

8

Sinus Dysrhythmias

Fast & Easy ECGs – A Self-Paced
Learning Program

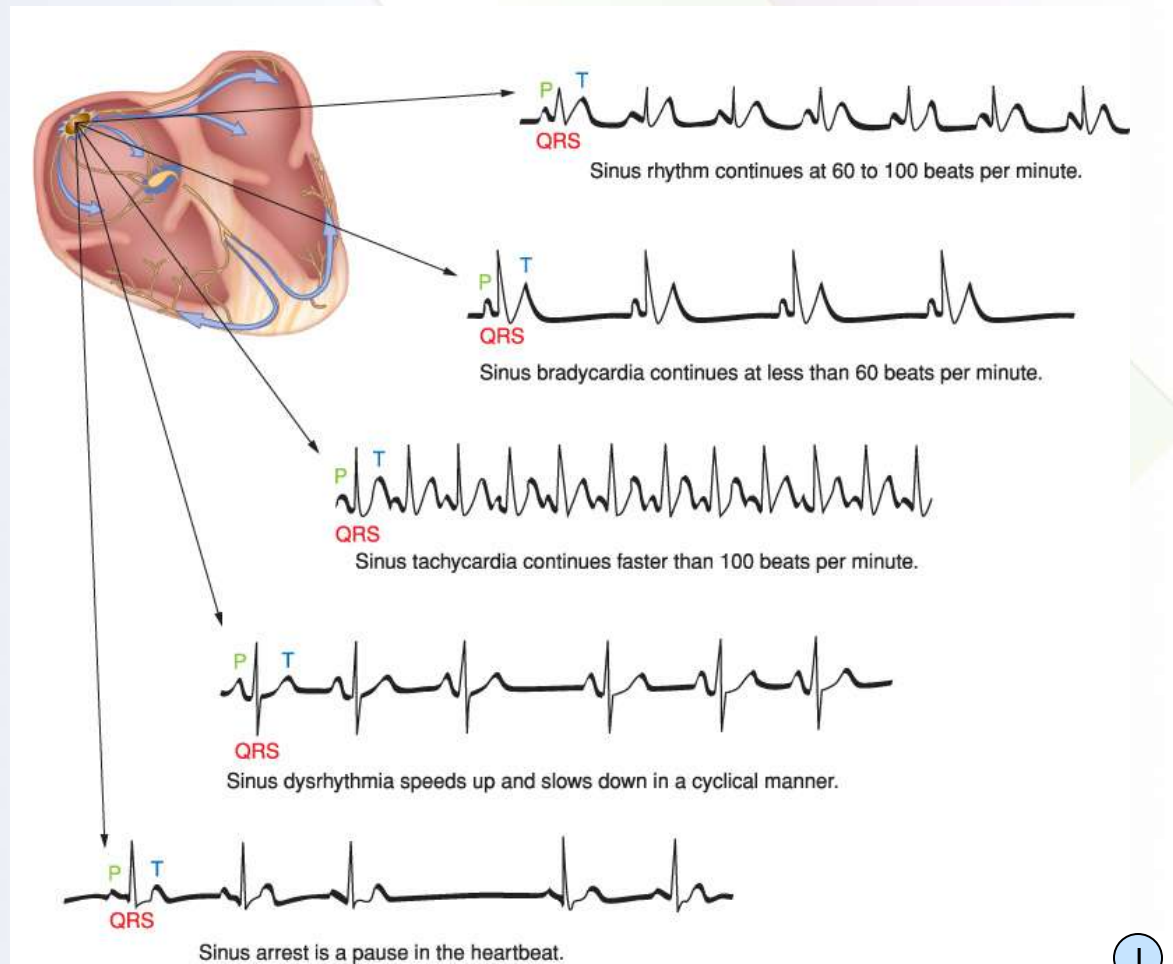


Identifying Dysrhythmias

- Examination of the ECG rhythm must be done in a systematic, organized way

Sinus Rhythms

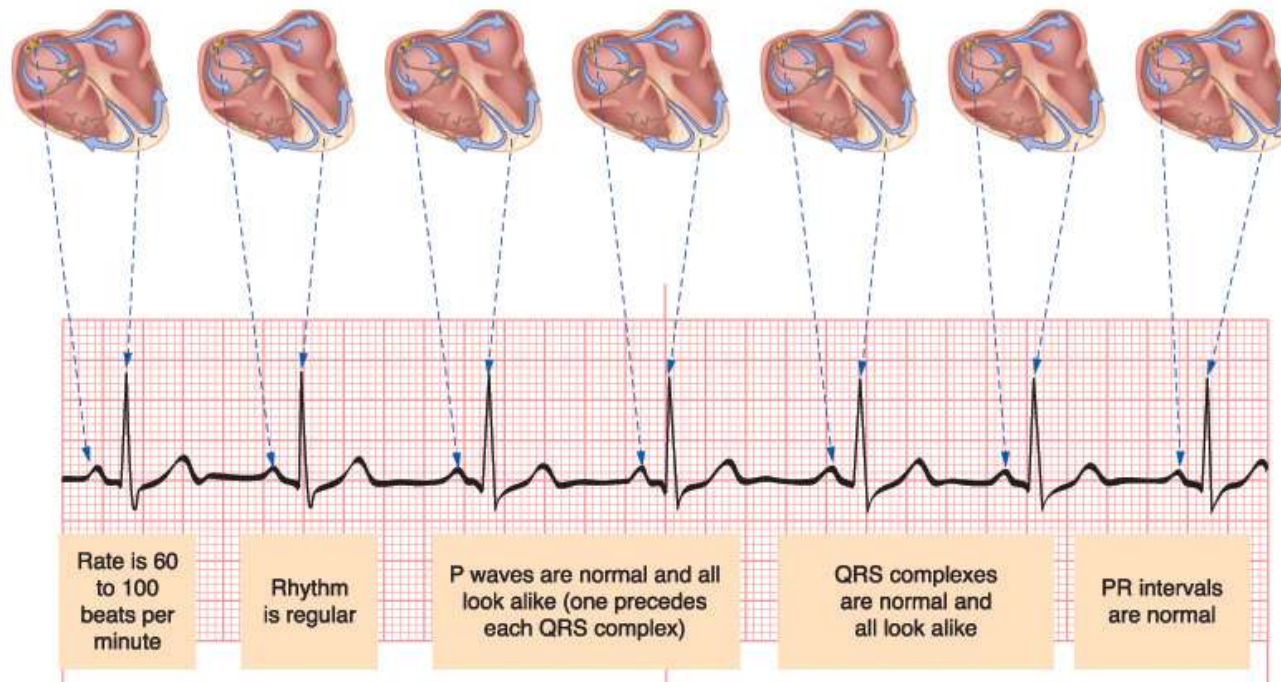
- Rhythms originating from the SA node are called *sinus rhythms*



Normal Sinus Rhythm (NSR)

- During normal heart activity, the SA (sinoatrial) node acts as the primary pacemaker
- NSR has a heart rate of 60 to 100 BPM (in the average adult)

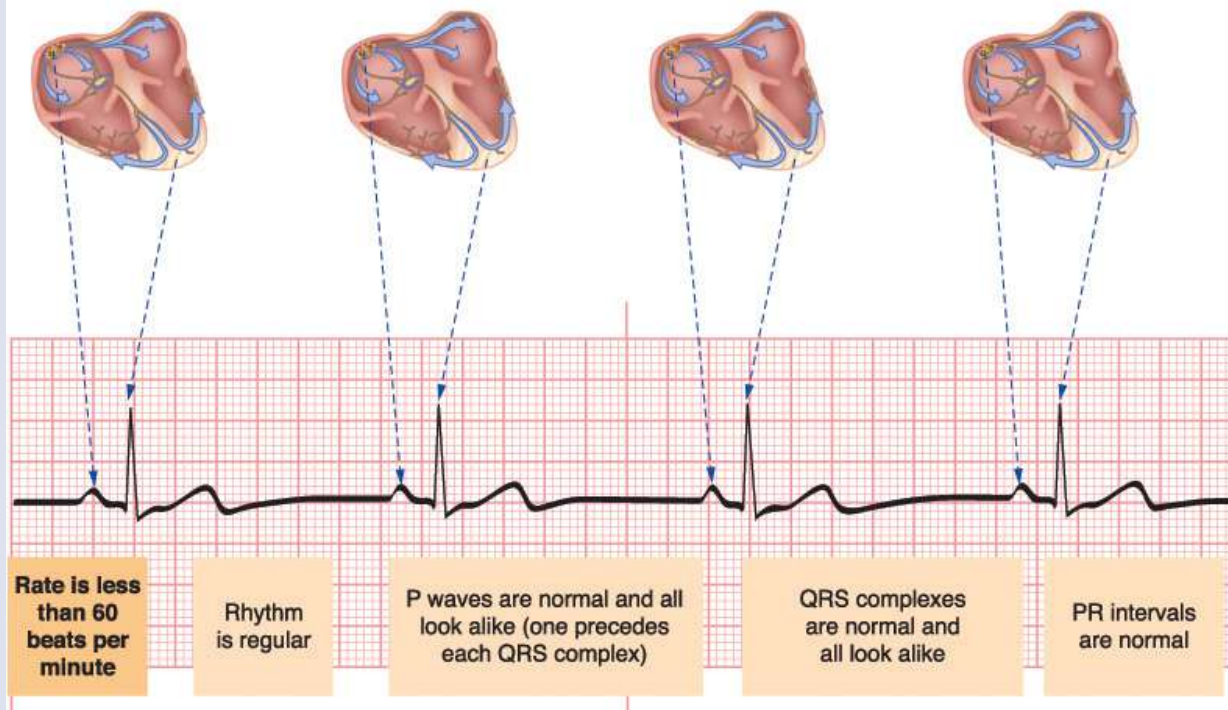
Normal sinus rhythm arises from the SA node. Each impulse travels down through the conduction system in a normal manner.



Sinus Bradycardia

- Has all the characteristics of NSR but the heart rate is < 60 BPM

Sinus bradycardia arises from the SA node. Each impulse travels down through the conduction system in a normal manner.



Sinus Bradycardia

Table 8.1 Causes of Sinus Bradycardia

Cause	Examples
Cardiac diseases	Intrinsic sinoatrial node disease, cardiomyopathy, myocarditis, myocardial ischemia and/or infarction, and heart block
Use of certain drugs	Digoxin, beta-adrenergic blockers, calcium channel blockers, lithium, amiodarone, propafenone, and quinidine
Excessive vagal tone or decreased sympathetic stimulation	Carotid sinus massage, vomiting, Valsalva's maneuver, deep relaxation, sleep
Noncardiac disorders	Hypothermia, hypoxia, hyperkalemia, increased intracranial pressure, hypothyroidism, sleep, and glaucoma

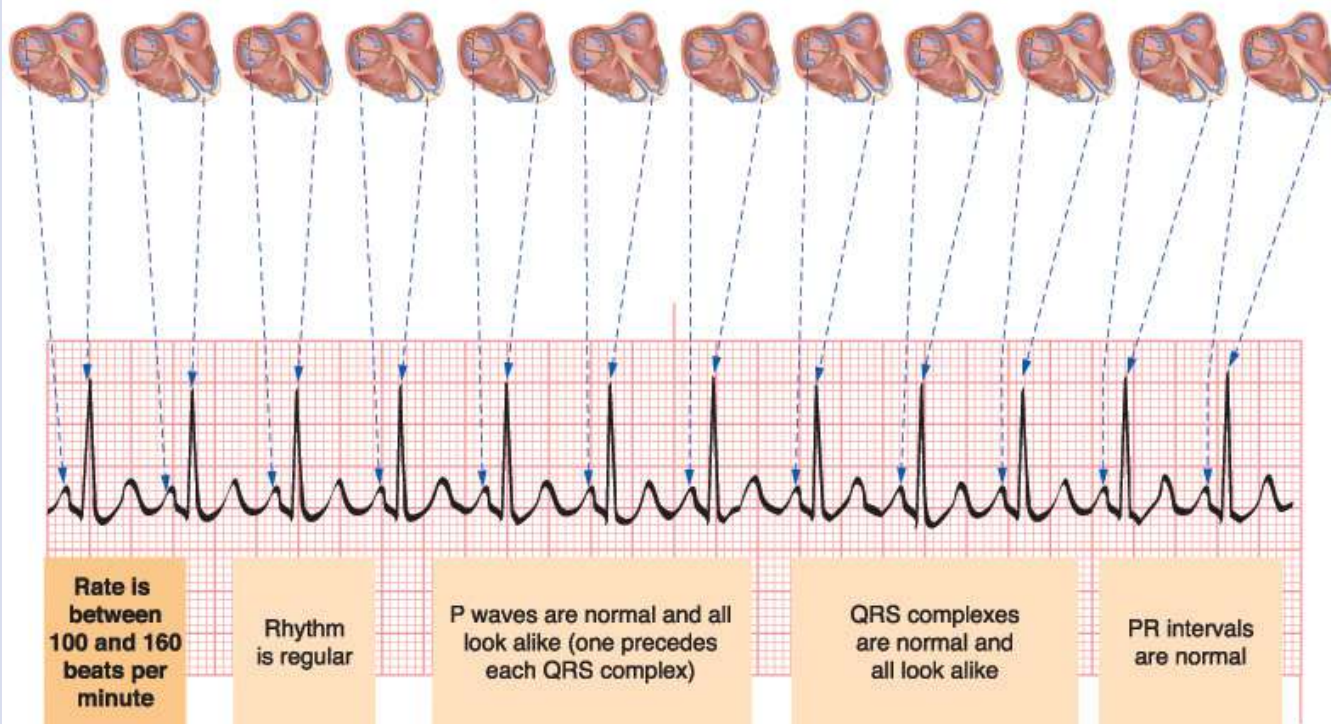
Sinus Bradycardia

- Often insignificant and the patient is asymptomatic
- Hypotension can result if the heart rate slows to the point where cardiac output drops sufficiently
 - Patients are less tolerant of rates < 45 BPM

Sinus Tachycardia

- Same characteristics as NSR but has a rate >100 BPM

Sinus tachycardia arises from the SA node. Each impulse travels down through the conduction system in a normal manner.



Sinus Tachycardia

Table 8.2 Causes of Sinus Tachycardia

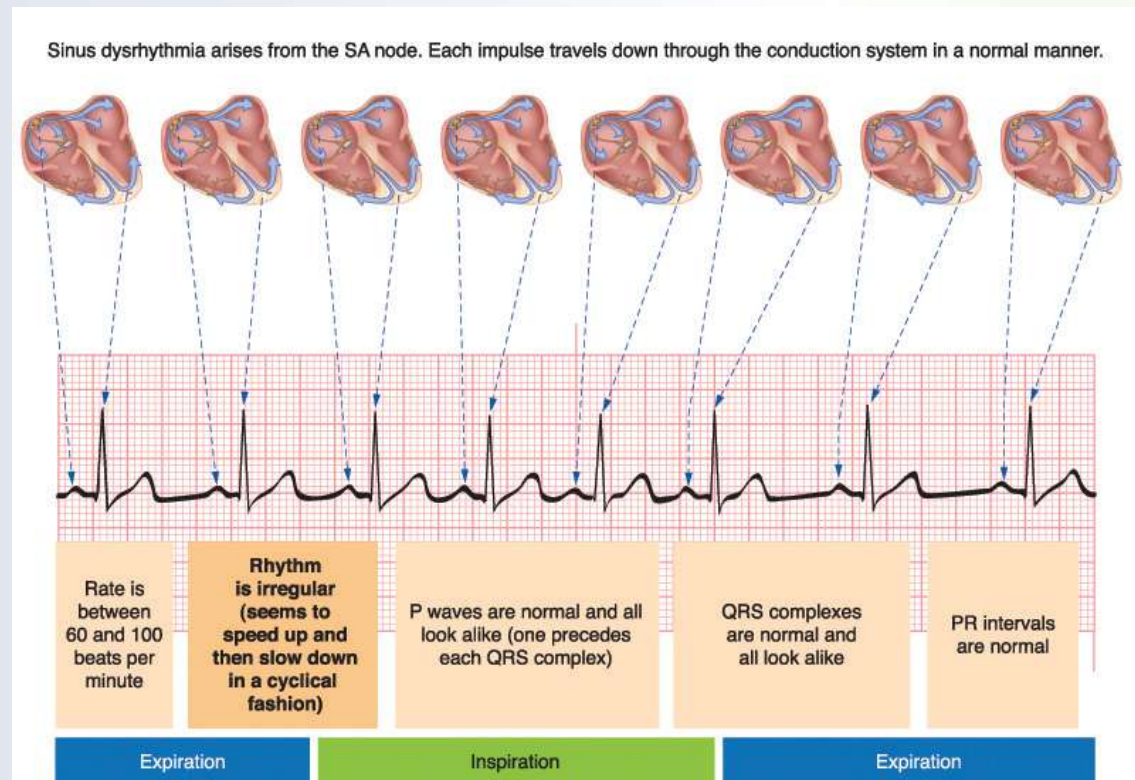
Cause	Examples
Cardiac diseases	Congestive heart failure, cardiogenic shock, and pericarditis
Use of certain drugs	Sympathomimetic drugs such as epinephrine; isoproterenol; dopamine; dobutamine; vagolytic drugs such as atropine; or other drugs such as alcohol, caffeine, nicotine, and amphetamines
Increased sympathetic stimulation	Exercise; pain; stress; fever; fear; anxiety; or as a compensatory mechanism in shock, respiratory distress, hypoxia, pulmonary embolism, anemia, sepsis, and hyperthyroidism

Sinus Tachycardia

- Often of no clinical significance
- Can increase myocardial oxygen consumption
 - which can aggravate ischemia (bringing on chest pain), and infarction, particularly in those with cardiovascular disease

Sinus Dysrhythmia

- Same as NSR except there is a patterned irregularity
- Described as a cycle of “slowing, then speeding up, then slowing again”



Sinus Dysrhythmia

- The beat-to-beat variation produced by irregular firing of the SA node usually corresponds with the respiratory cycle and changes in intrathoracic pressure
- Heart rate increases during inspiration and decreases during expiration

Sinus Dysrhythmia

- Can occur naturally in athletes, children, and older adults
- Can also occur in:
 - Patients with heart disease or inferior wall myocardial infarction
 - Individuals receiving certain drugs such as digitalis and morphine
 - Conditions where there is increased intracranial pressure

Sinus Dysrhythmia

- Usually of no clinical significance and produces no symptoms
- In some patients and conditions it may be associated with palpitations, dizziness, and syncope

Sinus Arrest

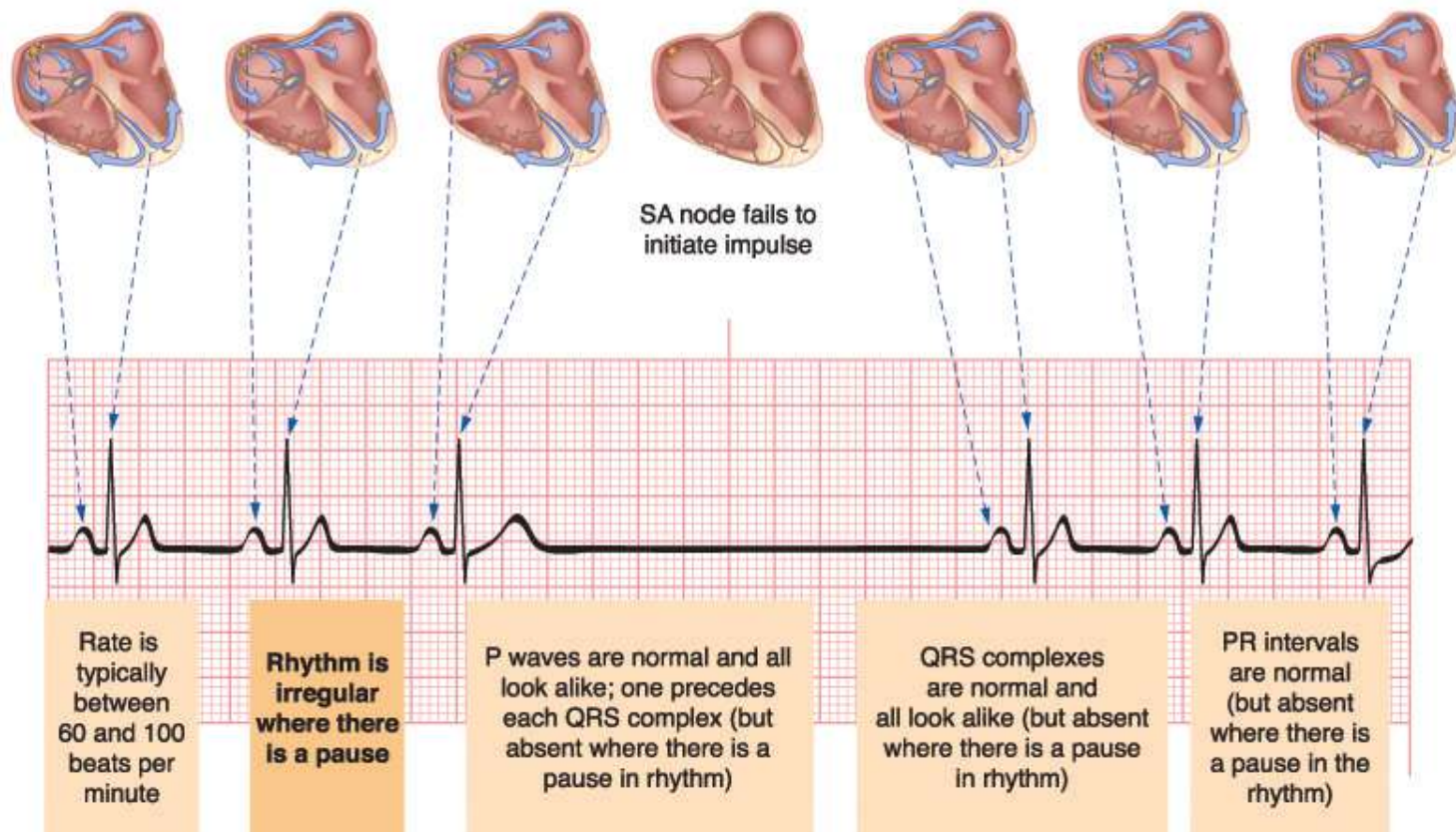
- Occurs when the SA node transiently stops firing
- Causes short periods of cardiac standstill until a lower-level pacemaker discharges or the SA node resumes its normal function

Sinus Arrest

- Most prominent characteristic is a pause in ECG rhythm
- Produces an irregularity
- Rhythm typically resumes its normal appearance after pause unless an escape pacemaker resumes the rhythm

Sinus Arrest

Sinus arrest occurs when the SA node fails to initiate an impulse.



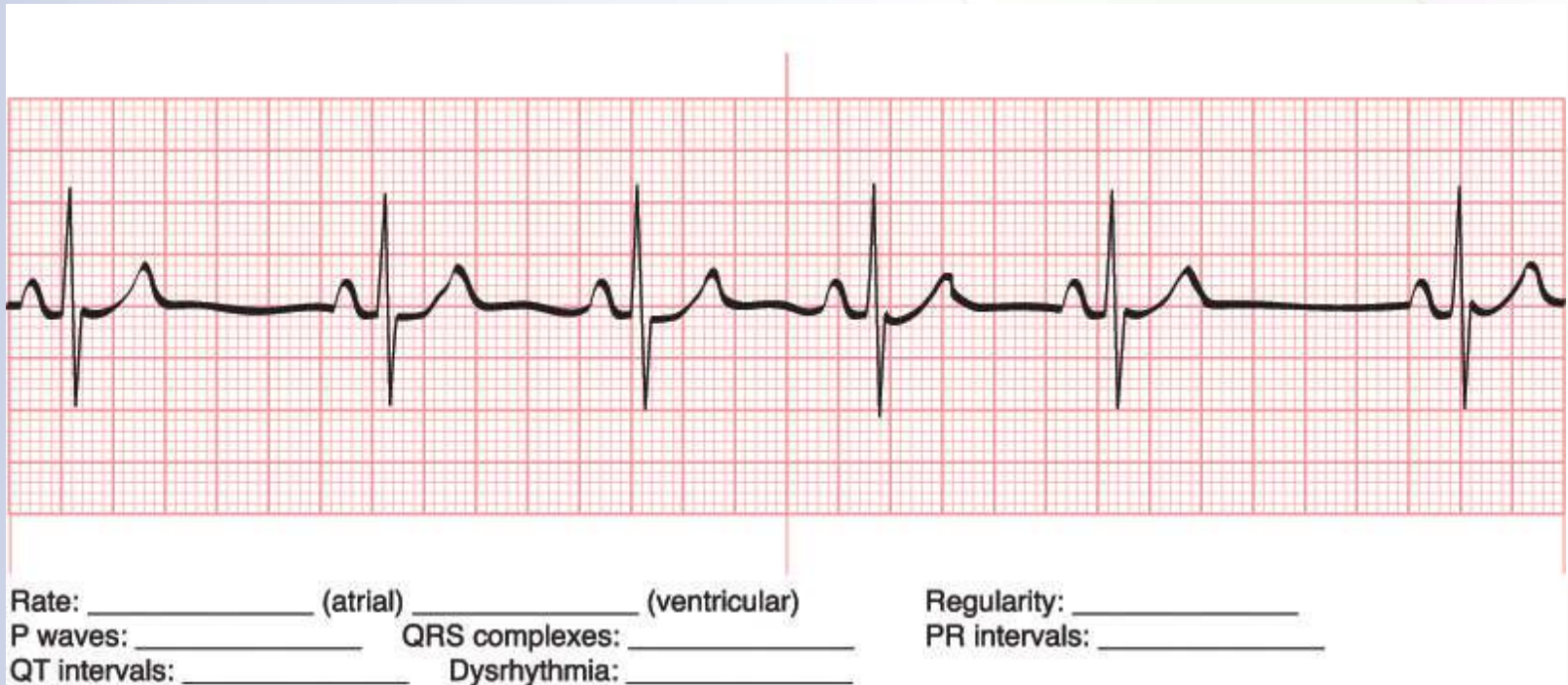
Sinus Arrest

Table 8-3 Causes of Sinus Arrest

Cause	Examples
Sinus node disease Cardiac disorders	Fibrosis, idiopathic degeneration Chronic coronary artery disease, myocardial ischemia or infarction, acute myocarditis, cardiomyopathy, hypertensive heart disease
Use of certain drugs	Digoxin, procainamide, quinidine, salicylates (particularly in toxic doses), excessive doses of beta-adrenergic blockers such as propranolol and metoprolol, or calcium channel blockers
Increased vagal tone	Valsalva's maneuver, carotid sinus massage, vomiting
Others	Hyperkalemia, hypoxia

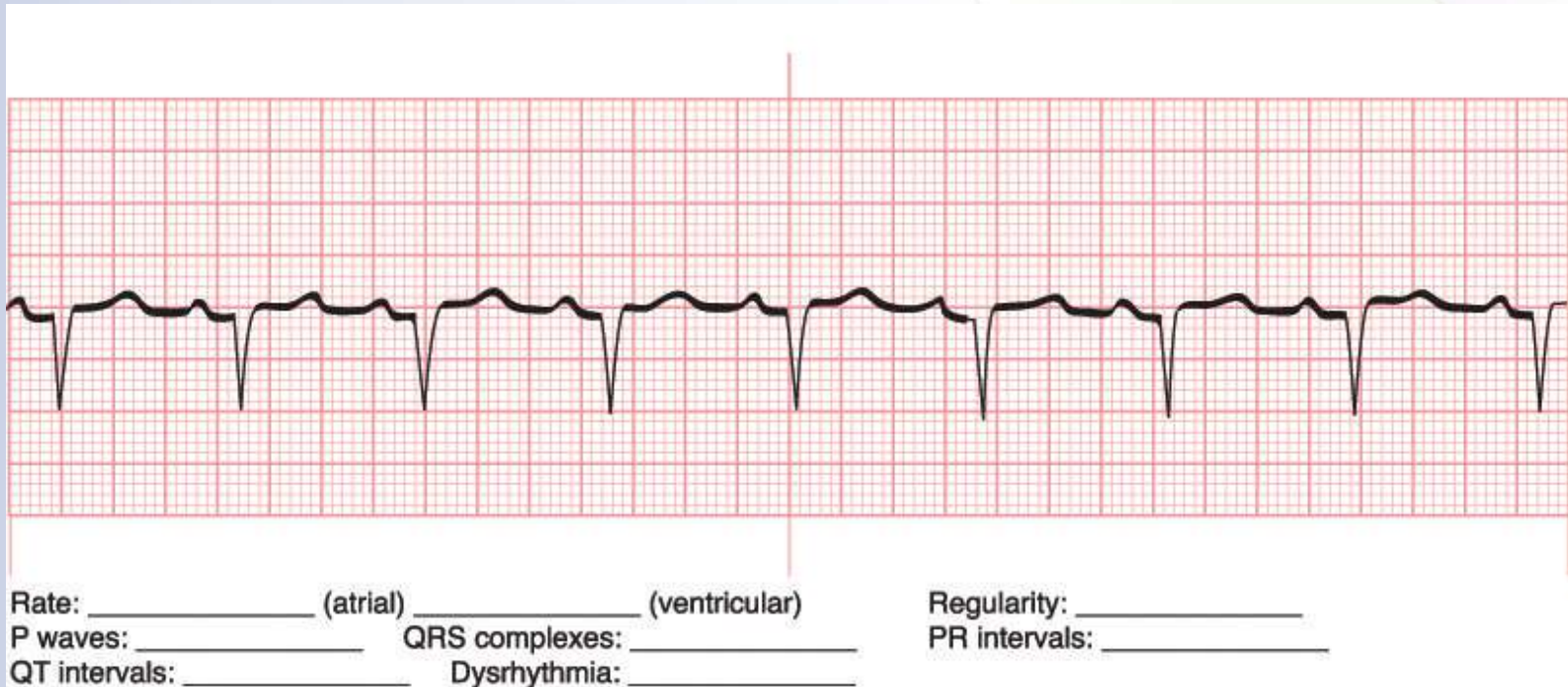
Practice Makes Perfect

- Determine the type of dysrhythmia



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Practice Makes Perfect

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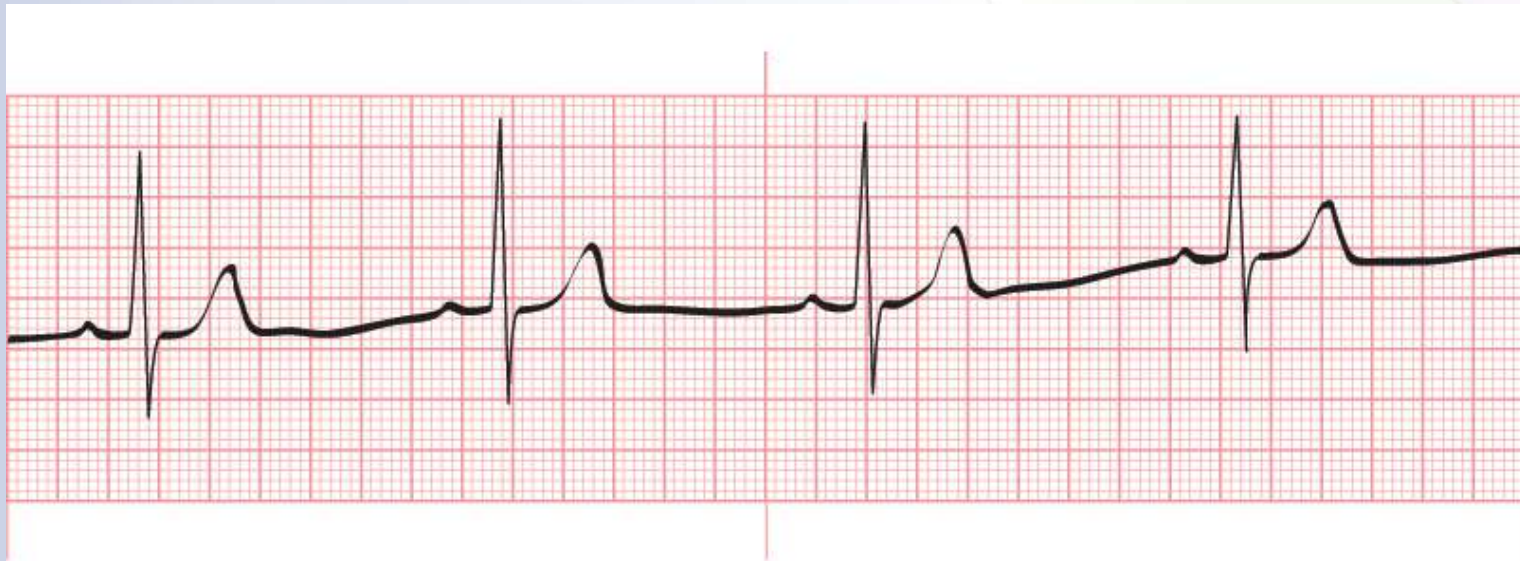


Rate: _____ (atrial) _____ (ventricular)
P waves: _____ QRS complexes: _____
QT intervals: _____ Dysrhythmia: _____

Regularity: _____
PR intervals: _____

Practice Makes Perfect

- Determine the type of dysrhythmia



Rate: _____ (atrial) _____ (ventricular) Regularity: _____
P waves: _____ QRS complexes: _____ PR intervals: _____
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Practice Makes Perfect

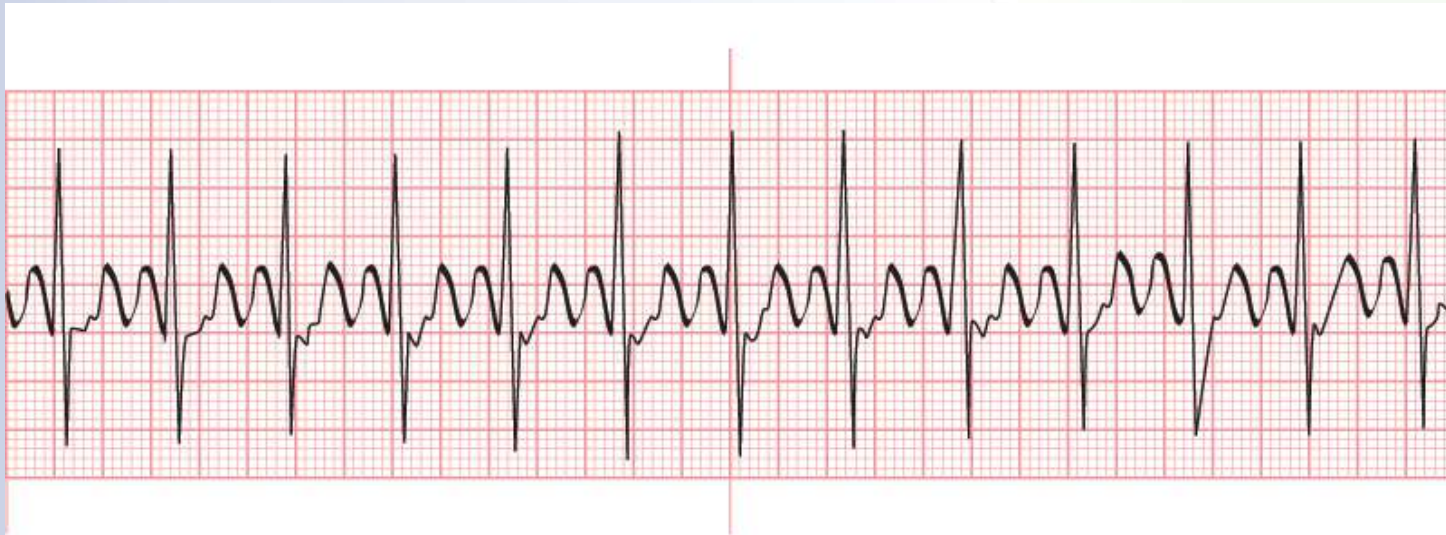
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Practice Makes Perfect

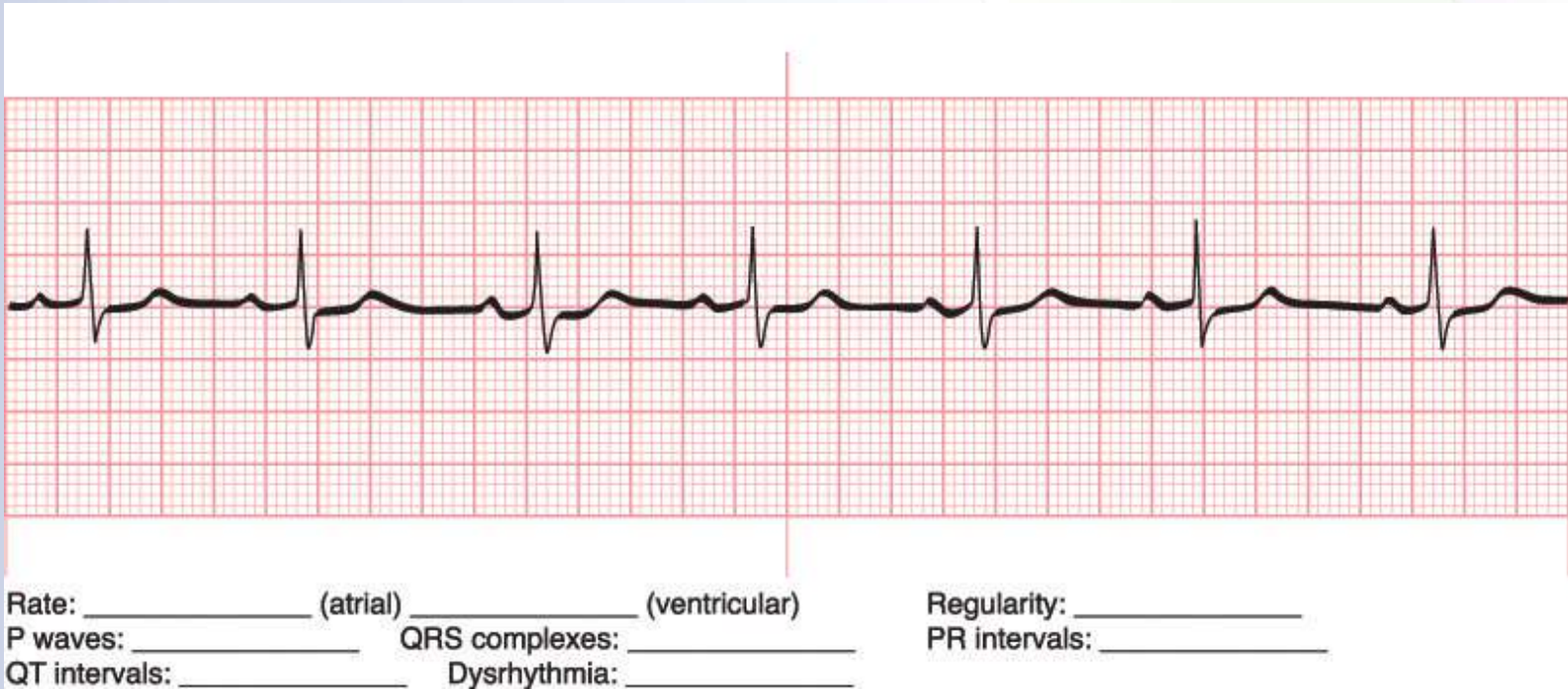
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Rate: _____ (atrial) _____ (ventricular) Regularity: _____
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Practice Makes Perfect

- Determine the type of dysrhythmia



Practice Makes Perfect

- Determine the type of dysrhythmia



Rate: _____ (atrial) _____ (ventricular) Regularity: _____
P waves: _____ QRS complexes: _____ PR intervals: _____
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Practice Makes Perfect

- Determine the type of dysrhythmia



Rate: _____ (atrial) _____ (ventricular) Regularity: _____
P waves: _____ QRS complexes: _____ PR intervals: _____
QT intervals: _____ Dysrhythmia: _____

Summary

- A dysrhythmia is an ECG rhythm that differs from normal sinus rhythm (NSR).
- Examination of the ECG rhythm must be done in a systematic, organized way.
- Rhythms originating from the SA node are called sinus rhythms.

Summary

- Normal sinus rhythm has a heart rate of 60 to 100 BPM (in the average adult).
- Sinus bradycardia has all the characteristics of normal sinus rhythm but the heart rate is less than 60 BPM.
- Sinus tachycardia has the same characteristics as normal sinus rhythm but has a rate of greater than 100 BPM.

Summary

- Sinus dysrhythmia is the same as sinus rhythm except there is the presence of a patterned irregularity. It can be described as a cycle of “slowing, then speeding up, then slowing again.”
- With sinus arrest the ECG rhythm looks like normal sinus rhythm except there is a pause in the rhythm or an absence of the P, QRS, and T waveforms until a pacemaker site reinitiates the rhythm.