial rate = AV dissociation (40-55 beats/min) ■ Rhythm: both atrial rhythm and ventricular rhythm are regular but independent ("dissociated") ■ PR: by definition there is no relationship between P wave and R wave ■ P

				waves: typical in size and shape ■ QRS complex: narrow (≤0.10 sec) implies high block


SA node
AV node
R
P
T
Q
S
① Atrial depolarization, initiated by the SA node, causes the P wave.
② With atrial depolarization complete, the impulse is delayed at the AV node.
③ Ventricular depolarization begins at apex, causing the QRS complex. Atrial repolarization occurs.
Depolarization
Repolarization
④ Ventricular depolarization is complete.
⑤ Ventricular repolarization begins at apex, causing the T wave.
⑥ Ventricular repolarization is complete.