1 🔲	
2 🔲	The AV Node
	AV node
	 A group of specialized cells located in the lower portion of the right atrium
	Main function is to delay the electrical impulse
	Allows atria to contract and complete filling of ventricles before next ventricular contraction
3	Bundle of His
	After passing through the AV node, the electrical impulse enters the bundle of His
	 Connects the AV node with bundle branches
	 Has pacemaker cells capable of discharging at a rhythmic rate of 40 to 60 beats/min
4	The AV Junction
	The AV node and the nonbranching portion of the bundle of His are called the "AV junction"
5	The AV Junction
	The AV junction may assume responsibility for pacing the heart if:
	 The SA node fails to discharge
	 An impulse from the SA node is generated but blocked as it exits the SA node
	 The rate of discharge of the SA node is slower than that of the AV junction
	 An impulse from the SA node is generated and is conducted through the atria but is not conducted to the ventricles
6	The AV Junction
	If the AV junction paces the heart, the electrical impulse must travel in a backward (retrograde) direction to activate the atria
7	The AV Junction
	• If atrial depolarization occurs before the ventricles, an inverted P wave will be seen before the QRS complex in leads II, III, and aVF
	• If atrial and ventricular depolarization occur simultaneously, the P wave will not be visible since it will be hidden in the QRS complex
	• If atrial depolarization occurs after ventricular depolarization, an inverted P wave will appear after the QRS complex
8 🔲	Premature Junctional Complexes (PJCs)
	A PJC arises from an ectopic focus within the AV junction that discharges before the next expected sinus beat
	The QRS will usually measure 0.10 second or less
	Often followed by a noncompensatory (incomplete) pause
9	Premature Junctional Complexes (PJCs)
	A P wave may or may not be present with a PJC
	If a P wave is present, it is inverted (retrograde) and may precede or follow the QRS
10 🔲	Premature Junctional Complexes (PJCs)
	 A PJC is not an entire rhythm—it is a single beat Identify the underlying rhythm and the ectopic beat(s) Example: Sinus rhythm at 98/min with two PJCs
11 🔲	PJCs – ECG Characteristics
12 1	PJCs – Causes

- · Excessive caffeine, tobacco, or alcohol intake
- Valvular disease
- Ischemia
- · Congestive heart failure
- Digitalis toxicity
- · Increased vagal tone 2
 - Acute myocardial infarction
 - Hypoxia
 - · Electrolyte imbalance
 - Particularly magnesium and potassium
 - Exercise
 - · Rheumatic heart disease

PJCs - Clinical Significance

- · Most individuals with PJCs are asymptomatic
- PJCs may lead to symptoms of palpitations or the feeling of skipped beats

PJCs - Intervention

- PJCs do not normally require treatment
- If PJCs occur because of the ingestion of stimulants or digitalis toxicity, these substances should be withheld

Junctional Escape Rhythm - Causes

- Acute myocardial infarction
 - Particularly inferior wall MI
 - Rheumatic heart disease
- · Valvular disease
- Disease of the SA node
- Hypoxia

2

- Increased parasympathetic tone
- Immediately after cardiac surgery
- Patients taking:
 - Digitalis
 - Quinidine
 - Beta-blockers
 - Calcium channel blockers

16 Junctional Escape Rhythm - Intervention

- Intervention depends on the cause of the dysrhythmia and the patient's presenting signs and symptoms
- If the dysrhythmia is caused by digitalis toxicity, this medication should be withheld
- If the patient's signs and symptoms are related to the slow heart rate, consider:
 - Atropine sulfate and/or transcutaneous pacing
 - Dopamine intravenous infusion
 - Epinephrine intravenous infusion

Junctional Escape Rhythm - ECG Characteristics

Junctional Escape Rhythm 18

19 🔲 **Accelerated Junctional Rhythm**

- An ectopic rhythm caused by enhanced automaticity of the bundle of His
- Results in a regular ventricular response at a rate of 61 to100 beats/min

20 Accelerated Junctional Rhythm - ECG Characteristics

Accelerated Junctional Rhythm

Accelerated Junctional Rhythm - Causes 22

- Causes
 - Digitalis toxicity
 - Acute myocardial infarction

- Cardiac surgery
- Rheumatic fever
- COPD
- Hypokalemia
- · The patient may be asymptomatic, but monitor closely

23 Accelerated Junctional Rhythm – Intervention

• If the dysrhythmia is due to digitalis toxicity, this medication should be withheld

24 Junctional Tachycardia

- Junctional tachycardia is three or more sequential PJCs occurring at a rate of more than 100/min
- · Paroxysmal junctional tachycardia is a term used to describe a junctional tachycardia that starts and ends suddenly
 - Often precipitated by a PJC

25 Junctional Tachycardia

- . When the ventricular rate is greater than 150 beats/min, it may be difficult to distinguish junctional tachycardia from atrial tachycardia
 - The rhythm may simply be called supraventricular tachycardia (SVT)

26 Junctional Tachycardia – ECG Characteristics

27 Junctional Tachycardia

28 Junctional Tachycardia – Causes

- Myocardial ischemia or infarction
- Congestive heart failure
- · Digitalis toxicity

Junctional Tachycardia – Clinical Significance

- With sustained ventricular rates of 150 beats/min or more, the patient may complain of a sudden feeling of a "racing heart" and severe
 anxiety
- Decreased cardiac output may occur as a result of the fast ventricular rate

30 Junctional Tachycardia – Intervention

- For a stable but symptomatic patient:
 - Oxygen therapy, IV access
 - Vagal maneuvers
 - Adenosine
 - Amiodarone

31 Junctional Tachycardia – Intervention

- Unstable patient
- Usually a sustained heart rate of 150 beats/min or more
- If signs and symptoms are due to rapid heart rate:
- Oxygen administration, IV access
- Consider medications
- Sedate (if awake and time permits)
- Synchronized cardioversion