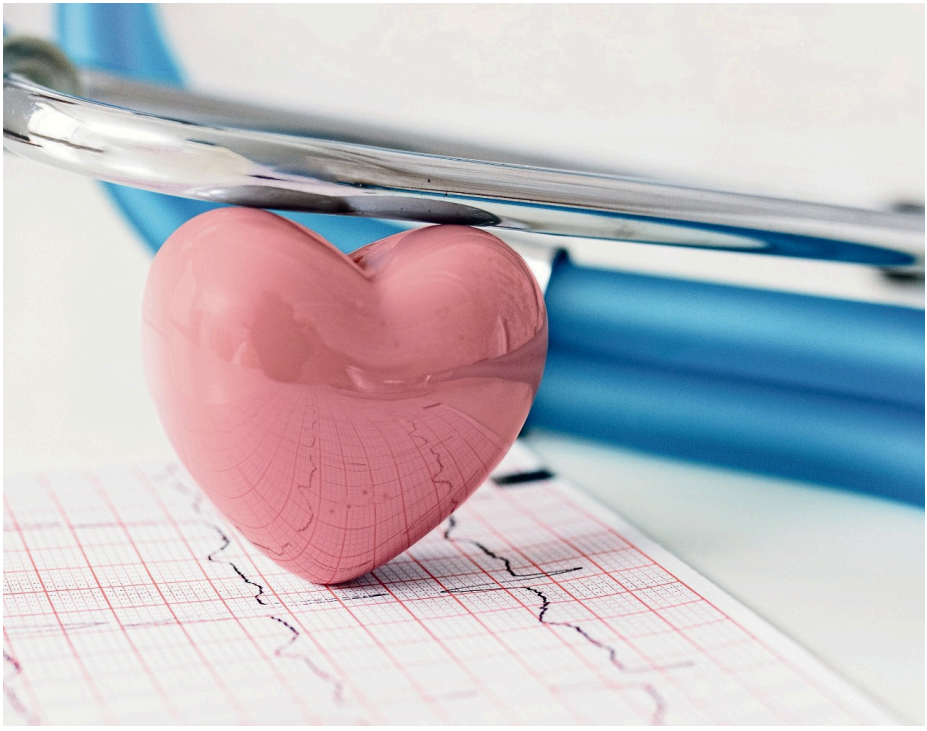
RAPID EKG INTERPRETATION

Workbook

The Complete Guide to EKG Interpretation: From Basics to Advanced Techniques



Medical Dosage Calculation : Math for Nurses: Ensuring Patient Safety through Safe Medication Dosage Workbook.

First edition. September, 2023.

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Introduction

Welcome to the EKG Interpretation Workbook!

This workbook is designed for a diverse audience, including medical students, practicing healthcare professionals, and individuals intrigued by the heart's electrical activities. It aims to guide you through the essentials of EKG interpretation. Featuring a variety of exercises, thorough explanations, and practical tips, this resource will help you cultivate confidence in reading and analyzing EKGs. Dive in and embark on your journey to mastering this vital skill!

Our foundational textbook, "Rapid EKG Interpretation," encompasses all the key topics within this fascinating field. It thoroughly covers major arrhythmias, detailing their causes, ECG characteristics, and management strategies. The textbook includes sample ECGs, accompanied by insights to enhance your understanding.

If you have not yet acquired our Medical Dosage Calculation manual and are struggling with some chapters and questions, please reach out to us at **booksprohealth.com**. We will gladly send you specific chapters from the manual to assist you in your learning process.

Best wishes on your learning journey!

CONTENTS


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1.Cardiac Anatomy and Physiology

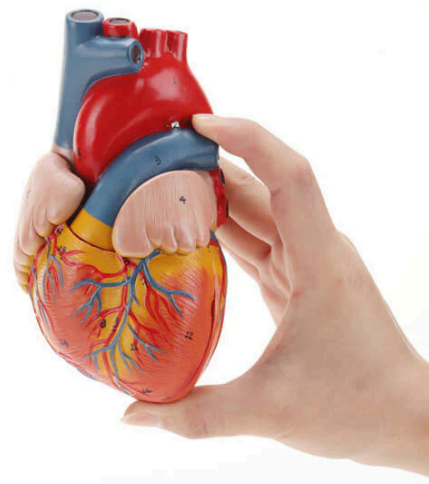
1. What is the function of the heart?
   A. To carry carbon dioxide to the lungs
   B. To collect oxygenated blood from the body
   C. To transport oxygenated blood to the lungs
   D. To distribute oxygenated blood to all body parts

2. How much blood does the heart pump in a day?
   A. 7,000 liters
   B. 7,200 liters
   C. 7,500 liters
   D. 8,000 liters

3. Where is the heart located in the chest?
   A. Left side
   B. Right side
   C. Center
   D. Depends on the person's body size

4. How many times does the heart beat per day?
   A. 50,000
   B. 100,000
   C. 150,000
   D. 200,000

5. What is the size of an adult heart?
   A. 5 x 7 x 9 cm
   B. 6 x 8 x 10 cm
   C. 7 x 9 x 11 cm
   D. 8 x 10 x 12 cm



6. What is the function of the pericardium?
   A. To protect the heart
   B. To keep the heart in place within the chest cavity
   C. To allow the heart to move and expand as it beats
   D. All of the above

7. What is the function of the SA node?
   A. To generate an electrical signal that spreads throughout the heart
   B. To regulate blood flow through the chambers
   C. To prevent backflow of blood
   D. To cushion the heart

8. What are the upper chambers of the heart called?
   A. Ventricles
   B. Atria
   C. Mitral valves
   D. Tricuspid valves

9. What are the lower chambers of the heart called?
   A. Ventricles
   B. Atria
   C. Mitral valves
   D. Tricuspid valves

10. What is the function of the tricuspid valve?
   A. To prevent backflow of blood from the right ventricle to the right atrium
   B. To prevent backflow of blood from the left ventricle to the left atrium
   C. To regulate blood flow from the right atrium to the right ventricle
   D. To regulate blood flow from the left atrium to the left ventricle

11. What is the function of the mitral valve?

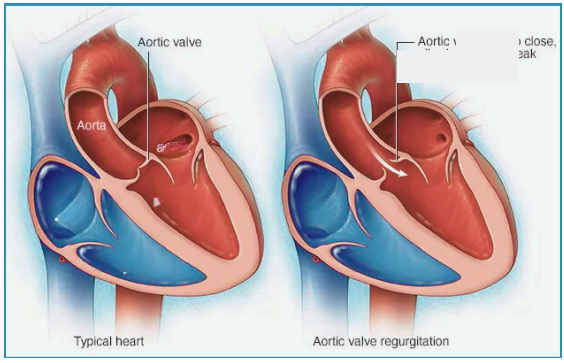
A. To prevent backflow of blood from the right ventricle to the right atrium
B. To prevent backflow of blood from the left ventricle to the left atrium
C. To regulate blood flow from the right atrium to the right ventricle
D. To regulate blood flow from the left atrium to the left ventricle

12. What is the function of the pulmonary valve?

A. To prevent backflow of blood from the right ventricle to the right atrium
B. To prevent backflow of blood from the left ventricle to the left atrium
C. To regulate blood flow from the right atrium to the right ventricle
D. To regulate blood flow from the left atrium to the left ventricle

13. What is the function of the aortic valve?

A. To prevent backflow of blood from the right ventricle to the right atrium
B. To prevent backflow of blood from the left ventricle to the left atrium
C. To regulate blood flow from the right atrium to the right ventricle
D. To regulate blood flow from the left atrium to the left ventricle



14. What is the function of the epicardium?

A. To provide a protective barrier for the heart
B. To reduce friction as the heart beats
C. To pump blood out to the body and lungs
D. To regulate blood flow through the chambers

15. What is the function of the myocardium?

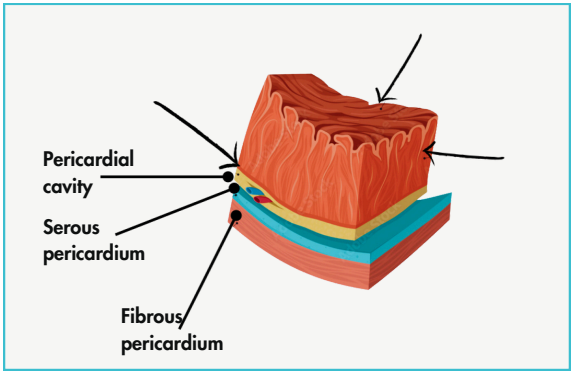
A. To provide a protective barrier for the heart
B. To reduce friction as the heart beats
C. To pump blood out to the body and lungs
D. To stimulate the chambers to contract in a coordinated manner

16. What is the function of the endocardium?

A. To provide a protective barrier for the heart
B. To reduce friction as the heart beats
C. To line the inside of the heart chambers
D. To generate an electrical signal that spreads throughout the heart

17. What is the purpose of the pericardial sac?

A. To protect the heart
B. To keep the heart in place within the chest cavity
C. To lubricate the heart
D. All of the above



18. What is the name of the valve located between the right atrium and the right ventricle?

A. Tricuspid valve
B. Mitral valve
C. Pulmonary valve
D. Aortic valve

19. What is the name of the valve located between the left atrium and the left ventricle?

A. Tricuspid valve
B. Mitral valve
C. Pulmonary valve
D. Aortic valve

20. What is the name of the node that generates an electrical signal that spreads throughout the heart?

A. Tricuspid node
B. Mitral node
C. Pulmonary node
D. Sinoatrial node

21. The internal structure of the heart consists of __ chambers and___ _____ valves.

22. The upper chambers of the heart are called ____, while the lower chambers are called _____.

23. The ____ is responsible for generating the electrical signal that spreads throughout the heart and stimulates the chambers to contract.

24. The __ valve is located between the right atrium and the right ventricle.

25. The __ valve is located between the left atrium and the left ventricle.

26. The __ valve prevents backflow of blood from the pulmonary trunk into the right ventricle.

27. The __ valve prevents backflow of blood from the aorta into the left ventricle.

28. The tricuspid valve has __ cusps, while the mitral valve has __ cusps.

29. The __ layer of the heart is responsible for the heart's pumping action.

30. The apex of the heart is tilted towards the __ side of the body.

31. The epicardium is the __ layer of the heart.

32. The pericardium is a double layered sac that encloses the heart and the roots of the great vessels. True or false?

33. The heart pumps around __ litres of blood in a day throughout the body.

34. The heart is situated at the centre of the chest and points slightly towards the __.

35. The heart measures __ x __ x __ cm and weighs ~310 g (males) and ~255 g (females).

36. The __ is the thickest layer of the heart and consists of tightly packed cardiac muscle fibers.

37. The __ valve is located between the left ventricle and the ascending aorta.

38. The __ valve is located between the right ventricle and the pulmonary trunk.

39. The four chambers of the heart are the right atrium, left atrium, right ventricle, and __.

40. The __ is the innermost layer of the heart and lines the inside of the heart chambers.

41. What are the three veins that play an important role in the cardiovascular system?

A. Superior vena cava, inferior vena cava, and pulmonary veins
B. Superior vena cava, inferior vena cava, and aortic veins
C. Superior vena cava, inferior vena cava, and coronary veins
D. Superior vena cava, inferior vena cava, and jugular veins

42. What is the function of the superior vena cava?

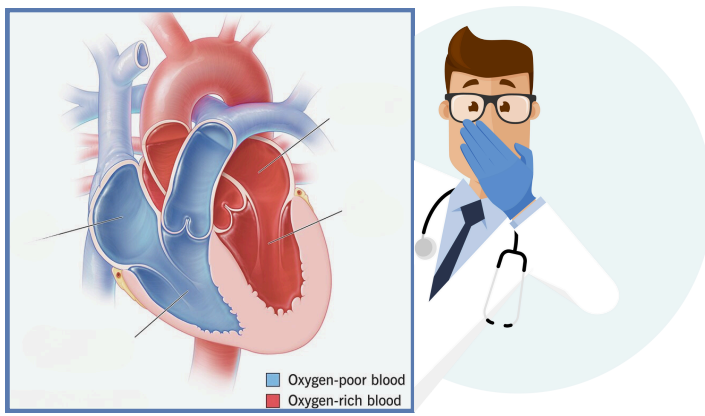
A. To carry oxygen-rich blood from the lungs to the heart
B. To carry oxygen-poor blood from the lower body to the heart
C. To carry oxygen-rich blood from the heart to the rest of the body
D. To carry oxygen-poor blood from the upper body to the heart

43. What is the function of the inferior vena cava?

A. To carry oxygen-rich blood from the lungs to the heart
B. To carry oxygen-poor blood from the lower body to the heart
C. To carry oxygen-rich blood from the heart to the rest of the body
D. To carry oxygen-poor blood from the upper body to the heart

44. What is the function of the pulmonary veins?

A. To carry oxygen-rich blood from the lungs to the heart
B. To carry oxygen-poor blood from the lower body to the heart
C. To carry oxygen-rich blood from the heart to the rest of the body
D. To carry oxygen-poor blood from the upper body to the heart

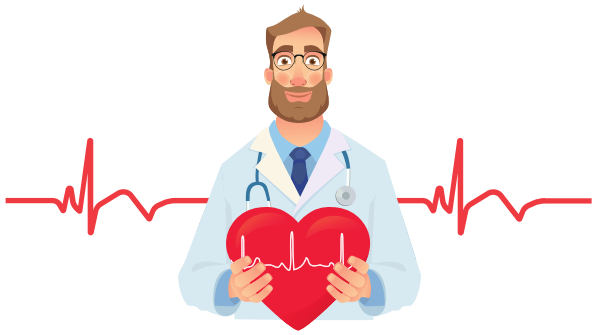


45. What are the four chambers of the heart?
A. Right atrium, left atrium, right ventricle, left ventricle
B. Superior vena cava, inferior vena cava, pulmonary veins, aortic veins
C. Sinoatrial node, atrioventricular node, bundle of His, Purkinje fibers
D. Tricuspid valve, pulmonary valve, mitral valve, aortic valve

46. What are the two atrioventricular valves?
A. Tricuspid and mitral valves
B. Pulmonary and aortic valves
C. Bicuspid and tricuspid valves
D. Mitral and aortic valves

47. What is the function of the tricuspid valve?
A. To prevent blood from flowing back into the left atrium
B. To prevent blood from flowing back into the right atrium
C. To prevent blood from flowing back into the left ventricle
D. To prevent blood from flowing back into the right ventricle

48. What is the function of the mitral valve?
A. To prevent blood from flowing back into the left atrium
B. To prevent blood from flowing back into the right atrium
C. To prevent blood from flowing back into the left ventricle
D. To prevent blood from flowing back into the right ventricle



49. What is the function of the aortic valve?
A. To prevent blood from flowing back into the left atrium
B. To prevent blood from flowing back into the right atrium
C. To prevent blood from flowing back into the left ventricle
D. To prevent blood from flowing back into the right ventricle

50. What is the function of the pulmonary valve?
A. To prevent blood from flowing back into the left atrium
B. To prevent blood from flowing back into the right atrium
C. To prevent blood from flowing back into the left ventricle
D. To prevent blood from flowing back into the right ventricle

51. Which chamber of the heart receives deoxygenated blood from the body?
A. Left atrium
B. Right atrium
C. Left ventricle
D. Right ventricle

52. What is the correct order of the cardiac cycle?
A. Ventricular systole, atrial systole, ventricular diastole, atrial diastole
B. Atrial systole, ventricular systole, atrial diastole, ventricular diastole
C. Ventricular systole, atrial diastole, ventricular diastole, atrial systole
D. Atrial diastole, ventricular diastole, atrial systole, ventricular systole

53. Which of the following valves separates the left atrium and left ventricle?

A. Aortic valve
B. Tricuspid valve
C. Mitral valve
D. Pulmonary valve

54. What is the function of the SA node in the heart?

A. To generate an electrical signal that spreads throughout the heart
B. To pump blood out to the body and lungs
C. To regulate blood flow through the chambers
D. To receive blood from the body and lungs

55. What is the thickest layer of the heart?

A. Epicardium
B. Endocardium
C. Myocardium
D. Pericardium

56. What is the function of the pericardium?

A. To pump blood out to the body and lungs
B. To regulate blood flow through the chambers
C. To generate an electrical signal that spreads throughout the heart
D. To protect the heart and keep it in place within the chest cavity

57. Which chamber of the heart pumps blood through the tricuspid valve into the right ventricle?

A. Left atrium
B. Right atrium
C. Left ventricle
D. Right ventricle

58. What is the name of the condition in which excess pericardial fluid compromises the heart's ability to pump blood?

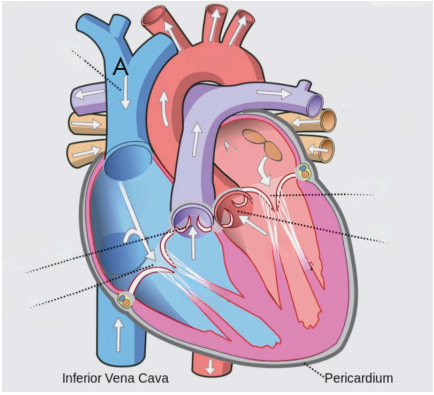
A. Aortic stenosis
B. Ventricular fibrillation
C. Pericardial effusion
D. Myocardial infarction

59. What is the name of the valve located between the left atrium and left ventricle?

A. Aortic valve
B. Tricuspid valve
C. Mitral valve
D. Pulmonary valve

60. Which of the following is responsible for generating an electrical signal that spreads throughout the heart and stimulates the chambers to contract in a coordinated manner?

A. Aortic valve
B. Tricuspid valve
C. Mitral valve
D. SA node



61. Which of the following is the definition of preload?
A. The force required to eject blood from the ventricles
B. The amount of ventricular stretch before contraction
C. The resistance the heart must overcome to eject blood
D. The amount of blood ejected from the ventricles per beat

62. What is the definition of afterload?
A. The force required to eject blood from the ventricles
B. The amount of ventricular stretch before contraction
C. The resistance the heart must overcome to eject blood
D. The amount of blood ejected from the ventricles per beat

63. Which of the following is the definition of contractility?
A. The force required to eject blood from the ventricles
B. The amount of ventricular stretch before contraction
C. The resistance the heart must overcome to eject blood
D. The strength of the heart's contractions

64. Which of the following factors can affect preload?
A. Blood volume
B. Arterial resistance
C. Heart rate
D. All of the above

65. Which of the following factors can affect afterload?
A. Blood volume
B. Arterial resistance
C. Heart rate
D. All of the above

66. Those perky Purkinje fibers are responsible for _____ the ventricles of the heart.

67. The bundle branches located in the ventricular septum are responsible for _____ the electrical signal in the ventricles.

68. Bachmann's bundle is responsible for _____ the electrical signal between the atria.

69. The _____ fibers are specialized muscle fibers that conduct impulses throughout the heart.

70. The _____ bundle is responsible for carrying the electrical signal from the right atrium to the left atrium.

71. The _____ fibers are located in the walls of the ventricles and transmit the electrical signal rapidly and efficiently.

72. _____ is the name of the structure that connects the atria and allows for coordinated contraction.

73. The _____ fibers are responsible for rapid and efficient depolarization of the ventricles.

74. The bundle branches in the ventricular septum are responsible for _____ the electrical signal to the left and right ventricles.

75. The _____ fibers are specialized muscle fibers that conduct electrical impulses rapidly and efficiently.

76. The _____ bundle is located in the interatrial septum and conducts electrical impulses from the right atrium to the left atrium.

77. The _____ fibers are responsible for the rapid and coordinated contraction of the ventricles.

78. The bundle branches in the ventricular septum _____ the electrical signal to the left and right ventricles.

79. Bachmann's bundle is responsible for _____ the electrical signal between the two atria.

80. Abnormal impulses can cause _____ to occur in the EKG.

81. _____ is an irregular heart rhythm that can be caused by abnormal electrical impulses in the heart.

82. The term _____ refers to the spread of electrical activity in the heart that is not occurring in the normal way.

83. When the electrical impulses in the heart are moving too slowly, this is known as _____.

84. The _____ is a region of the heart that initiates the electrical impulses that cause the heart to beat.

85. _____ is an abnormal heart rhythm that is characterized by a rapid heartbeat.

86. When there is an absence of electrical activity in the heart, this is known as _____.

87. A _____ is a device that is implanted in the chest to help regulate the heartbeat.

88. _____ is an abnormal heart rhythm in which the heart beats too slowly.

89. An _____ is a brief episode of abnormal heart rhythm that can cause symptoms such as palpitations or dizziness.

90. The right ventricle pumps blood through the _____ into the pulmonary trunk to be oxygenated in the lungs.

Answers

2. Obtaining a Rhythm Strip

1. The 12-lead ECG is a _____ tool used to evaluate the electrical activity of the heart.

2. The ECG records the _____ of each heartbeat.

3. The _____ is the first wave of the ECG, representing atrial depolarization.

4. The _____ represents ventricular depolarization.

5. The _____ represents ventricular repolarization.

6. The _____ is the time interval between the start of atrial depolarization and the start of ventricular depolarization.

7. The _____ is the time interval between the start of ventricular depolarization and the end of ventricular repolarization.

8. The _____ is a measure of the heart rate, calculated by dividing 60 seconds by the duration of the R-R interval.

9. A _____ is a deviation from the normal sinus rhythm.

10. An _____ is a rapid heart rate that can occur in response to stress, exercise, or certain medications.

11. A _____ is a slow heart rate that can be caused by a variety of factors, including medication side effects.

12. _____ occurs when the heart beats too fast and doesn't allow enough time for the ventricles to fill with blood.

13. _____ occurs when the heart beats too slow and doesn't pump enough blood to the body.

14. The _____ is a standard method of recording the ECG, using 10 electrodes placed on the patient's chest and limbs.

15. The _____ is a graphical representation of the electrical activity of the heart over time.

16. The _____ is a measure of the electrical activity of the heart between two points on the ECG. 17. The _____ is a measure of the duration of a wave or interval on the ECG.

18. The _____ is a measure of the angle at which the heart's electrical axis is tilted.

19. The _____ is a measure of the degree of electrical activity in the heart during repolarization.

20. The _____ is a measure of the difference in electrical potential between two points on the ECG.

21. What is the role of leads in EKG interpretation?
A. To monitor blood pressure
B. To measure the electrical activity of the heart
C. To assess lung function
D. To monitor oxygen saturation

22. How many leads are typically used in a standard EKG?
A. 4
B. 6
C. 8
D.12

23. What is the difference between a 12-lead EKG and a 3-lead EKG?
A. The number of leads used
B. The duration of the recording
C. The location of the leads on the body
D. The type of electrical activity measured

24. What is the purpose of lead placement in EKG interpretation?
    A. To measure the electrical activity of the heart from different angles
    B. To create a visual representation of the heart's contractions
    C. To assess the heart's blood flow
    D. To monitor the patient's breathing

25. What is the difference between the P wave and the QRS complex in an EKG?
    A. The P wave represents atrial depolarization, while the QRS complex represents ventricular depolarization
    B. The P wave represents ventricular depolarization, while the QRS complex represents atrial depolarization
    C. The P wave represents the repolarization of the atria, while the QRS complex represents the repolarization of the ventricles
    D. The P wave represents the depolarization of the SA node, while the QRS complex represents the depolarization of the AV node

26. What is the normal duration of the PR interval in an EKG?
    A. 0.06-0.12 seconds
    B. 0.12-0.20 seconds
    C. 0.20-0.30 seconds
    D. 0.30-0.40 seconds

27. What is the significance of ST segment changes in an EKG?
    A. They indicate atrial fibrillation
    B. They suggest a possible myocardial infarction
    C. They indicate a ventricular arrhythmia
    D. They suggest a possible conduction block

28. What is the normal duration of the QRS complex in an EKG?
    A. 0.06-0.12 seconds
    B. 0.12-0.20 seconds
    C. 0.20-0.30 seconds
    D. 0.30-0.40 seconds

29. What is the purpose of the T wave in an EKG?
    A. To represent atrial repolarization
    B. To represent ventricular repolarization
    C. To indicate the presence of an arrhythmia
    D. To indicate the presence of a conduction block

30. What is the significance of a prolonged QT interval in an EKG?
    A. It suggests a possible myocardial infarction
    B. It indicates a ventricular arrhythmia
    C. It suggests a possible conduction block
    D. It indicates a possible electrolyte imbalance

31. What is the purpose of EKG monitoring?
    A. To assess lung function
    B. To monitor oxygen saturation
    C. To detect changes in the electrical activity of the heart
    D. To measure blood pressure

32. What is the difference between sinus rhythm and atrial fibrillation?

A. Sinus rhythm is a regular rhythm, while atrial fibrillation is
B. Sinus rhythm is an irregular rhythm, while atrial fibrillation is
C. Sinus rhythm is a fast rhythm, while atrial fibrillation is slow
D. Sinus rhythm is a slow rhythm, while atrial fibrillation is fast

33. What is the significance of a peaked T wave in an EKG?

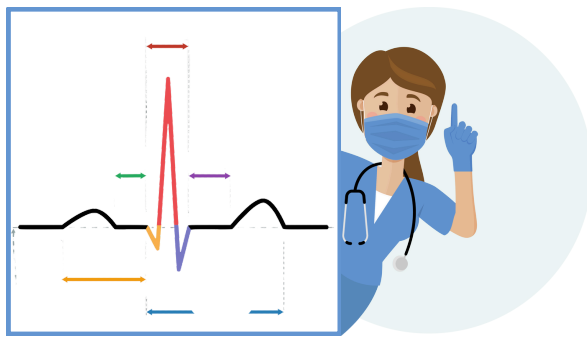
A. It suggests hyperkalemia
B. It indicates a conduction block
C. It suggests hypokalemia
D. It indicates a ventricular arrhythmia

34. What is the significance of a widened QRS complex in an EKG?

A. It suggests a possible myocardial infarction
B. It indicates a ventricular arrhythmia
C. It suggests a possible conduction block
D. It indicates a possible electrolyte imbalance

35. What is the significance of a flat or inverted T wave in an EKG?

A. It indicates a possible myocardial infarction
B. It suggests a possible electrolyte imbalance
C. It suggests a possible conduction block
D. It indicates a ventricular arrhythmia



36. What is the significance of a prolonged PR interval in an EKG?

A. It suggests a possible myocardial infarction
B. It indicates a possible electrolyte imbalance
C. It suggests a possible conduction block
D. It indicates a ventricular arrhythmia

37. What is the difference between the cardiac cycle and the EKG tracing?

A. The cardiac cycle represents the mechanical events of the heart, while the EKG tracing represents the electrical events

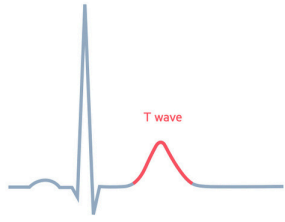
B. The cardiac cycle represents the electrical events of the heart, while the EKG tracing represents the mechanical events

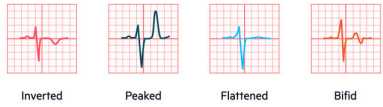
C. The cardiac cycle represents the blood flow through the heart, while the EKG tracing represents the heart's oxygen levels

D. The cardiac cycle represents the oxygenation of the blood, while the EKG tracing represents the blood pressure

38. What is the significance of a decreased ST segment in an EKG?

A. It suggests a possible myocardial infarction
B. It indicates a possible electrolyte imbalance
C. It suggests a possible conduction block
D. It indicates a ventricular arrhythmia





39. What is the significance of a prolonged QTc interval in an EKG?
A. It suggests a possible myocardial infarction
B. It indicates a ventricular arrhythmia
C. It suggests a possible conduction block
D. It indicates a possible electrolyte imbalance

40. What is the purpose of measuring the QTc interval in an EKG?
A. To assess lung function
B. To monitor oxygen saturation
C. To detect changes in the electrical activity of the heart
D. To measure blood pressure

41. What is the purpose of the "a" leads in an EKG?

A. To detect the electrical activity of the atria
B. To detect the electrical activity of the ventricles
C. To monitor the patient's heart rate
D. To measure blood pressure

42. Which lead is typically used as the "reference" lead in a leadwire system?
A. Lead I
B. Lead II
C. Lead III
D. Lead aVR

43. What is the name of the lead that is placed on the left leg in a leadwire system?

A. Lead I
B. Lead II
C. Lead III
D. Lead aVF

44. Which lead is typically used to monitor the electrical activity of the inferior wall of the heart?

A. Lead I
B. Lead II
C. Lead III
D. Lead aVL

45. Which of the following leadwire systems is commonly used in a 12-lead EKG?

A. Einthoven's triangle
B. Wilson's central terminal
C. Goldberger's augmented leads
D. Mason-Likar lead system

46. Which lead is typically used to monitor the electrical activity of the lateral wall of the heart?

A. Lead I
B. Lead II
C. Lead III
D. Lead aVL

47. What is the name of the lead that is placed on the right arm in a leadwire system?

A. Lead I
B. Lead II
C. Lead III
D. Lead aVR

48. What is the name of the lead that is placed on the left arm in a leadwire system?

A. Lead I
B. Lead II
C. Lead III
D. Lead aVL

49. Which of the following leadwire systems is commonly used in a 3- lead EKG?

A. Einthoven's triangle
B. Wilson's central terminal
C. Goldberger's augmented leads
D. Mason-Likar lead system

50. What is the name of the lead that is placed on the right leg in a leadwire system?

A. Lead I
B. Lead II
C. Lead III
D. Lead aVF

51. Which lead is typically used to monitor the electrical activity of the anterior wall of the heart?

A. Lead I
B. Lead II
C. Lead III
D. V1

52. Which of the following leadwire systems is commonly used in a 5- lead EKG?

A. Einthoven's triangle
B. Wilson's central terminal
C. Goldberger's augmented leads
D. Mason-Likar lead system

53. What is the name of the lead that is placed on the right side of the chest in a leadwire system?

A. V1
B. V2
C. V3
D. V4

54. Which lead is typically used to monitor the electrical activity of the posterior wall of the heart?

A. V1
B. V2
C. V3
D. V4

55. What is the name of the lead that is placed on the left side of the chest in a leadwire system?

A. V1
B. V2
C. V3
D. V4

56. Placement of the electrodes for the EASI system includes:

A. E lead: lower part of the sternum at the level of the fifth intercostal space
B.A lead: left midaxillary line at the level of the fifth intercostal space
C. S lead: upper part of the sternum
D.All of above

57. Placement of the electrodes for the EASI system includes:

A. E lead: lower part of the sternum at the level of the fifth intercostal space
B.A lead:upper part of the sternum
C. S lead: left midaxillary line at the level of the fifth intercostal space
D.All of above

58. The first step in preparing the patient's skin is to :

A. Clip this hair with clippers or scissors
B. Dry it thoroughly
C. Wash their chest with soap and water
D. each site should be briskly rubbed with the rough patch on the back of the electrode

59. To print the patient's cardiac rhythm, press the record control on the monitor. Label the rhythm strip with :

A. The date
B. The time
C. The patient's name
D. All of above

60. Which lead is typically used to monitor the electrical activity of the lateral wall of the heart?

A. V5
B. V6
C. I
D. aVL

61. The EASI system is used to obtain _____ lead ECG tracings.

62. The EASI system is based on the _____ lead system.

63. The EASI system's leads are placed on the patient's _____, _____, and _____.

64. Lead EASI-AVR is obtained by placing electrodes on the_____ _____ and _____.

65. Lead EASI-AVL is obtained by placing electrodes on the_____ _____ and _____.

67. The EASI system is useful for detecting _____.

68. The EASI system is particularly useful for detecting _____ arrhythmias.

69. The EASI system stands for _____, _____, _____, and _____.

70. The EASI system is less useful for detecting _____ arrhythmias.

71. Observing the cardiac rhythm involves assessing the _____, _____, and _____ of the ECG waveform.

72. The _____ is the most reliable indicator of heart rate on the ECG.

73. A regular rhythm on the ECG suggests an _____ source of depolarization.

74. An irregular rhythm on the ECG suggests a _____ source of depolarization.

75. The _____ represents atrial depolarization on the ECG.

76. The _____ represents ventricular depolarization on the ECG.

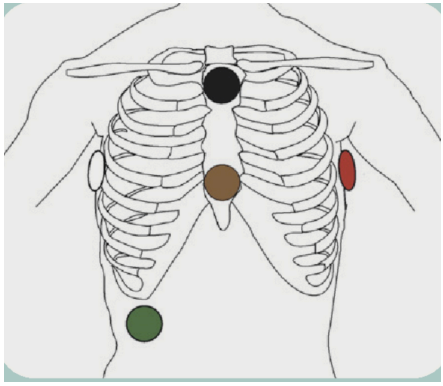
77. The _____ represents ventricular repolarization on the ECG.

78. A _____ is a type of arrhythmia characterized by a rapid, irregular heartbeat.

79. A _____ is a type of arrhythmia characterized by a slow heartbeat.

80. Which of the following is not a lead in the EASI system?
A. EASI-AVR
B. EASI-AVL
C. EASI-AVF
D. EASI-V1

81. The EASI system is based on which lead system?
A. Wilson's
B. Einthoven's
C. Goldberger's
D. Lewis's



82. Which lead in the EASI system is useful for detecting atrial arrhythmias?

A. EASI-AVR
B. EASI-AVL
C. EASI-AVF
D. All of the above

83. The R-R interval is the most reliable indicator of which of the following?

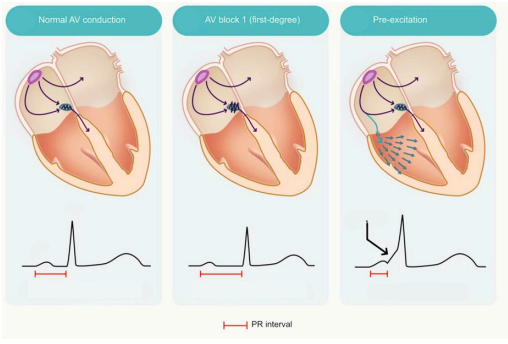
A. Heart rate
B. Rhythm
C. Morphology
D. None of the above

84. Which of the following represents ventricular repolarization on the ECG?

A. P wave
B. QRS complex
C. T wave
D. U wave

85. What does EASI stand for in the EASI system?

A. Electrocardiogram, Arterial, Systemic, Infarction
B. Einthoven's, Augmented, Vector, Inferior
C. Electrode, Artery, Ventricle, Inferior
D. Echocardiogram, Atrial, Systemic, Infarction



86. Which lead in the EASI system is obtained by placing electrodes on the left arm and left leg?

A. EASI-AVR
B. EASI-AVL
C. EASI-AVF
D. EASI-V1

87. Which of the following is a reliable indicator of heart rate on the ECG?

A. P wave
B. QRS complex
C. T wave
D. R-R interval

88. Which type of arrhythmia is the EASI system particularly useful for detecting?

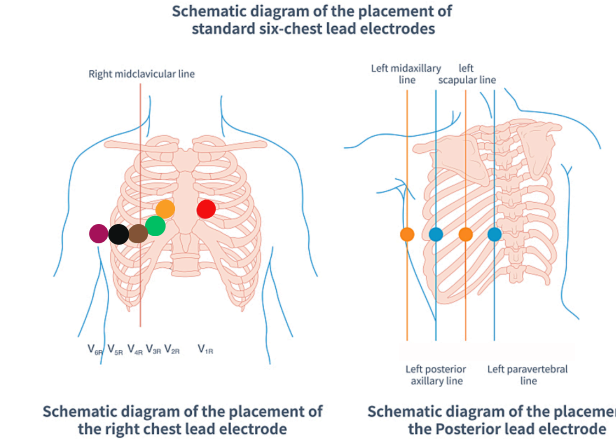
A. Ventricular fibrillation
B. Atrial fibrillation
C. Bradycardia
D. Tachycardia

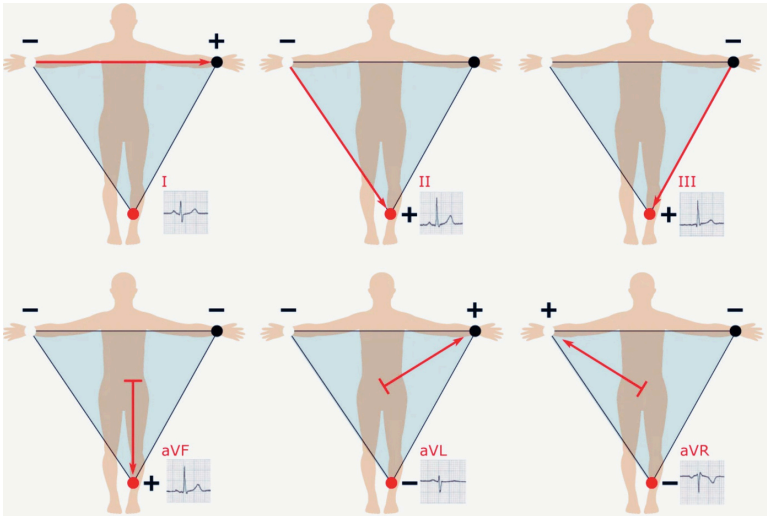
89. What does observing the morphology of the ECG waveform involve?

A. Assessing the rate of the heart
B. Assessing the rhythm of the heart
C. Assessing the shape and size of the ECG waveform
D. Assessing the source of depolarization in the heart

90. Which of the following is not a common problem when monitoring EKG readings?

A. Electrical interference
B. Incorrect electrode placement
C. Movement artifact
D. Normal sinus rhythm





Answers

3. Interpreting a Rhythm Strip

1. What does the P wave represent on an EKG?
    a. Depolarization of the atria
    b. Repolarization of the atria
    c. Depolarization of the ventricles
    d. Repolarization of the ventricles

2. What is the normal duration range for the PR interval on an EKG?
    a. 0.06-0.10 seconds
    b. 0.10-0.20 seconds
    c. 0.20-0.30 seconds
    d. 0.30-0.40 seconds

3. Which wave represents the depolarization of the ventricles?
    a. P wave
    b. QRS complex
    c. T wave
    d. U wave

4. What is the normal duration range for the QRS complex on an EKG?
    a. 0.06 - 0.10 seconds
    b. 0.10 - 0.20 seconds
    c. 0.20 - 0.30 seconds
    d. 0.30 - 0.40 seconds

5. What does an abnormally tall and peaked T wave on an EKG suggest?

a. Hyperkalemia
b. Hypokalemia
c. Hypocalcemia
d. Hypercalcemia

6. What does a prolonged PR interval on an EKG suggest?

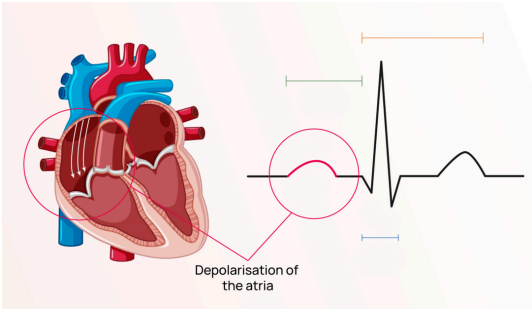
a. Atrioventricular block
b. Ventricular tachycardia
c. Atrial fibrillation
d. Ventricular fibrillation

7. What does an abnormally wide QRS complex on an EKG suggest?

a. Bundle branch block
b. Sinus bradycardia
c. Sinus tachycardia
d. Atrial fibrillation

8. What does an absence of a P wave on an EKG suggest?

a. Atrial fibrillation
b. Atrial flutter
c. Ventricular tachycardia
d. Ventricular fibrillation



9. What is the normal duration range for the QT interval on an EKG?
    a. 0.20 - 0.40 seconds
    b. 0.40 - 0.60 seconds
    c. 0.60 - 0.80 seconds
    d. 0.80 - 1.00 seconds

10. What does an inverted T wave on an EKG suggest?
    a. Ischemia
    b. Hypertrophy
    c. Infarction
    d. Bundle branch block

11. What does a shortened PR interval on an EKG suggest?
    a. Wolff-Parkinson-White syndrome
    b. Atrioventricular block
    c. Sinus tachycardia
    d. Sinus bradycardia

12. What does a prolonged QT interval on an EKG suggest?
    a. Ventricular tachycardia
    b. Hypocalcemia
    c. Hypokalemia
    d. Congenital long QT syndrome

13. What does a U wave on an EKG represent?
    a. Repolarization of the ventricles
    b. Repolarization of the atria
    c. Depolarization of the ventricles
    d. Depolarization of the atria

14. What is the normal amplitude range for the QRS complex on an EKG?
   a. 0.5 - 2.0 mV
   b. 2.0 - 5.0 mV
   c. 5.0 - 10.0 mV
   d. 10.0 - 20.0 mV

15. What does a wide, bizarre QRS complex on an EKG suggest?
   a. Ventricular tachycardia
   b. Atrial fibrillation
   c. Atrioventricular block
   d. Bundle branch block

16. What does a shortened QT interval on an EKG suggest?
   a. Hyperkalemia
   b. Hypokalemia
   c. Hypercalcemia
   d. Hypocalcemia

17. What does a prolonged ST segment on an EKG suggest?
   a. Myocardial ischemia
   b. Myocardial infarction
   c. Atrial fibrillation
   d. Ventricular tachycardia

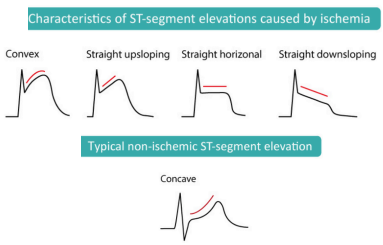
18. What does a biphasic T wave on an EKG suggest?
   a. Myocardial infarction
   b. Hypokalemia
   c. Hyperkalemia
   d. Hypocalcemia

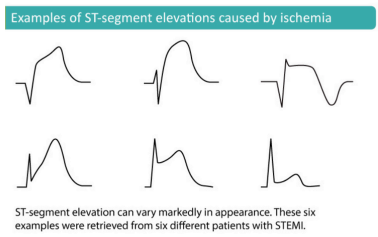
19. What does a flat T wave on an EKG suggest?
    a. Hypertrophy
    b. Ischemia
    c. Infarction
    d. Bundle branch block

20. What does an ST segment depression on an EKG suggest?
    a. Myocardial ischemia
    b. Myocardial infarction
    c. Atrial fibrillation
    d. Ventricular fibrillation

21. What does the ST segment represent in EKG interpretation?
    a. The time between ventricular depolarization and repolarization
    b. The time between atrial depolarization and ventricular depolarization
    c. The time between ventricular depolarization and atrial repolarization
    d. The time between atrial depolarization and ventricular repolarization

22. What is the normal duration of the ST segment?
    a. 0.04 to 0.12 seconds
    b. 0.08 to 0.12 seconds
    c. 0.14 to 0.20 seconds
    d. 0.20 to 0.26 seconds





23. What does the T wave represent in EKG interpretation?
a. The time between ventricular depolarization and repolarization
b. The time between atrial depolarization and ventricular depolarization
c. The time between ventricular depolarization and atrial repolarization
d. The time between atrial depolarization and ventricular repolarization

24. What is the normal direction of the T wave in leads I, II, and V3-V6?
a. Positive
b. Negative
c. Biphasic
d. Absent

25. What does the QT interval represent in EKG interpretation?
a. The time between ventricular depolarization and repolarization
b. The time between atrial depolarization and ventricular depolarization
c. The time between ventricular depolarization and atrial repolarization
d. The time between atrial depolarization and ventricular repolarization

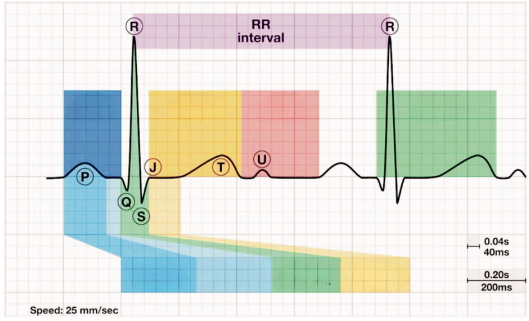
26.What is the normal duration of the T wave?
a. 0.04 to 0.12 seconds
b. 0.08 to 0.12 seconds
c. 0.14 to 0.20 seconds
d. 0.20 to 0.26 seconds

27. What is the normal duration of the QT interval?
    a. Less than 0.30 seconds
    b. 0.30 to 0.35 seconds
    c. 0.35 to 0.40 seconds
    d. Greater than 0.40 seconds

28. What factors can cause prolongation of the QT interval?
    a. Hypocalcemia and hypokalemia
    b. Hypercalcemia and hyperkalemia
    c. Hypoxia and hypercapnia
    d. Hypoglycemia and hyperglycemia

29. What does the U wave represent in EKG interpretation?
    a. Atrial repolarization
    b. Ventricular depolarization
    c. Ventricular repolarization
    d. A late repolarization of the Purkinje fibers

30. What is the normal direction of the U wave in EKG interpretation?
    a. Positive
    b. Negative
    c. Biphasic
    d. Absent



Answers

4. Obtaining a 12-Lead ECG

1. What is Transtelephonic cardiac monitoring?
   A. A cardiac test performed in a hospital
   B. A method of remote cardiac monitoring using a small device
   C. A type of surgery to repair heart valves
   D. A medication used to treat heart disease

2. How does Transtelephonic cardiac monitoring work?
   A. It requires a patient to be in the hospital
   B. It involves placing electrodes on the chest and connecting them to a small device
   C. It requires surgery to implant a device in the heart
   D. It involves taking medication to regulate heart rhythms

3. What is the purpose of Transtelephonic cardiac monitoring?
   A. To diagnose heart disease
   B. To monitor heart rhythms in patients with heart disease
   C. To treat heart disease
   D. To prevent heart disease

4. How long can a patient use Transtelephonic cardiac monitoring?
   A. It is a one-time test
   B. It can be used for a few days
   C. It can be used for several weeks or months
   D. It can be used for years

5. What are some benefits of Transtelephonic cardiac monitoring?
   A. It is non-invasive and convenient
   B. It can detect abnormal heart rhythms that may not be detected during a regular office visit
   C. It can provide peace of mind for patients with heart disease
   D. All of the above

6. What type of patients may benefit from Transtelephonic cardiac monitoring?
   A. Patients with a history of heart disease
   B. Patients with symptoms of heart disease
   C. Patients who have undergone heart surgery
   D. All of the above

7. Can Transtelephonic cardiac monitoring replace traditional in-person visits with a doctor?
   A. Yes, it can completely replace in-person visits
   B. No, it cannot replace in-person visits, but it can complement them
   C. No, it is only used in emergency situations
   D. No, it is not effective for monitoring heart rhythms

8. What should a patient do if they experience symptoms such as chest pain or shortness of breath while using Transtelephonic cardiac monitoring?
   A. Ignore the symptoms, as they are likely unrelated to the monitoring
   B. Contact their doctor immediately
   C. Stop using the monitoring device
   D. Wait until their next in-person visit to discuss the symptoms with their doctor

9. Are there any risks associated with Transtelephonic cardiac monitoring?
   A. No, it is completely safe
   B. Yes, it can cause infections or skin irritation at the electrode site
   C. Yes, it can interfere with other electronic devices
   D. Yes, it can cause heart rhythm abnormalities

10. Is Transtelephonic cardiac monitoring covered by insurance?
   A. Yes, it is covered by most insurance plans
   B. No, it is not covered by insurance
   C. It depends on the patient's specific insurance plan
   D. It is only covered in emergency situations

11. How do leads work in an EKG?
   A. They convert electrical signals to mechanical signals
   B. They convert mechanical signals to electrical signals
   C. They measure magnetic waves
   D. They measure sound waves

12. What is the electrical axis in an EKG?
   A. The direction of the electrical currents flowing through the heart
   B. The rate at which the heart beats
   C. The strength of the heart's contractions
   D. The electrical resistance of the heart

13. What is the purpose of monitoring the limb leads in an EKG?

A. To detect arrhythmias
B. To measure the electrical activity of the heart in the frontal plane
C. To measure the electrical activity of the heart in the horizontal plane
D. To measure the blood pressure of the patient

14. Which limb lead is used to determine the electrical axis of the heart?

A. Lead I
B. Lead II
C. Lead III
D. Lead aVR

15. What is the normal range for the electrical axis in an EKG?

A. -30 to +90 degrees
B. -90 to +30 degrees
C. -180 to +180 degrees
D. 0 to 360 degrees

16. What is the purpose of the chest leads in an EKG?

A. To measure the electrical activity of the atria
B. To measure the electrical activity of the ventricles
C. To measure the oxygen saturation of the blood
D. To measure the blood pressure of the patient

17. The V1 electrode should be placed in the _____ intercostal space at the right sternal border.

18. The V2 electrode should be placed in the _____ intercostal space at the left sternal border.

19. The V4 electrode should be placed at the _____ intercostal space in the midclavicular line.

20. The V3 electrode should be placed midway between V2 and V4 at the _____ intercostal space.

21. The V6 electrode should be placed at the _____ intercostal space in the midaxillary line.

22. The V5 electrode should be placed at the _____ intercostal space in the anterior axillary line.

23. Signal-averaged ECG (SAECG) is a technique used to detect__ _____ signals in the ECG.

24. SAECG is especially useful in diagnosing _____.

25. SAECG is often used in patients with _____.

26. Electrode placement for a signal-averaged ECG requires ____ electrodes to be placed on the patient's chest.

27. The electrodes used for a signal-averaged ECG are typically ____ electrodes.

28. For a signal-averaged ECG, the electrodes are placed at the standard precordial positions, which include _____.

29. In addition to the standard precordial positions, a signal-averaged ECG may require the placement of electrodes on the patient's _____.

30. The signal-averaged ECG is used to assess _____.

31. The signal-averaged ECG is particularly useful for detecting _____.

32. The signal-averaged ECG is typically performed in patients who have had a(n) _____.

33. A signal-averaged ECG may also be used to evaluate patients with _____.

34. The signal-averaged ECG is a type of _____.

35. The signal-averaged ECG is a non-invasive test that uses electrodes to measure the electrical activity of the _____.

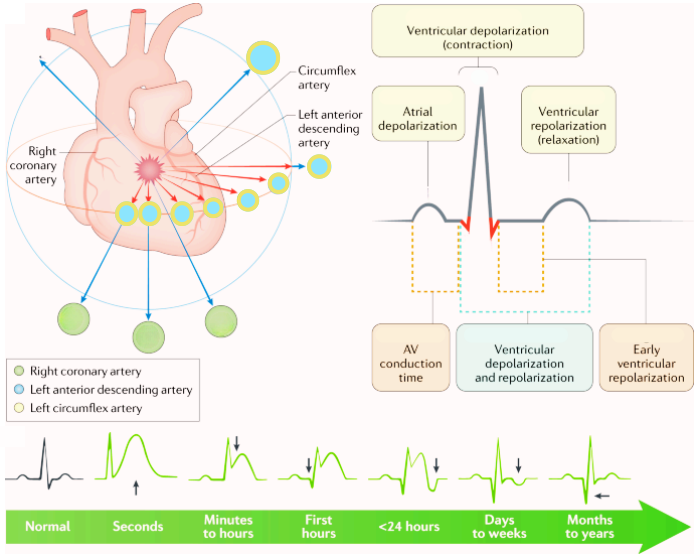
36. Signal-averaged ECG is used to detect _____ signals in the ECG.

37. Signal-averaged ECG is primarily used to detect _____.

38. Signal-averaged ECG is performed by recording multiple _____ signals and averaging them together.

39. Signal-averaged ECG is often used in patients with_____ _____ disease.

40. Signal-averaged ECG can be used as an adjunct to_____ _____ testing.



Answers

5. Interpreting a 12-Lead ECG

1.The electrical axis of the heart is the direction of the overall electrical activity of the heart during depolarization and can be measured using a(n) _____.

2. To determine the electrical axis of the heart, one must evaluate the net _____ and _____ of the QRS complexes in leads I and aVF.

3. If the QRS complex in lead I is predominantly _____ and the QRS complex in lead aVF is predominantly _____, the electrical axis of the heart is normal.

4. If the QRS complex in lead I is predominantly _____ and the QRS complex in lead aVF is predominantly _____, the electrical axis of the heart is left axis deviation.

5. If the QRS complex in lead I is predominantly _____ and the QRS complex in lead aVF is predominantly _____, the electrical axis of the heart is right axis deviation.

6. The electrical axis of the heart is a reflection of the_____ _____ of the heart during depolarization.

7. The electrical axis of the heart can be an important diagnostic tool in identifying _____ and other cardiac conditions.

8. A normal electrical axis of the heart is between _____ and _____ degrees.

9. If the QRS complex in lead I and lead aVF are both predominantly _____, the electrical axis of the heart is indeterminate.

10. The electrical axis of the heart is influenced by factors such as _____, _____, and _____.

11. Which of the following is a disorder affecting a 12-lead ECG?
   a. Asthma
   b. Migraine
   c. Angina
   d. Diabetes

12. What is angina?
   a. A type of arrhythmia
   b. A type of heart attack
   c. A type of heart murmur
   d. Chest pain caused by reduced blood flow to the heart

13. What is bundle-branch block?
   a. A type of arrhythmia
   b. A type of heart attack
   c. A type of heart murmur
   d. Chest pain caused by reduced blood flow to the heart

14. What is myocardial infarction?
   a. A type of arrhythmia
   b. A type of heart attack
   c. A type of heart murmur
   d. Chest pain caused by reduced blood flow to the heart

15. Which of the following is not a symptom of a myocardial infarction?
   a. Chest pain or discomfort
   b. Shortness of breath
   c. Nausea or vomiting
   d. Increased appetite

16. What is the most common cause of a myocardial infarction?
   a. Atherosclerosis
   b. High blood pressure
   c. Heart valve disease
   d. Congenital heart defects

17. How is a myocardial infarction diagnosed?
   a. By a physical exam
   b. By a blood test
   c. By an ECG
   d. All of the above

18. Which of the following is a treatment option for a myocardial infarction?
   a. Lifestyle changes
   b. Medications
   c. Surgery
   d. All of the above

19. What is the difference between angina and a myocardial infarction?

a. Angina is less severe than a myocardial infarction
b. Angina is caused by a blockage in the arteries, while a myocardial infarction is caused by a blood clot
c. Angina is a type of arrhythmia, while a myocardial infarction is a type of heart attack
d. There is no difference between the two

20. What is the treatment for bundle-branch block?

a. Lifestyle changes
b. Medications
c. Surgery
d. No treatment is necessary

21. Which of the following is not a risk factor for a myocardial infarction?

a. Smoking
b. High blood pressure
c. Low cholesterol levels
d. Diabetes

22. What is the role of an ECG in the diagnosis of a myocardial infarction?

a. To monitor the heart's electrical activity
b. To detect any abnormalities in the heart's rhythm or structure
c. To measure the blood flow to the heart
d. All of the above

23. What is the primary cause of bundle-branch block?
   a. Genetics
   b. High blood pressure
   c. Coronary artery disease
   d. Heart valve disease

24. What is the treatment for angina?
   a. Medications
   b. Surgery
   c. Lifestyle changes
   d. All of the above

25. What is the difference between a complete and incomplete bundle- branch block?
   a. Incomplete bundle-branch block is less severe than complete bundle-branch block
   b. Complete bundle-branch block affects both sides of the heart, while incomplete bundle-branch block only affects one side
   c. Incomplete bundle-branch block is asymptomatic, while complete bundle-branch block causes symptoms
   d. There is no difference between the two

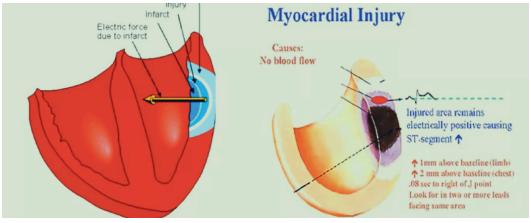
26. What is the role of an ECG in the diagnosis of bundle-branch block?
   a. To monitor the heart's electrical activity
   b. To detect any abnormalities in the heart's rhythm or structure
   c. To measure the blood flow to the heart
   d. None of the above

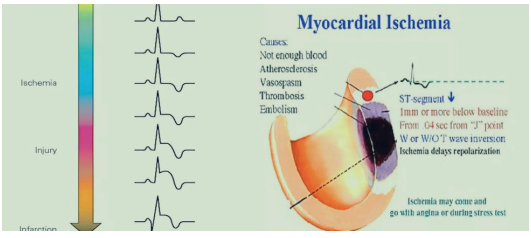
27. What is the most common symptom of angina?
   a. Chest pain or discomfort
   b. Shortness of breath
   c. Nausea or vomiting
   d. Fatigue

28. What is the difference between a STEMI and NSTEMI myocardial infarction?
   a. STEMI is caused by a blood clot completely blocking a coronary artery, while NSTEMI is caused by a partial blockage
   b. NSTEMI is less severe than STEMI
   c. STEMI can be treated with medications, while NSTEMI requires surgery
   d. There is no difference between the two

29. What is the treatment for a bundle-branch block?
   a. Medications
   b. Surgery
   c. Lifestyle changes
   d. No treatment is necessary

30. What is the most common symptom of a myocardial infarction?
   a. Chest pain or discomfort
   b. Shortness of breath
   c. Nausea or vomiting
   d. Fatigue





Answers

6. Sinus Node Arrhythmias

1. Sinus arrhythmia is a variation in the normal rhythm of the heart caused by changes in the rate of impulses generated by the _____ node.

2. Sinus arrhythmia is most commonly seen in _____ patients.

3. A patient with sinus arrhythmia may experience _____ breathing.

4. Sinus arrhythmia can be caused by changes in _____ tone.

5. The diagnosis of sinus arrhythmia is made by reviewing an _____.

6. The hallmark of sinus arrhythmia is a change in the _____ between beats.

7. Sinus arrhythmia is usually _____ and requires no treatment.

8. In sinus arrhythmia, the heart rate _____ during inspiration and _____ during expiration.

9. Sinus arrhythmia is often associated with _____ breathing.

10. Sinus arrhythmia is common in _____ athletes.

11. Sinus arrhythmia can be caused by _____.

12. In a patient with sinus arrhythmia, the _____ may be irregular.

13. Sinus arrhythmia is typically a benign condition that does not require _____.

14. Sinus arrhythmia is a type of _____.

15. Sinus arrhythmia is typically detected on a _____.

16. Sinus bradycardia is defined as a heart rate less than_____ _____ beats per minute.

17. Sinus bradycardia may be caused by _____.

18. Sinus bradycardia is often seen in _____.

19. The ECG for sinus bradycardia will show a _____.

20. Sinus bradycardia may be asymptomatic or may cause symptoms such as _____.

21. Treatment for sinus bradycardia depends on the underlying cause and may include _____.

22. Sinus bradycardia may be a sign of _____.

23. Sinus bradycardia is a common finding in _____.

24. Sinus bradycardia can be differentiated from other bradyarrhythmias by the presence of _____.

25. Sinus bradycardia is not typically a concern unless accompanied by _____.

26 . Sinus tachycardia is a type of cardiac arrhythmia where the heart rate is greater than _____ beats per minute.

27. Sinus tachycardia is characterized by a P wave that is ___ in shape.

28. Sinus tachycardia may result from a variety of factors, including physical activity, ___ stress, or medication.

29. Sinus tachycardia is most commonly seen in ___ patients.

30. Sinus tachycardia is often a normal response to ___ or other physiologic stressors.

31. In patients with sinus tachycardia, the ___ interval is usually normal.

32. Sinus tachycardia is typically ___ in nature.

33. Sinus tachycardia is usually a ___ rhythm.

34. In sinus tachycardia, the ___ interval may be shortened.

35. Treatment for sinus tachycardia is typically directed at the underlying ___ rather than the arrhythmia itself.

36. Sinus tachycardia may occur in response to pain, ___ or fever.

37. Sinus tachycardia may be a sign of ___ or hypovolemia.

38. Patients with sinus tachycardia may experience symptoms such as ___ or lightheadedness.

39. In some cases, sinus tachycardia may be associated with underlying ___ disease.

40. Sinus tachycardia is typically diagnosed based on ___ findings and a patient's clinical history.

41. Sinus arrest is defined as a pause in the normal rhythm of the heart's natural pacemaker, the _____ node.

42. Sinus arrest can lead to a decrease in _____ output and cause symptoms such as dizziness and syncope.

43. Sinus arrest can be caused by various factors including_____ _____, heart disease, and certain medications.

44. The EKG pattern of sinus arrest includes a sudden absence of _____ P-waves.

45. Sinus arrest is diagnosed when the pause lasts for at least _____ seconds on the EKG.

46. Sinus arrest is often asymptomatic and may not require treatment unless it causes _____ symptoms.

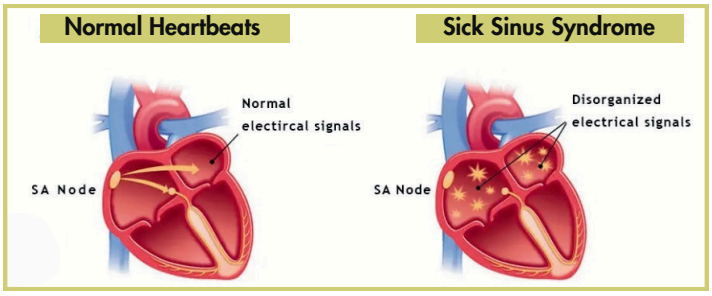
47. Treatment for sinus arrest may include medications to correct underlying _____ imbalances or the use of a pacemaker.

48. In addition to sinus arrest, other types of sinus node dysfunction include _____ and sinus bradycardia.

49. Sinus arrest is a relatively rare condition, occurring in less than _____ of EKGs.

50. Sinus arrest can be a sign of underlying _____ disease and should be evaluated by a healthcare professional.

51. Sick sinus syndrome (SSS) is a _____ disorder that affects the heart's natural pacemaker, the sinoatrial node.



52. SSS can lead to periods of _____ and bradycardia, as well as other irregularities in heart rate and rhythm.

53. The most common symptoms of SSS include _____, fatigue, dizziness, and fainting.

54. Treatment for SSS may include medications to regulate heart rate and rhythm, as well as _____ or other surgical interventions.

55. SSS can occur as a result of _____, degenerative changes in the heart's electrical system, or as a side effect of certain medications.

56. Patients with SSS may experience pauses in heart rate known as____ _____, which can cause fainting and other symptoms.

57. In addition to EKG, other diagnostic tests that may be used to diagnose SSS include _____ and echocardiography.

58. In some cases, treatment for SSS may also involve _____ to manage related conditions such as high blood pressure or heart failure.

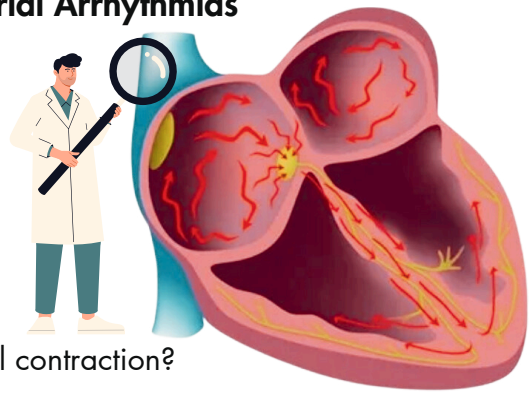
59. SSS is a relatively rare condition, affecting approximately_____ _____ of the population.

60. Patients with SSS may be advised to avoid certain medications, such as _____ or other drugs that can affect heart rate and rhythm.

Answers


Rx
ADDRESS
PRESCRIPTION
Patient:
Mey, MONOROM
45 Jahre / F
156 cm / 54 kg
HF 76/min
Intervalle:
RR 792 ms
P 76 ms
PQ 120 ms
QRS 78 ms
QT 352 ms
QTC 400 ms
Achsen:
P 54 °
QRS 51 °
T 42 °
S (T1) 0.89 mV
R (V5) 1.33 mV
Sokol. 1.38 mV
2.71 mV

7. Atrial Arrhythmias



1. What is a premature atrial contraction?
   A. A skipped heartbeat
   B. An extra heartbeat
   C. A rapid heartbeat
   D. A slow heartbeat

2. What part of the heart generates electrical signals?
   A. Atria
   B. Ventricles
   C. Sinoatrial (SA) node
   D. Purkinje fibers

3. Which valve is located between the left atrium and the left ventricle?
   A. Tricuspid valve
   B. Pulmonary valve
   C. Mitral valve
   D.Aortic valve

4. What is the function of the pericardium?
   A. To pump blood throughout the body
   B. To regulate blood flow through the heart
   C. To provide a protective barrier for the heart
   D. To generate electrical signals for the heart

5. What is the innermost layer of the heart called?
   A. Epicardium
   B. Myocardium
   C. Endocardium
   D. Pericardium

6. Which chamber of the heart receives blood from the body and lungs?
   A. Right atrium
   B. Left atrium
   C. Right ventricle
   D. Left ventricle

7. What is the function of the sinoatrial (SA) node?
   A.To generate electrical signals for the heart
   B.To regulate blood flow through the heart
   C.To pump blood throughout the body
   D.To receive blood from the body and lungs

8. Which valve is located between the right atrium and the right ventricle?
   A.Tricuspid valve
   B. Pulmonary valve
   C.Mitral valve
   D.Aortic valve

9. What is the outermost layer of the heart called?
   A. Epicardium
   B. Myocardium
   C. Endocardium
   D. Pericardium

10. What is the function of the right ventricle?
    A. To receive blood from the body and lungs
    B. To pump blood to the body and lungs
    C. To generate electrical signals for the heart
    D. To regulate blood flow through the heart

11. Atrial tachycardia is a type of ____ rhythm.

12. Atrial tachycardia is characterized by a rapid heart rate originating in the ____.

13. Atrial tachycardia is characterized by a fast heart rate of____to ____ beats per minute.

14. Atrial tachycardia can be caused by ____.

15. The QRS complex in atrial tachycardia may be ____.

16. Treatment for atrial tachycardia may include ____.

17. Atrial tachycardia is diagnosed by ____.

18. Atrial tachycardia may be associated with symptoms such as _____.

19. Atrial tachycardia may occur in patients with ____.

20. Atrial tachycardia is different from atrial fibrillation because___

____.

21. What is atrial flutter?
    A. A type of ventricular arrhythmia
    B. A type of supraventricular arrhythmia
    C. A type of sinus arrhythmia
    D. A type of heart block

22. Atrial flutter is commonly found in patients with:
    A. Hyperthyroidism
    B. Severe aortic valve disease
    C. Hypothyroidism
    D. Severe tricupsid valve disease

23. What is the typical heart rate for atrial flutter?
    A. 60-100 bpm
    B. 100-150 bpm
    C. 250-350 bpm
    D. 200-250 bpm

24. Which EKG lead is best for diagnosing atrial flutter?
    A. Lead I
    B. Lead II
    C. Lead III
    D. Atrial lead

25. How many P waves are present in each QRS complex in atrial flutter?

A. One
B. Two
C. Six
D. Four

26. What is the classic "sawtooth" pattern seen on EKG in atrial flutter?

A. P wave
B. QRS complex
C. T wave
D. U wave

27. What is the treatment for stable atrial flutter?

A. Cardioversion
B. Pharmacologic therapy
C. Radiofrequency ablation
D. All of the above

28. What is the goal heart rate for pharmacologic therapy in atrial flutter?

A. < 60 bpm
B. 60-80 bpm
C. 80-100 bpm
D. > 100 bpm

29. What is the definitive treatment for atrial flutter?
    A. Cardioversion
    B. Pharmacologic therapy
    C. Radiofrequency ablation
    D. Pacemaker implantation

30. What is the most common complication of atrial flutter?
    A. Stroke
    B. Heart failure
    C. Cardiac arrest
    D. Ventricular fibrillation

31. What is atrial fibrillation?
    A. A type of heart valve disorder
    B. A heart rhythm disorder
    C. A disorder of the heart's electrical system
    D. A disorder of the heart's muscle contraction

32. How does atrial fibrillation affect the heart?
    A. It causes the heart to beat too slowly
    B. It causes the heart to beat irregularly
    C. It causes the heart to beat too quickly
    D. It causes the heart to stop beating

33. What are some common symptoms of atrial fibrillation?
    A. Chest pain and shortness of breath
    B. Dizziness and fainting
    C. Fatigue and weakness
    D. All of the above

34. How is atrial fibrillation diagnosed?
A. Through a physical exam and medical history
B. Through blood tests
C. Through an electrocardiogram (ECG)
D. All of the above

35. What are some risk factors for developing atrial fibrillation?
A. Age and gender
B. High blood pressure and heart disease
C. Diabetes and obesity
D. All of the above

36. Atrial fibrillation can occur following cardiac surgery or be caused by :
A. Hyperthyroidism
B. Mitral insufficiency
C. Hypoxia
D. All of the above

37. What are some treatment options for atrial fibrillation?
A. Medications to control heart rate and rhythm
B. Electrical cardioversion
C. Catheter ablation
D. All of the above

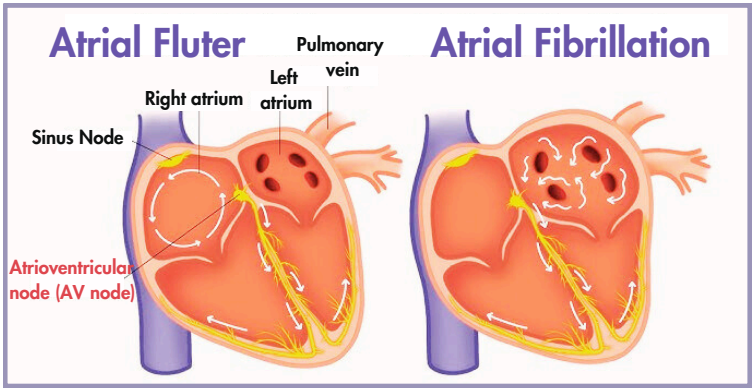
38. How can lifestyle changes help manage atrial fibrillation?
A. By controlling blood pressure and cholesterol levels
B. By maintaining a healthy weight
C. By reducing stress and avoiding triggers
D. All of the above

39. Can atrial fibrillation be cured?
    A. Yes, through medication
    B. Yes, through surgery
    C. No, but it can be managed with treatment
    D. No, it is a lifelong condition

40. Patients with atrial fibrillation are at an increased risk of developing :
    A. Atrial thrombus
    B. Hypoxia
    C. Hyperthyroidism
    D. All of the above

41. What is the wandering pacemaker?
    A. An abnormal heart rhythm
    B. A normal variation of the heart rhythm
    C. A heart block
    D. A type of ventricular tachycardia

42.Wandering pacemaker may be caused by:
    A. Sick sinus syndrome
    B. Increased vagal tone
    C. Rheumatic heart disease
    D. Chest pain



43. What is the cause of wandering pacemaker?
A. Atrial fibrillation
B. Heart block
C. Increased vagal tone
D. Normal physiological variation

44. How is wandering pacemaker diagnosed?
A. Echocardiogram
B. Electrocardiogram
C. Holter monitor
D. Cardiac stress test

45. Can wandering pacemaker be harmful?
A. Yes, it can lead to heart failure
B. No, it is a benign condition
C. It depends on the severity of the condition
D. It depends on the age of the patient

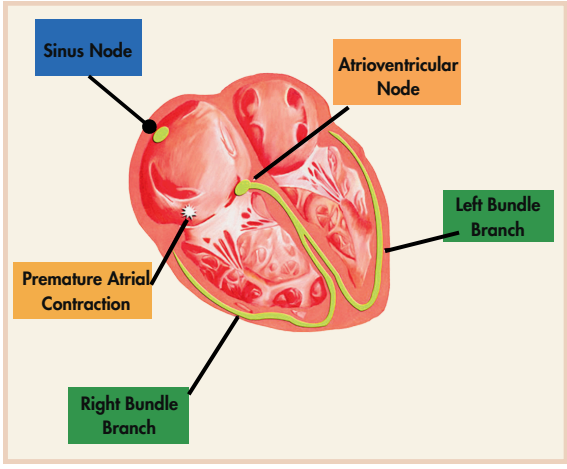
46. Which of the following is a treatment option for wandering pacemaker?
A. Medication
B. Pacemaker implantation
C. Surgery
D. Lifestyle changes

47. What is the prognosis for wandering pacemaker?
A. Poor, it often leads to death
B. Excellent, it is a harmless condition
C. It depends on the underlying cause
D. It depends on the age of the patient

48. How common is wandering pacemaker?
    A. It is a very rare condition
    B. It is a common variation of the heart rhythm
    C. It is more common in men than in women
    D. It is more common in older adults

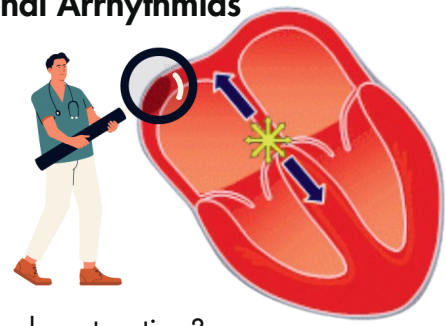
49. Can wandering pacemaker be prevented?
    A. Yes, through lifestyle changes
    B. No, it is a normal variation of the heart rhythm
    C. It depends on the underlying cause
    D. It can be prevented through medication

50. What is the treatment goal for wandering pacemaker?
    A. To cure the condition
    B. To manage the symptoms
    C. To prevent the condition from worsening
    D. To prevent complications



Answers

8. Junctional Arrhythmias



1. What is a premature junctional contraction?
   A. A type of heart block
   B. A type of tachycardia
   C. A type of premature ventricular contraction
   D. A type of premature atrial contraction

2. Where in the heart does a premature junctional contraction originate?
   A. Right atrium
   B. Left atrium
   C. AV node
   D. SA node

3. What is the EKG appearance of a premature junctional contraction?
   A. Normal sinus rhythm
   B. P wave before QRS complex
   C. P wave after QRS complex
   D. No P wave before QRS complex

4. Which of the following is not a symptom of a premature junctional contraction?
   A. Palpitations
   B. Chest pain
   C. Dizziness
   D. Shortness of breath

5. What is the treatment for a premature junctional contraction?
   A. No treatment necessary
   B. Antiarrhythmic medication
   C. Cardioversion
   D. Catheter ablation

6. What is the difference between a premature atrial contraction and a premature junctional contraction?
   A. The location in the heart where the contraction originates
   B. The EKG appearance of the contraction
   C. The symptoms associated with the contraction
   D. The treatment for the contraction

7. Which of the following is a possible cause of a premature junctional contraction?
   A. Coronary artery disease
   B. Hypertension
   C. Hyperthyroidism
   D. Atrial fibrillation

8. What is the clinical significance of a premature junctional contraction?
   A. It is usually benign and does not require treatment
   B. It is associated with an increased risk of complications such as stroke
   C. It is a sign of a more serious underlying heart condition
   D. It can lead to sudden cardiac death

9. Which of the following is not a characteristic of a premature junctional contraction?
   A. Occurs before the next expected sinus beat
   B. No P wave before QRS complex
   C. R-R interval shorter than normal
   D. QRS complex duration longer than normal

10. How is a premature junctional contraction diagnosed?
   A. Physical examination
   B. Blood tests
   C. Echocardiogram
   D. Electrocardiogram

11. What is a junctional escape rhythm?
   A. A rhythm originating from the SA node
   B. A rhythm originating from the AV node
   C. A rhythm originating from the ventricles
   D. A rhythm originating from the atria

12. What is the rate of a junctional escape rhythm?
   A. 60-100 bpm
   B. 40-60 bpm
   C. 20-40 bpm
   D. < 20 bpm

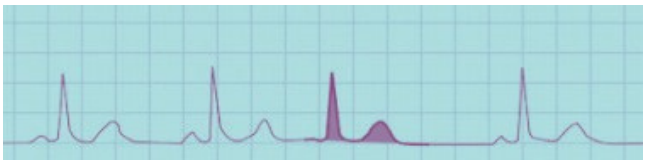
13. What is the PR interval in a junctional escape rhythm?
   A. 0.12-0.20 sec
   B. 0.10-0.20 sec
   C. > 0.20 sec
   D. Cannot be determined

14. What is the QRS duration in a junctional escape rhythm?
   A. < 0.12 sec
   B. 0.12-0.20 sec
   C. > 0.20 sec
   D. Cannot be determined

15. What is the usual clinical significance of a junctional escape rhythm?
   A. It is a normal variant
   B. It can indicate a disruption of the heart's normal electrical conduction system
   C. It is always associated with a high risk of sudden death
   D. It is usually asymptomatic

16.What is the treatment for a junctional escape rhythm?
   A. No treatment is necessary
   B. Catheter ablation
   C. Antiarrhythmic medication
   D. Electrical cardioversion

17. Which of the following is NOT a possible cause of a junctional escape rhythm?
   A. Ischemia
   B. Hypoxia
   C. Electrolyte imbalance
   D. Increased sympathetic activity



18. What is the mechanism of a junctional escape rhythm?
   A. Reentry
   B. Automaticity
   C. Triggered activity
   D. None of the above

19. What is the normal range of the PR interval in a Accelerated Junctional Rhythm?
   A. 0.06-0.10 sec
   B. 0.10
   C. 0.20-0.40 sec
   D. > 0.40 sec

20.To identify an accelerated junctional rhythm, look for a regular rhythm and a rate between:
   A. 60 and 120 beats per minute
   B. 50 and 80 beats per minute
   C. 50 and 110 beats per minute
   D. 60 and 100 beats per minute

21. What type of rhythm is Accelerated Junctional Rhythm?
   A. Atrial rhythm
   B. Junctional rhythm
   C. Ventricular rhythm
   D. Sinus rhythm

22. What is the heart rate range for Accelerated Junctional Rhythm?
   A. 20-40 bpm
   B. 40-60 bpm
   C. 60-100 bpm
   D. 100-180 bpm

23. Which of the following is not a symptom of Accelerated Junctional Rhythm?

A. Palpitations
B. Shortness of breath
C. Chest pain
D. Blurred vision

24. Which lead is best for diagnosing Accelerated Junctional Rhythm?

A. Lead I
B. Lead II
C. Lead aVL
D. Lead aVR

25. What is the usual cause of Accelerated Junctional Rhythm?

A. Hypertension
B. Atrial fibrillation
C. Coronary artery disease
D. Digitalis toxicity

26. Which of the following is a treatment option for Accelerated Junctional Rhythm?

A. Administering oxygen
B. Performing cardioversion
C. Prescribing beta blockers
D. All of the above

27. What is the most common age group affected by Accelerated Junctional Rhythm?

A.Children
B. Adolescents
C. Young adults
D. Elderly

28. Which of the following is not a risk factor for developing Accelerated Junctional Rhythm?

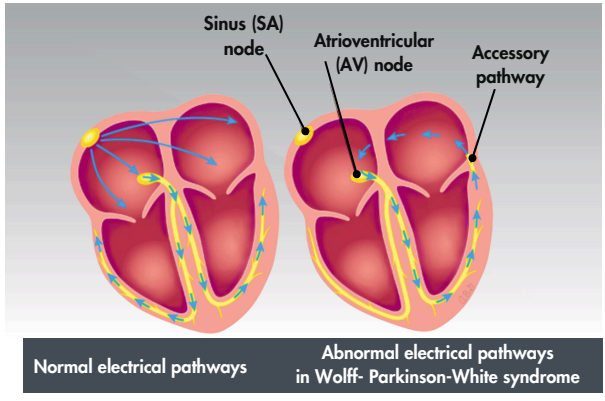
A. Heart disease
B. Diabetes
C. Thyroid disorders
D. Smoking

29. What is the treatment goal for Accelerated Junctional Rhythm?

A. To restore normal heart rhythm
B. To reduce the risk of complications C.
To relieve symptoms
D. All of the above

30. How is Accelerated Junctional Rhythm diagnosed?

A. Physical examination
B. Electrocardiogram (ECG)
C. Blood tests
D. Imaging tests



31. What is junctional tachycardia?
    A. A type of ventricular arrhythmia
    B. A type of atrial arrhythmia
    C. A type of supraventricular arrhythmia
    D. None of the above

32. What is the normal heart rate for an adult at rest?
    A. 60-100 bpm
    B. 40-60 bpm
    C. 100-120 bpm
    D. 120-140 bpm

33. What is the possible cause of junctional tachycardia?
    A. Heart attack
    B. Infection
    C. Digoxin toxicity
    D. Hypertension

34. What is the treatment for junctional tachycardia?
    A. Medications
    B. Cardioversion
    C. Ablation
    D. All of the above

35. What is the location of the SA node?
    A. Left atrium
    B. Right atrium
    C. Left ventricle
    D. Right ventricle

36. What is the function of the SA node?
A. Generates an electrical signal
B. Pumps blood to the body
C. Regulates blood flow through the chambers
D. None of the above

37. What is the role of the AV node?
A. Generates an electrical signal
B. Pumps blood to the body
C. Regulates blood flow through the chambers
D. None of the above

38. What is the location of the AV node?
A. Left atrium
B. Right atrium
C. Left ventricle
D. Right ventricle

39. What is the normal PR interval on an EKG?
A. 0.10-0.20 seconds
B. 0.04-0.10 seconds
C. 0.20-0.40 seconds
D. 0.40-0.60 seconds

40. What is the normal QRS complex duration on an EKG?
A. <0.04 seconds
B. 0.04-0.10 seconds
C. 0.10-0.20 seconds
D. >0.20 seconds

Answers

9. Ventricular Arrhythmias

1. Which of the following is NOT a symptom of premature ventricular contraction (PVC)?
    a. Palpitations
    b. Fainting
    c. Chest pain
    d. Shortness of breath

2. What is premature ventricular contraction (PVC)?
    a. A type of tachycardia
    b. A type of bradycardia
    c. An arrhythmia that originates in the ventricles
    d. An arrhythmia that originates in the atria

3. What is the most common cause of premature ventricular contraction (PVC)?
    a. Hypertension
    b. Coronary artery disease
    c. Heart attack
    d. Congenital heart disease

4. Which of the following is a treatment for premature ventricular contraction (PVC)?
    a. Medications
    b. Surgery
    c. Lifestyle changes
    d. All of the above

5. Which of the following is NOT a risk factor for premature ventricular contraction (PVC)?
   a. Smoking
   b. Alcohol consumption
   c. Regular exercise
   d. Caffeine consumption

6. Which of the following is a complication of premature ventricular contraction (PVC)?
   a. Heart failure
   b. Stroke
   c. Cardiac arrest
   d. None of the above

7. What is the treatment goal for premature ventricular contraction (PVC)?
   a. To reduce the frequency of PVCs
   b. To eliminate PVCs completely
   c. To prevent complications of PVCs
   d. All of the above

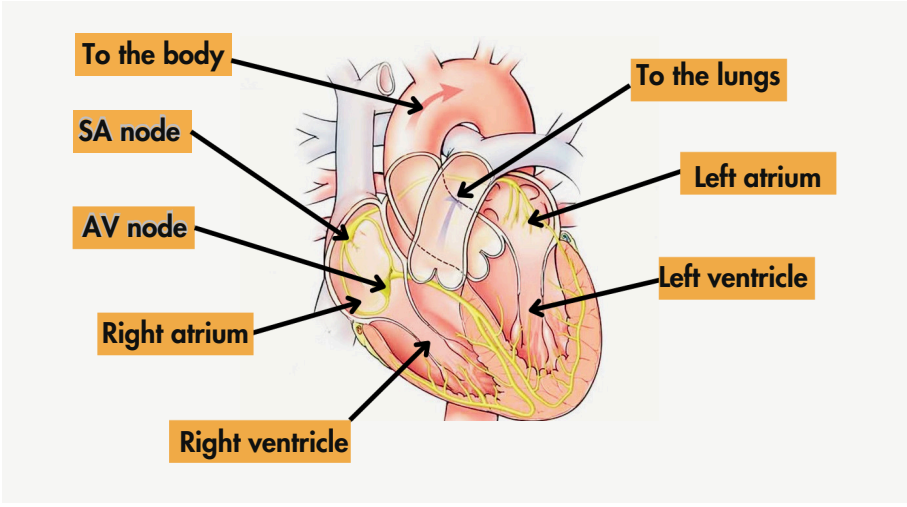
8. Which of the following is a symptom of frequent premature ventricular contraction (PVC)?
   a. Fainting
   b. Chest pain
   c. Shortness of breath
   d. All of the above

9. What is the difference between ventricular tachycardia and premature ventricular contraction (PVC)?

a. Ventricular tachycardia is a more serious arrhythmia than PVC
b. PVC is a type of ventricular tachycardia
c. PVC is a less serious arrhythmia than ventricular tachycardia
d. There is no difference between the two

10. Which of the following is a diagnostic test for premature ventricular contraction (PVC)?

a. EKG
b. CT scan
c. MRI
d. X-ray

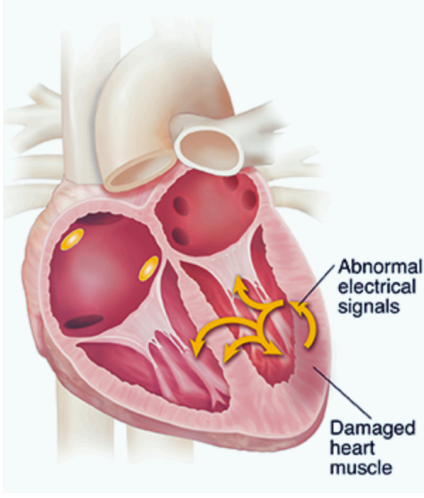


11. What is an idioventricular rhythm?
    A. A rhythm originating from the sinoatrial node
    B. A rhythm originating from the atrioventricular node
    C. A rhythm originating from the ventricles
    D. A rhythm originating from the pulmonary artery

12. Which of the following is a characteristic of an idioventricular rhythm?
    A. Fast heart rate
    B. Slow heart rate
    C. Regular rhythm
    D. Irregular rhythm

13. What is the treatment for idioventricular rhythm?
    A. Cardioversion
    B. Defibrillation
    C. Antiarrhythmic medication
    D. No treatment necessary

14. What is the most common cause of idioventricular rhythm?
    A. Myocardial infarction
    B. Hypertension
    C. Heart failure
    D. Valvular heart disease



15. Which of the following is not a symptom of idioventricular rhythm?
   A. Palpitations
   B. Chest pain
   C. Shortness of breath
   D. Fainting

16. How is idioventricular rhythm diagnosed?
   A. Electrocardiogram (ECG)
   B. Blood test
   C. X-ray
   D. Echocardiogram

17. What is the typical heart rate range for idioventricular rhythm?
   A. 40-60 bpm
   B. 60-100 bpm
   C. 100-120 bpm
   D. 120-150 bpm

18. Which of the following is a potential complication of idioventricular rhythm?
   A. Stroke
   B. Heart attack
   C. Cardiac arrest
   D. Pulmonary embolism

19. Is idioventricular rhythm a life-threatening condition?
   A. Yes
   B. No

20. What is the difference between idioventricular rhythm and ventricular tachycardia?

A. Heart rate
B. Origin of the rhythm
C. Symptoms
D. Treatment

21. Which chamber of the heart is responsible for pumping blood to the lungs?

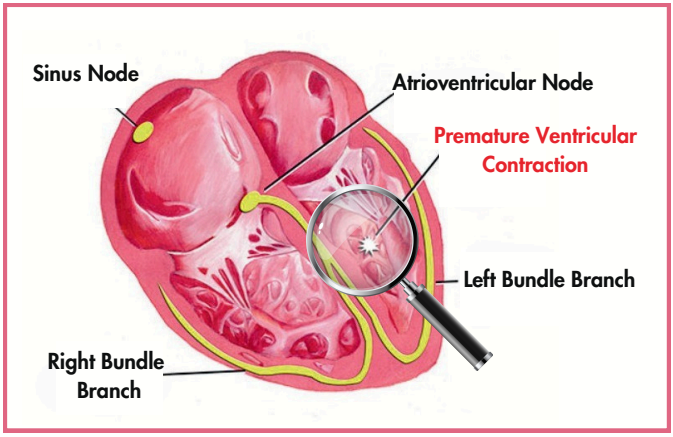
A. Left atrium
B. Right atrium
C. Left ventricle
D. Right ventricle

22. What is the function of the SA node in the heart?

A. To generate an electrical signal that stimulates the chambers to contract in a coordinated manner
B. To regulate blood flow through the chambers of the heart
C. To produce and secrete hormones that control the heart rate and blood pressure
D. To filter and remove waste products from the blood

23. Which layer of the heart is responsible for the heart's pumping action?

A. Epicardium
B. Myocardium
C. Endocardium
D. Pericardium



24. What is the purpose of the pericardium?
A. To provide a protective barrier for the heart and reduce friction as it beats
B. To regulate blood flow through the chambers of the heart
C. To generate an electrical signal that stimulates the chambers to contract in a coordinated manner
D. To filter and remove waste products from the blood

25. What are the upper chambers of the heart called?
A. Ventricles
B. Atria
C. Valves
D. Nodes

26. Which valve is located between the left atrium and left ventricle?
A. Tricuspid valve
B. Pulmonary valve
C. Mitral valve
D. Aortic valve

27. What is the function of the semilunar valves in the heart?
A. To prevent backflow of blood from one chamber to another
B. To anchor the cusps of the valves to the papillary muscles in the heart wall
C. To regulate blood flow through the chambers of the heart
D. To generate an electrical signal that stimulates the chambers to contract in a coordinated manner

28. What is the name of the condition that occurs when damage to the valves of the heart allows blood to flow backward into a chamber?

A. Heart disease
B. Hypertension
C. Heart murmur
D. Cardiac output

29. What is the name of the valve located between the right atrium and the right ventricle?

A. Tricuspid valve
B. Pulmonary valve
C. Mitral valve
D. Aortic valve

30. Which node generates an electrical signal that spreads throughout the heart and stimulates the chambers to contract in a coordinated manner?

A. AV node
B. SA node
C. Bundle of His
D. Purkinje fibers

31. What is the most common cause of ventricular fibrillation?

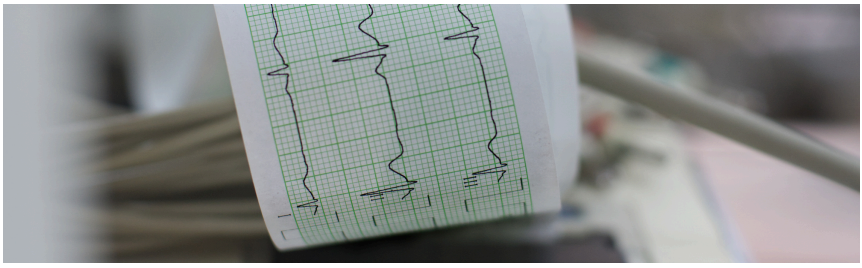
A. Coronary artery disease
B. Hypertension
C. Heart valve disease
D. Congenital heart defects

32. What is ventricular fibrillation?
    A. A condition where the ventricles contract in an uncoordinated manner, causing an irregular heartbeat
    B. A condition where the atria contract in an uncoordinated manner, causing an irregular heartbeat
    C. A condition where the blood flow to the ventricles is restricted, causing an irregular heartbeat
    D. A condition where the heart stops beating altogether

33. What are the symptoms of ventricular fibrillation?
    A. Chest pain and shortness of breath
    B. Dizziness and fainting
    C. Nausea and vomiting
    D. None of the above

34. How is ventricular fibrillation diagnosed?
    A. Electrocardiogram (ECG)
    B. Blood tests
    C. Chest X-ray
    D. CT scan

35. What is the treatment for ventricular fibrillation?
    A. CPR
    B. Defibrillation
    C. Medications
    D. All of the above



36. What is the difference between ventricular fibrillation and ventricular tachycardia?

A. Ventricular fibrillation is faster than ventricular tachycardia
B. Ventricular tachycardia is faster than ventricular fibrillation
C. Ventricular fibrillation is irregular, while ventricular tachycardia is regular
D. Ventricular tachycardia is irregular, while ventricular fibrillation is regular

37. How quickly must ventricular fibrillation be treated to avoid brain damage?

A. Within 1 minute
B. Within 3 minutes
C. Within 5 minutes
D. Within 10 minutes

38. Can ventricular fibrillation be prevented?

A. Yes, by maintaining a healthy lifestyle and managing risk factors for heart disease
B. Yes, by taking medication
C. No, ventricular fibrillation cannot be prevented
D. None of the above

39. What is the survival rate for ventricular fibrillation?

A. Less than 10%
B. 20-30%
C. 50-60%
D. More than 90%

40. What are the risk factors for ventricular fibrillation?
A. Smoking, high blood pressure, high cholesterol, and diabetes
B. Family history of heart disease, obesity, and sedentary lifestyle
C. Age, sex, and ethnicity
D. All of the above

41.What is asystole?
A. A rhythm where the heart beats too fast
B. A rhythm where the heart beats too slow
C. A rhythm where the heart has no electrical activity
D. A rhythm where the heart has irregular electrical activity

42. What is the treatment for asystole?
A. Defibrillation
B. Administering epinephrine
C. Administering digoxine
D. Administering lidocaine

43. What is the most common cause of asystole?
A. Hypoxia
B. Hypokalemia
C. Hypertension
D. Hypoglycemia

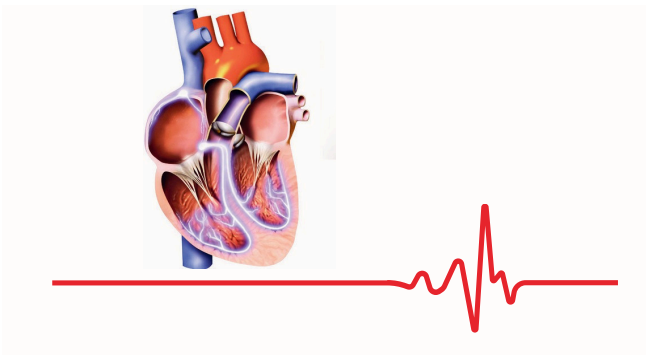
44. Which of the following rhythms is NOT a shockable rhythm?
A. Ventricular fibrillation
B. Asystole
C. Pulseless ventricular tachycardia
D. Torsades de pointes

45. What is the first step in treating asystole?
   A. Administering epinephrine
   B. Perform CPR
   C. Administering atropine
   D. Defibrillation

46. What is the most important intervention in treating asystole?
   A. Administering epinephrine
   B. Defibrillation
   C. Performing high-quality CPR
   D. Administering atropine

47.Which of the following is a sign of asystole on an EKG?
   A. Absent P waves
   B. Absent QRS complexes
   C. Wide QRS complexes
   D. Narrow QRS complexes

48.How long should you perform CPR before administering epinephrine in the treatment of asystole?
   A. 1 minute
   B. 2 minutes
   C. 3 minutes
   D. 4 minutes

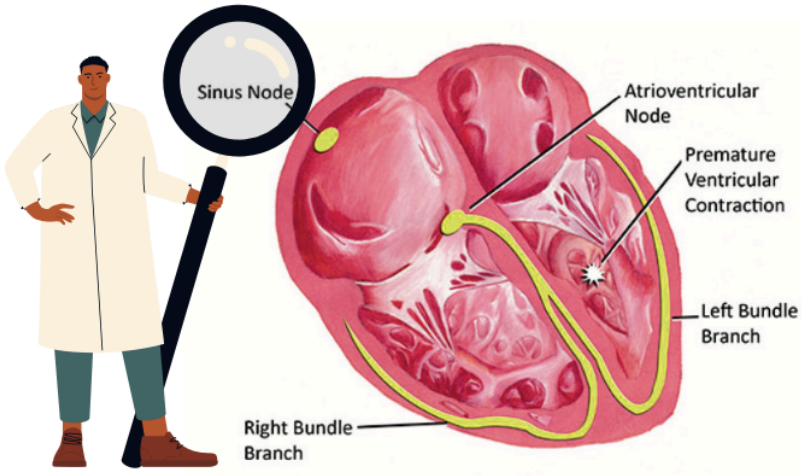


49.Which of the following is NOT a possible cause of asystole?

A. Hypovolemia
B. Hypothermia
C. Hyperkalemia
D. Hypotension

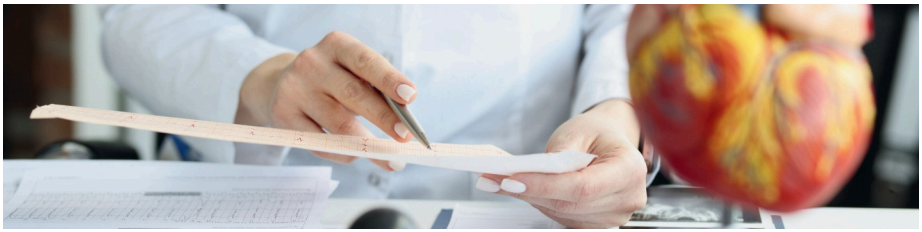
50. What is the survival rate for patients with asystole?

A. Less than 5%
B. 10-20%
C. 30-40%
D. More than 50%



Answers

10. Atrioventricular Blocks



1. What is First-degree AV block?
   A) A complete block of the AV node
   B) A partial block of the AV node
   C) An irregular heartbeat
   D) A normal heartbeat

2. Which EKG interval is prolonged in First-degree AV block?
   A) PR interval
   B) QT interval
   C) ST segment
   D) P wave

3. How is First-degree AV block diagnosed on an EKG?
   A) A prolonged PR interval
   B) A short PR interval
   C) A missing P wave
   D) A missing QRS complex

4. Which of the following is not a symptom of First-degree AV block?
   A) Dizziness
   B) Fatigue
   C) Chest pain
   D) Shortness of breath

5. What is the normal PR interval duration on an EKG?
   A) 0.12-0.20 seconds
   B) 0.06-0.12 seconds
   C) 0.20-0.30 seconds
   D) 0.30-0.40 seconds

6. What is the most common cause of First-degree AV block?
   A) Heart attack
   B) High blood pressure
   C) Aging
   D) Chronic alcohol use

7. Which of the following medications can cause First-degree AV block?
   A) Beta-blockers
   B) Calcium channel blockers
   C) Digoxin
   D) All of the above

8. Is First-degree AV block a life-threatening condition?
   A) Yes
   B) No

9. How is First-degree AV block treated?
   A) No treatment is necessary
   B) Medications to slow down the heart rate
   C) A pacemaker
   D) Cardiac catheterization

10. Which age group is most commonly affected by First-degree AV block?

A) Infants
B) Young adults
C) Middle-aged adults
D) Elderly adults

11. What is the most common cause of Type I second-degree AV block?

A) Atrioventricular nodal reentrant tachycardia
B) Inferior myocardial infarction
C) Sinus bradycardia
D) Atrial fibrillation

12. What is the hallmark ECG finding in Type I second-degree AV block?

A) Prolonged PR interval
B) Absent P waves
C) Narrow QRS complex
D) Wide QRS comple

13. Which of the following is not a symptom of Type I second-degree AV block?

A) Dizziness
B) Syncope
C) Chest pain
D) Fatigue

14. Which of the following is not a potential treatment for Type I second-degree AV block?

A) Atropine
B) Pacemaker
C) Isoproterenol
D) Beta blockers

15. How is Type I second-degree AV block distinguished from Type II second-degree AV block?

A) Type I has more P waves than QRS complexes
B) Type I is caused by damage to the bundle of His
C) Type I has a progressive lengthening of the PR interval
D) Type I is always symptomatic

16. Which of the following is a potential complication of Type I second-degree AV block?

A) Cardiac arrest
B) Stroke
C) Heart failure
D) All of the above

17. Which of the following is not a cause of Type I second-degree AV block?

A) Cardiac surgery
B) Digoxin toxicity
C) Lyme disease
D) Idiopathic

18. What is the treatment of choice for Type I second-degree AV block in the setting of an acute inferior myocardial infarction?
    A) Atropine
    B) Pacemaker
    C) Isoproterenol
    D) Beta blockers

19. What is the mechanism of Type I second-degree AV block?
    A) Increased vagal tone
    B) Blockage of the His-Purkinje system
    C) Reentry circuit in the AV node
    D) Increased sympathetic tone

20. What is third-degree AV block?
    A) A condition where the heart's chambers beat irregularly
    B) A condition where the heart's rhythm is too slow
    C) A condition where the heart's rhythm is too fast
    D) A condition where the electrical signals between the atria and ventricles are completely blocked

21. Which of the following is a symptom of third-degree AV block?
    A) Chest pain
    B) Shortness of breath
    C) Fainting or near-fainting
    D) All of the above

22. Which of the following is a potential cause of third-degree AV block?

A) Heart attack
B) Congenital heart defect
C) Medications
D) All of the above

23. How is third-degree AV block diagnosed?

A) Electrocardiogram (ECG or EKG)
B) Blood tests
C) X-rays
D) CT scans

24. What is the treatment for third-degree AV block?

A) Medications to regulate heart rhythm
B) Pacemaker implantation
C) Surgery to repair heart damage
D) None of the above

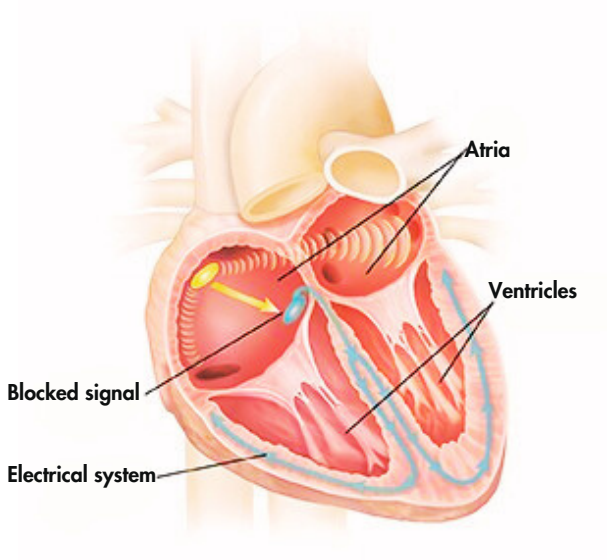
25. What is the difference between third-degree AV block and second- degree AV block?

A) Third-degree AV block is more severe than second-degree AV block
B) Third-degree AV block is less severe than second-degree AV block
C) Third-degree AV block and second-degree AV block are the same thing
D) None of the above

26. Can third-degree AV block be prevented?
A) Yes, through lifestyle changes such as exercise and healthy eating
B) No, it cannot be prevented
C) Sometimes, through the use of medications
D) None of the above

27. How does third-degree AV block affect the heart's function?
A) It causes the heart to beat too fast
B) It causes the heart to beat too slow
C) It causes the heart's chambers to beat out of sync with one another
D) It doesn't affect the heart's function

28. Who is at risk for developing third-degree AV block?
A) Older adults
B) People with a history of heart disease
C) People who have had a heart attack
D) All of the above



Answers

11. Nonpharmacologic Treatments

1. What is the primary difference between a permanent and temporary pacemaker?

   A. Permanent pacemakers are implanted for long-term use, while temporary pacemakers are only used for short periods of time.
   B. Permanent pacemakers are only used for certain conditions, while temporary pacemakers are used in a wider range of conditions.
   C. Permanent pacemakers are more invasive than temporary pacemakers.
   D. Temporary pacemakers are implanted inside the body, while permanent pacemakers are worn externally.

2. What is a pacemaker code?
   A. A code used to identify the type of pacemaker device used
   B. A code used to identify the type of EKG machine used
   C. A code used to identify the type of arrhythmia present
   D. A code used to identify the age of the patient

3. What is the primary purpose of a pacemaker?
   A. To regulate the heart rate
   B. To diagnose arrhythmias
   C. To treat hypertension
   D. To prevent heart disease

4. How is a permanent pacemaker implanted?
   A. Through a small incision in the chest
   B. Through a small incision in the abdomen
   C. Through a small incision in the neck
   D. Through a large incision in the chest

5. What is the most common type of arrhythmia that requires a pacemaker?

A. Tachycardia
B. Bradycardia
C. Atrial fibrillation
D. Ventricular fibrillation

6. What is the difference between a single-chamber and dual-chamber pacemaker?

A. A single-chamber pacemaker has one lead, while a dual-chamber pacemaker has two leads
B. A single-chamber pacemaker is used for bradycardia, while a dual-chamber pacemaker is used for tachycardia
C. A single-chamber pacemaker is implanted in the left ventricle, while a dual-chamber pacemaker is implanted in the right ventricle
D. A single-chamber pacemaker is more invasive than a dual-chamber pacemaker

7. How long can a permanent pacemaker last?

A. 5-10 years
B. 10-15 years
C. 15-20 years
D. 20-25 years

8. What is the purpose of a temporary pacemaker?

A. To regulate the heart rate for a short period of time
B. To diagnose arrhythmias
C. To treat hypertension
D. To prevent heart disease

9. What is the difference between a demand pacemaker and a fixed-rate pacemaker?

A. A demand pacemaker only works when the heart rate falls below a certain level, while a fixed-rate pacemaker maintains a constant heart rate.

B. A demand pacemaker is used for tachycardia, while a fixed-rate pacemaker is used for bradycardia.

C. A demand pacemaker is implanted in the left ventricle, while a fixed-rate pacemaker is implanted in the right ventricle.

D. A demand pacemaker is more invasive than a fixed-rate pacemaker.

10. What is the most common complication associated with a pacemaker?

A. Infection

B. Heart attack

C. Stroke

D. Blood clots

11. Which mode is used in pacemakers to treat a patient with complete heart block?

A. VVI mode

B. DDD mode

C. VOO mode

D. AAI mode

12. Which mode is used in pacemakers to treat a patient with sick sinus syndrome?

A. VVI mode

B. DDD mode

C. VOO mode

D. AAI mode

13. In which mode does the pacemaker sense the atrial activity and triggers the ventricular contraction?

A. VVI mode
B. DDD mode
C. VOO mode
D. AAI mode

14. In which mode does the pacemaker sense the ventricular activity and triggers the ventricular contraction?

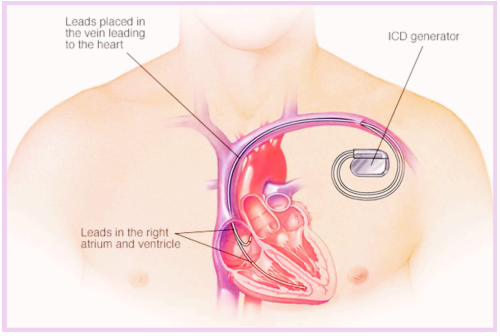
A. VVI mode
B. DDD mode
C. VOO mode
D. AAI mode

15. In which mode does the pacemaker neither sense nor pace the atria, but only paces the ventricles?

A. VVI mode
B. DDD mode
C. VOO mode
D. AAI mode

16. Which of the following pacemaker modes is used to treat a patient with atrial fibrillation?

A. VVI mode
B. DDD mode
C. VOO mode
D. AAI mode



17. In which mode does the pacemaker sense and pace both the atria and the ventricles?

A. VVI mode
B. DDD mode
C. VOO mode
D. AAI mode

18. Which mode is used in pacemakers to treat a patient with AV block?

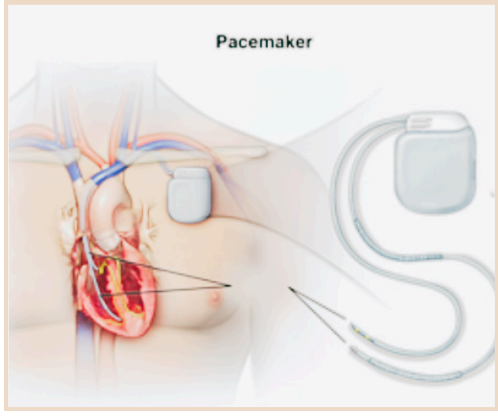
A. VVI mode
B. DDD mode
C. VOO mode
D. AAI mode

19. Which mode is used in pacemakers to treat a patient with sinus node dysfunction?

A. VVI mode
B. DDD mode
C. VOO mode
D. AAI mode

20. In which mode does the pacemaker neither sense nor pace the atria, but only senses the ventricles?

A. VVI mode
B. DDD mode
C. VOO mode
D. AAI mode

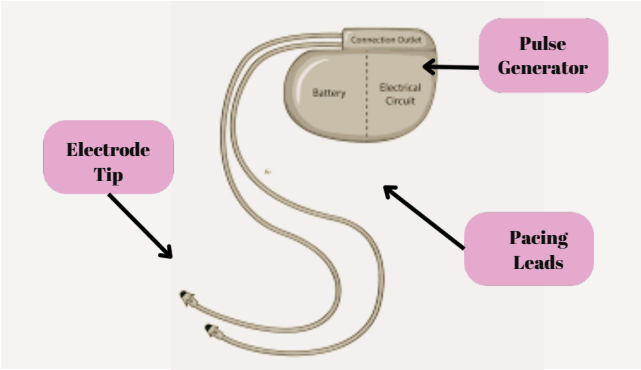


21. What is a biventricular pacemaker?
A. A device that regulates the heart's electrical system
B. A device that stimulates both the right and left ventricles of the heart
C. A device that regulates blood flow through the heart's chambers
D. A device that monitors heart rate and rhythm

22. What is the purpose of a biventricular pacemaker?
A. To regulate the heart's electrical system
B. To stimulate the left ventricle of the heart
C. To stimulate both the right and left ventricles of the heart
D. To monitor heart rate and rhythm

23. Who is a candidate for a biventricular pacemaker?
A. Patients with heart failure and a slow heart rate
B. Patients with a history of heart attack
C. Patients with hypertension
D. Patients with lung disease

24. How does a biventricular pacemaker work?
A. By regulating the heart's electrical system
B. By stimulating the left ventricle of the heart
C. By stimulating both the right and left ventricles of the heart
D. By monitoring heart rate and rhythm



25. What are the benefits of a biventricular pacemaker?
A. Improved heart function and quality of life
B. Reduced risk of heart attack
C. Lower blood pressure
D. All of above

26. What are the risks of a biventricular pacemaker?
A. Infection and bleeding
B. Heart attack
C. Stroke
D. Lung disease

27. How is a biventricular pacemaker implanted?
A. Through a small incision in the chest
B. Through a catheter inserted in the groin
C. Through a catheter inserted in the arm
D. Through the mouth

28. What should patients do after receiving a biventricular pacemaker?
A. Avoid physical activity
B. Avoid electromagnetic fields
C. Avoid contact with water
D. Follow their doctor's instructions for care and monitoring

29. Can a biventricular pacemaker be removed?
A. Yes, but it requires surgery
B. No, it is a permanent device
C. Yes, it can be removed without surgery
D. Only if it malfunctions

30. What is an Implantable Cardioverter Defibrillator (ICD)?
    A. A device used to monitor blood pressure
    B. A device used to treat heart failure
    C. A device used to correct abnormal heart rhythms
    D. A device used to measure heart rate

31. What is the purpose of an ICD?
    A. To monitor heart rate and rhythm
    B. To prevent heart attacks
    C. To treat heart failure
    D. To correct abnormal heart rhythms and prevent sudden cardiac death

32. How does an ICD work?
    A. It sends electrical signals to the heart to regulate heart rate
    B. It delivers an electrical shock to the heart to correct abnormal heart rhythms
    C. It acts as a pacemaker to regulate heart rate
    D. It delivers medication to the heart to treat heart failure

33. Who is a candidate for an ICD?
    A. People with a history of heart failure
    B. People with a history of abnormal heart rhythms
    C. People with a high risk of sudden cardiac death
    D. People with a history of heart attacks

34. What are the potential complications of having an ICD?

A. Infection, bleeding, and device malfunction
B. Nausea, dizziness, and fatigue
C. Headache, muscle pain, and joint pain
D. All of the above

35. Can an ICD be removed?

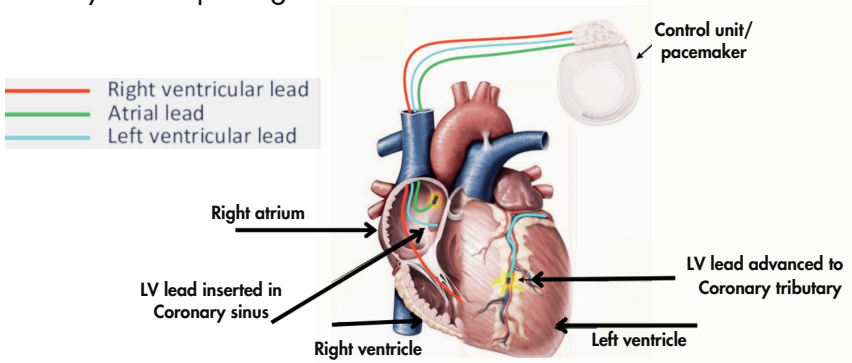
A. Yes, but it requires surgery
B. No, once it is implanted it cannot be removed
C. Yes, it can be removed without surgery
D. Only if it is malfunctioning

36. Which of the following is not a type of ICD therapy?

A. Anti-tachycardia pacing
B. Cardioversion
C. Defibrillation
D. Bradycardia pacing

37. Which type of ICD therapy delivers a series of rapid pacing pulses to the heart to try and stop a fast heart rhythm?

A. Anti-tachycardia pacing
B. Cardioversion
C. Defibrillation
D. Bradycardia pacing



38. Which type of ICD therapy delivers a shock to the heart to restore a normal heart rhythm?

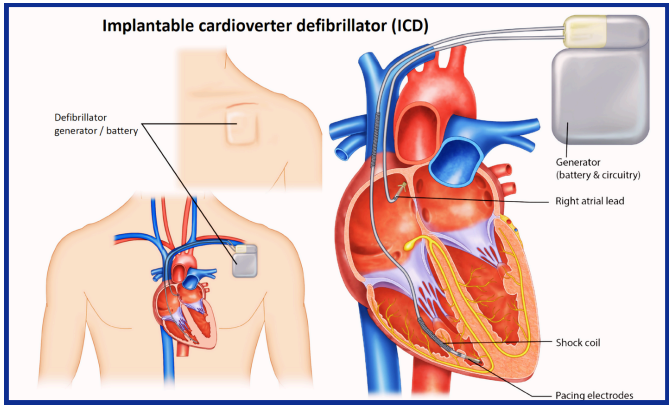
A. Anti-tachycardia pacing
B. Cardioversion
C. Defibrillation
D. Bradycardia pacing

39. Which type of ICD therapy is used to treat a slow heart rhythm?

A. Anti-tachycardia pacing
B. Cardioversion
C. Defibrillation
D. Bradycardia pacing

40. Which type of ICD therapy delivers a low-energy shock to the heart to restore a normal heart rhythm?

A. Anti-tachycardia pacing
B. Cardioversion
C. Defibrillation
D. Bradycardia pacing



Answers

12. Pharmacologic Treatments

1. Which class of drugs block sodium channels in the heart?
    A. Class Ib
    B. Class Ic
    C. Class II
    D. Class III
    E. Class Ia

2. Which of the following drugs is classified as a Class Ia antiarrhythmic?
    A. Amiodarone
    B. Digoxin
    C. Flecainide
    D. Quinidine
    E. Verapamil

3. What is the mechanism of action of Quinidine?
    A. Blocks sodium channels
    B. Blocks potassium channels
    C. Blocks calcium channels
    D. Blocks beta receptors
    E. Increases cAMP levels

4. Which of the following is a side effect of Quinidine?
    A. Hypoglycemia
    B. Hypertension
    C. Hyperkalemia
    D. Hypotension
    E. Torsades de pointes

5. Which of the following is a contraindication for the use of Quinidine?

A. Hypertension
B. Hypothyroidism
C. Myasthenia gravis
D. Heart block
E. Diabetes

6. What is the mechanism of action of Procainamide?

A. Blocks sodium channels
B. Blocks potassium channels
C. Blocks calcium channels
D. Blocks beta receptors
E. Increases cAMP levels

7. Which of the following is a side effect of Procainamide?

A. Hypoglycemia
B. Hypertension
C. Hyperkalemia
D. Hypotension
E. Lupus-like syndrome

8. Which of the following is a contraindication for the use of Procainamide?

A. Hypertension
B. Hypothyroidism
C. Myasthenia gravis
D. Heart block
E. Diabetes

9. Which of the following drugs is classified as a Class Ib antiarrhythmic?
   A. Amiodarone
   B. Lidocaine
   C. Flecainide
   D. Quinidine
   E. Verapamil

10. What is the mechanism of action of Lidocaine?
   A. Blocks sodium channels
   B. Blocks potassium channels
   C. Blocks calcium channels
   D. Blocks beta receptors
   E. Increases cAMP levels

11. Which class of antiarrhythmics does Lidocaine belong to?
   A. Class IA
   B. Class IB
   C. Class IC
   D. Class II

12.What is the mechanism of action of Lidocaine?
   A. Blockade of sodium channels
   B. Blockade of potassium channels
   C. Blockade of calcium channels
   D. Increase of calcium influx

13. What is the therapeutic use of Lidocaine?
   A. To treat ventricular tachycardia
   B. To treat atrial fibrillation
   C. To treat supraventricular tachycardia
   D. To treat bradycardia

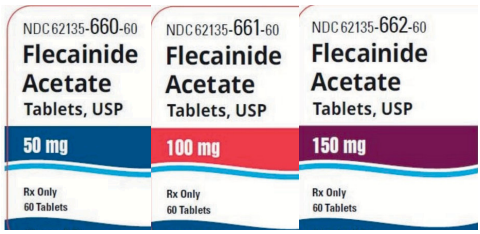
14. Which of the following is a Class Ic antiarrhythmic?
    A. Digoxin
    B. Flecainide
    C. Amiodarone
    D. Verapamil

15. What is the brand name for Flecainide?
    A. Tambocor
    B. Propafenone
    C. Propranolol
    D. Metoprolol

16. Which of the following is another Class Ic antiarrhythmic?
    A. Amiodarone
    B. Diltiazem
    C. Propafenone
    D. Lisinopril

17. How do Class Ic antiarrhythmics work?
    A. By blocking potassium channels
    B. By blocking calcium channels
    C. By blocking sodium channels
    D. By blocking beta receptors

18. What is the primary indication for Flecainide and Propafenone?
    A. Hypertension
    B. Angina
    C. Atrial fibrillation/flutter
    D. Heart failure

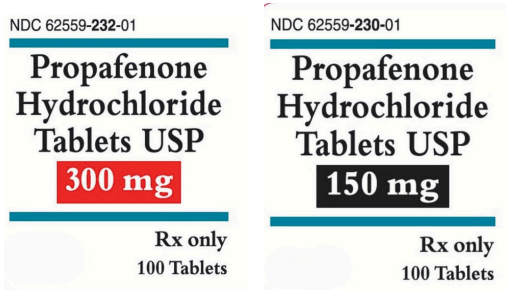


19. Which of the following is a potential side effect of Flecainide and Propafenone?
    A. Bradycardia
    B. Hypertension
    C. Diarrhea
    D. Tinnitus

20. What is the recommended dosing regimen for Flecainide and Propafenone?
    A. Once daily
    B. Twice daily
    C. Three times daily
    D. Four times daily

21. Which of the following is a contraindication for Flecainide and Propafenone?
    A. Bradycardia
    B. Hypertension
    C. Heart block
    D. Asthma

22. What is the primary mechanism of elimination for Flecainide and Propafenone?
    A. Renal excretion
    B. Hepatic metabolism
    C. Biliary excretion
    D. Pulmonary excretion



23. Which of the following is a class II antiarrhythmic?
    A. Digoxin
    B. Amiodarone
    C. Propranolol
    D. Verapamil

24. What is the mechanism of action for class II antiarrhythmics?
    A. Block sodium channels
    B. Block potassium channels
    C. Block calcium channels
    D. Block beta-adrenergic receptors

25. Which of the following is not a class II antiarrhythmic?
    A. Atenolol
    B. Esmolol
    C. Acebutolol
    D. Diltiazem

26. Which of the following is a potential adverse effect of class II antiarrhythmics?
    A. Hypotension
    B. Bradycardia
    C. Bronchospasm
    D. All of the above

27. Which of the following is a selective beta-1 blocker commonly used as a class II antiarrhythmic?

A. Propranolol
B. Esmolol
C. Acebutolol
D. Sotalol

28. Which of the following is a non-selective beta blocker commonly used as a class II antiarrhythmic?

A. Atenolol
B. Esmolol
C. Acebutolol
D. Propranolol

29. Which of the following class II antiarrhythmics is also used as an anti-hypertensive medication?

A. Sotalol
B. Esmolol
C. Acebutolol
D. Propranolol

30. Which of the following is a short-acting class II antiarrhythmic?

A. Propranolol
B. Esmolol
C. Acebutolol
D. Sotalol

31. Which of the following is a long-acting class II antiarrhythmic?
    A. Propranolol
    B. Esmolol
    C. Acebutolol
    D. Sotalol

32. Which of the following class II antiarrhythmics can cause QT interval prolongation?
    A. Propranolol
    B. Esmolol
    C. Acebutolol
    D. Sotalol

33. Which of the following is a Class III antiarrhythmic drug?
    A. Flecainide
    B. Metoprolol
    C. Amiodarone
    D. Adenosine

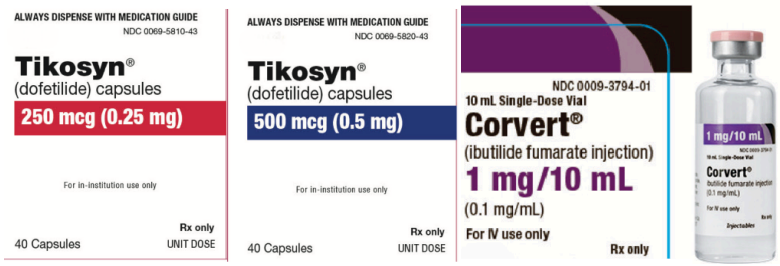
34. Which of the following is not a side effect of amiodarone?
    A. Pulmonary fibrosis
    B. QT prolongation
    C. Visual changes
    D. Torsades de pointes

35. What is the mechanism of action of ibutilide?
    A. Blocks potassium channels
    B. Inhibits sodium channels
    C. Blocks calcium channels
    D. Prolongs the QT interval

36. Which of the following is a contraindication of dofetilide?
    A. Renal impairment
    B. Atrial fibrillation
    C. Hypertension
    D. Coronary artery disease

37. What is the usual dosing schedule for amiodarone?
    A. 100 mg PO twice daily
    B. 200 mg PO once daily
    C. 400 mg PO twice daily
    D. 600 mg PO once daily

38. What is the major adverse effect of dofetilide?
    A. Hypotension
    B. Bradycardia
    C. QT prolongation
    D. Nausea and vomiting



39. Which of the following is a monitoring parameter for ibutilide?
    A. Blood pressure
    B. ECG
    C. Serum potassium
    D. Liver function tests

40. What is the primary indication for amiodarone?
    A. Supraventricular tachycardia
    B. Ventricular fibrillation
    C. Atrial fibrillation/flutter
    D. Sinus bradycardia

41. What is the usual dosing schedule for dofetilide?
    A. 125 mcg IV once daily
    B. 250 mcg IV once daily
    C. 500 mcg IV once daily
    D. 1000 mcg IV once daily

42. Which of the following is a warning associated with amiodarone?
    A. Hypoglycemia
    B. Hyperkalemia
    C. Pulmonary toxicity
    D. Renal failure

43. Which class of antiarrhythmic medications do verapamil and diltiazem belong to?

A. Class I
B. Class II
C. Class III
D. Class IV

44. What is the mechanism of action of verapamil and diltiazem?

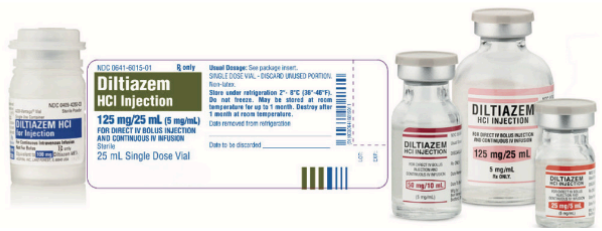
A. They block sodium channels.
B. They block beta-adrenergic receptors.
C. They prolong the action potential duration.
D. They block calcium channels.

45. Which of the following is not a potential side effect of verapamil and diltiazem?

A. Hypotension
B. Bradycardia
C. Tachycardia
D. Constipation

46. Which of the following conditions is a contraindication for the use of verapamil and diltiazem?

A. Hypertension
B. Atrial fibrillation
C. Sinus bradycardia
D. Ventricular tachycardia



47. Which of the following statements regarding the use of verapamil and diltiazem is true?

A. They are first-line agents for the treatment of ventricular arrhythmias.
B. They should be used with caution in patients with heart failure.
C. They are contraindicated in patients with Wolff-Parkinson-White syndrome.
D. They have no effect on cardiac contractility.

48. How do verapamil and diltiazem affect the AV node?

A. They increase conduction velocity through the AV node.
B. They decrease conduction velocity through the AV node.
C. They have no effect on the AV node.
D. They block the AV node completely.

49. Which of the following is a potential complication of verapamil and diltiazem overdose?

A. Hypotension
B. Bradycardia
C. AV block
D. All of the above

50. Which of the following is a potential drug interaction with verapamil and diltiazem?

A. Beta blockers
B. Digoxin
C. Calcium supplements
D. All of the above

51. What is the recommended route of administration for verapamil and diltiazem?

A. Intravenous
B. Intramuscular
C. Oral
D. Subcutaneous

52. Which of the following is a potential indication for the use of verapamil and diltiazem?

A. Supraventricular tachycardia
B. Ventricular fibrillation
C. Ventricular tachycardia
D. Atrial flutter

53. Adenosine is a medication used to treat supraventricular _____.

54.Adenosine slows down the electrical conduction in the _____ node.

55. Atropine Sulfate is a medication used to treat _____.

56.Atropine Sulfate works by blocking the effects of the _____ nervous system.

57.Adenosine is administered by rapid _____.

58. Atropine Sulfate is administered by _____.

59. Adenosine can cause _____ as a side effect.

60. Atropine Sulfate can cause _____ as a side effect.

61. Adenosine is contraindicated in patients with _____.

62. Atropine Sulfate is contraindicated in patients with _____.

63. Digoxin is a medication that is commonly used to treat_____ _____.

64. Digoxin works by _____ the force of the heart's contractions.

65. What is the other name for Epinephrine?

66. Epinephrine is a medication used to treat _____.

67. Epinephrine can cause _____.

68. Digoxin should be taken with caution in patients with _____.

69. Epinephrine should be used with caution in patients with____ _____.

71. Which of the following medications is commonly used to treat heart failure?

A. Digoxin
B. Epinephrine
C. Aspirin
D. Ibuprofen

72. Which of the following medications is a beta blocker commonly used to treat arrhythmias?

A. Digoxin
B. Epinephrine
C. Metoprolol
D. Lisinopril

73. Which of the following medications is commonly used to treat cardiac arrest?

A. Digoxin
B. Epinephrine
C. Atorvastatin
D. Acetaminophen

74. Which of the following medications may cause a prolonged QT interval on an EKG?

A. Digoxin
B. Epinephrine
C. Furosemide
D. Metformin

75. Which of the following medications is commonly used to treat supraventricular tachycardia?

A. Digoxin
B. Epinephrine
C. Adenosine
D. Gabapentin

76. Which of the following medications is a calcium channel blocker commonly used to treat hypertension?

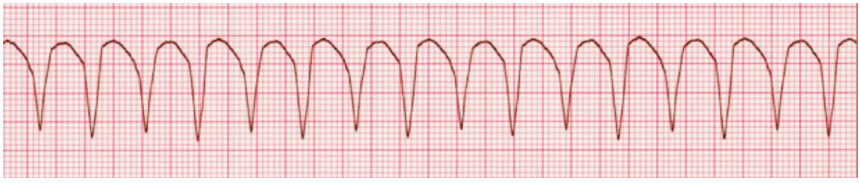
A. Digoxin
B. Epinephrine
C. Amlodipine
D. Losartan

77. Which of the following medications is commonly used to treat ventricular tachycardia?

A. Digoxin
B. Epinephrine
C. Lidocaine
D. Omeprazole

78. Which of the following medications is commonly used to treat angina?

A.Digoxin
B. Epinephrine
C. Nitroglycerin
D. Metoclopramide



79. Which of the following medications is commonly used to treat atrial fibrillation?

A. Digoxin
B. Epinephrine
C. Warfarin
D. Pantoprazole

80. Magnesium sulfate can be used to treat _____.

81. Magnesium sulfate is a _____.

82. Magnesium sulfate is most effective when given _____.

83. Magnesium sulfate can cause _____.

84. Magnesium sulfate is used to treat _____.

85.Magnesium sulfate is usually administered as a _____.

Answers

13. Emergency Medical Skills

1. What is defibrillation?
   A. The process of shocking the heart to restore its normal rhythm
   B. The process of detecting abnormal heart rhythms
   C. The process of monitoring heart rate and rhythm
   D. The process of administering medication to regulate heart function

2. When is defibrillation used in EKG interpretation?
   A. To diagnose heart disease
   B. To monitor heart rate
   C. To treat abnormal heart rhythms
   D. To measure blood pressure

3. How does defibrillation work?
   A. By administering medication to regulate heart function
   B. By monitoring heart rate and rhythm
   C. By delivering an electric shock to the heart
   D. By detecting abnormal heart rhythms

4. What is the purpose of defibrillation?
   A. To restore the heart's normal rhythm
   B. To detect abnormal heart rhythms
   C. To monitor heart rate and rhythm
   D. To diagnose heart disease

5. Which of the following is an example of an abnormal heart rhythm that may require defibrillation?
   A. Normal sinus rhythm
   B. Sinus bradycardia
   C. Ventricular fibrillation
   D. First-degree heart block

6. What is the purpose of manual defibrillation?
   A. To increase heart rate
   B. To decrease heart rate
   C. To restore normal heart rhythm
   D. To induce arrhythmia

7. When should manual defibrillation be used?
   A. When the patient is conscious
   B. When the patient is breathing normally
   C. When the patient is in cardiac arrest
   D. When the patient is experiencing chest pain

8. What is the minimum number of people needed to perform manual defibrillation?
   A. One
   B. Two
   C. Three
   D. Four

9. What is the first step in using a manual defibrillator?
   A. Turn on the machine
   B. Place the pads on the patient's chest
   C. Charge the machine
   D. Check the patient's pulse

10. What is the recommended energy level for the first shock in manual defibrillation?
   A. 50 joules
   B. 100 joules
   C. 200 joules
   D. 360 joules

11. What does AED stand for?
   A. Automated External Defibrillator
   B. Automated Electric Defibrillator
   C. Automatic External Defibrillation
   D. Automatic Electric Defibrillation

12. What is the purpose of an AED?
   A. To diagnose heart problems
   B. To administer medication
   C. To deliver an electric shock to restart the heart
   D. To take an EKG

13. What is the first step in using an AED?
    A. Place the pads on the chest of the person in cardiac arrest
    B. Turn on the AED
    C. Call for emergency medical services
    D. Begin chest compressions

14. What does an AED do?
    A. Monitors the heart's electrical activity
    B. Measures blood pressure
    C. Delivers an electric shock to the heart
    D. Provides oxygen to the lungs

15. Who can use an AED?
    A. Only medical professionals
    B. Only people with special training
    C. Anyone trained in CPR and AED use
    D. Only authorized personnel

16. What is the purpose of the pads on an AED?
    A. To monitor the heart's electrical activity
    B. To deliver an electric shock to the heart
    C. To measure blood pressure
    D. To provide oxygen to the lungs

17. When should you use an AED?
    A. Whenever someone is not breathing
    B. Whenever someone is unconscious
    C. Whenever someone is in cardiac arrest
    D. Whenever someone has a headache

18. How does an AED work?
    A. It analyzes the heart's rhythm and delivers a shock if necessary
    B. It provides medication to the heart
    C. It measures blood pressure
    D. It provides oxygen to the lungs

19. What is the success rate of using an AED in a cardiac arrest situation?
    A. 10%
    B. 25%
    C. 50%
    D. 75%

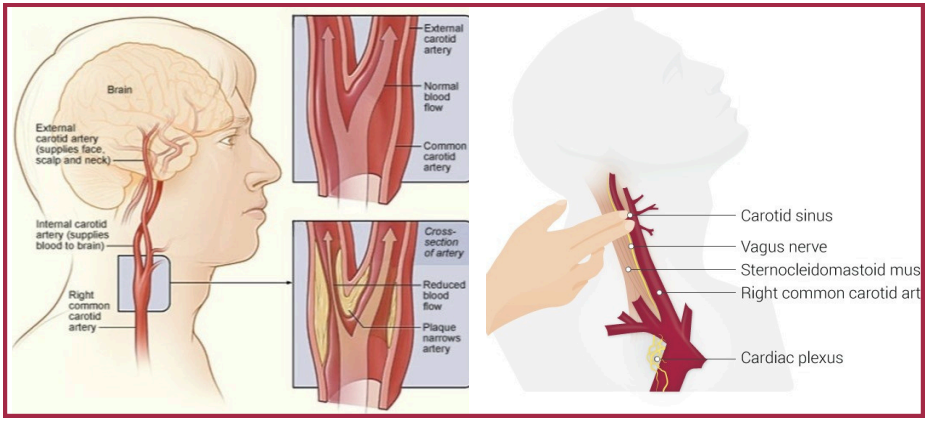
20. What should you do if someone is in cardiac arrest and you do not have access to an AED?
    A. Call for emergency medical services
    B. Begin CPR
    C. Wait for someone else to arrive with an AED
    D. Administer medication

21. What is the purpose of Carotid Sinus Massage?
   A. To increase heart rate
   B. To decrease heart rate
   C. To increase blood pressure
   D. To decrease blood pressure

22. Which of the following is a potential side effect of Carotid Sinus Massage?
   A. Nausea
   B. Vomiting
   C. Lightheadedness
   D. All of the above

23. When is Carotid Sinus Massage contraindicated?
   A.In patients with carotid artery disease
   B. In patients with a history of stroke
   C. In patients with a history of heart disease
   D. All of the above

24. How is Carotid Sinus Massage performed?
   A. By applying firm pressure to the carotid artery in the neck
   B. By gently massaging the carotid artery in the neck
   C. By applying ice to the carotid artery in the neck
   D. By applying heat to the carotid artery in the neck

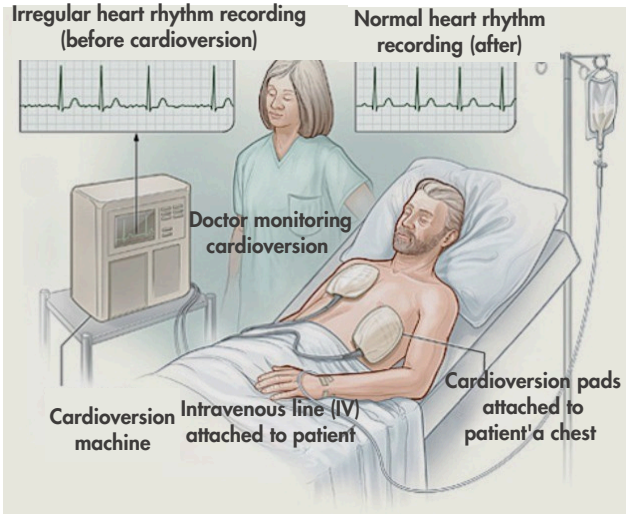


25. What is cardioversion?
   A. A medication for heart disease
   B. A procedure to restore normal heart rhythm
   C. A type of heart surgery
   D. A diagnostic test for heart function

26. What is synchronized cardioversion?
   A. A procedure that uses electric shocks to restore normal heart
   B. A medication for heart disease
   C. A type of heart surgery
   D. A diagnostic test for heart function

27. Who might need cardioversion?
   A. Patients with abnormal heart rhythms
   B. Patients with high blood pressure
   C. Patients with high cholesterol
   D. Patients with diabetes

28. What are some risks of cardioversion?
   A. Blood clots
   B. Irregular heart rhythms
   C. Damage to the heart muscle
   D. All of the above



29. What is the difference between defibrillation and cardioversion?

A. Defibrillation is a procedure to restore normal heart rhythm, while cardioversion is a diagnostic test for heart function
B. Defibrillation is a medication for heart disease, while cardioversion is a type of heart surgery
C. Defibrillation uses higher-energy shocks to reset the heart, while cardioversion uses lower-energy shocks that are timed to the heartbeat
D. There is no difference between defibrillation and cardioversion

30. How is cardioversion performed?

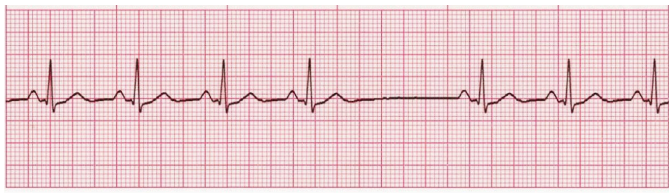
A. Using a medication
B. Through a small incision in the chest
C. Using electric shocks delivered through paddles or patches on the chest
D. None of the above

Answers

14. ECG PRACTICE STRIPS

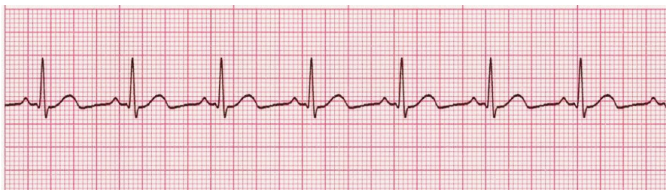
Practice your EKG interpretation skills by completing the following image labeling exercises. Look at the provided EKG images and label the corresponding waves and intervals. Use the answer key at the end to check your answers.

1.



Rate: _____Rhythm:_____
P Waves: _____PR_____
Interval:_____QRS:_____
Interpretation:_____

2.



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P Waves: _____PR_____
Interval:_____QRS:_____
Interpretation:_____

3.

Rate: _____Rhythm:_____
P Waves: _____PR_____
Interval:_____QRS:_____
Interpretation:_____

4.

Rate: _____Rhythm:_____
P Waves: _____PR_____
Interval:_____QRS:_____
Interpretation:_____

5.

Rate: _____Rhythm:_____
P Waves: _____PR_____
Interval:_____QRS:_____
Interpretation:_____

6.

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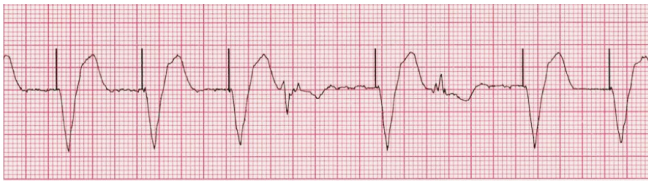
P Waves: _____PR_____
Interval:_____QRS:_____
Interpretation:_____

7.



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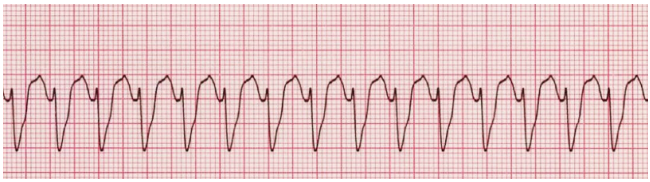
P Waves: _____PR_____
Interval:_____QRS:_____
Interpretation:_____

8.



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Interpretation:_____

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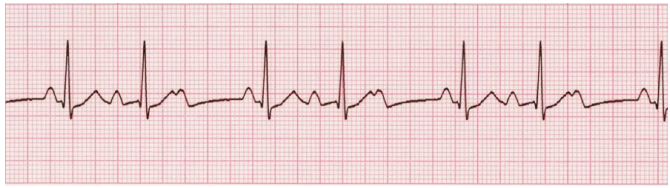

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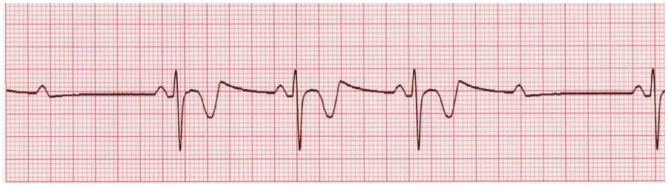
Interval:_____QRS:_____
Interpretation:_____

10.



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Interval:_____QRS:_____
Interpretation:_____

11.

Rate: _____Rhythm:_____
P Waves: _____PR_____
Interval:_____QRS:_____
Interpretation:_____

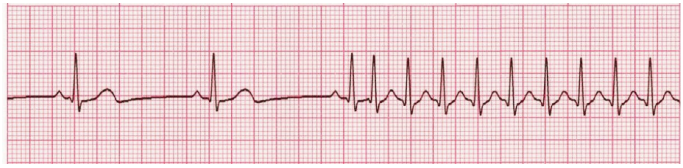
12.

Rate: _____Rhythm:_____
P Waves: _____PR_____
Interval:_____QRS:_____
Interpretation:_____

13.

Rate: _____Rhythm:_____
P Waves: _____PR_____
Interval:_____QRS:_____
Interpretation:_____

14.



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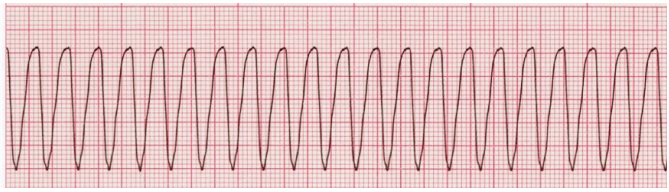
P Waves: _____PR_____
Interval:_____QRS:_____
Interpretation:_____

15.



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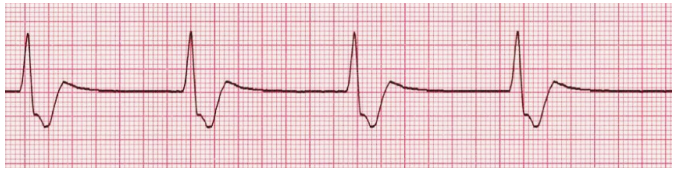
P Waves: _____PR_____
Interval:_____QRS:_____
Interpretation:_____

16.



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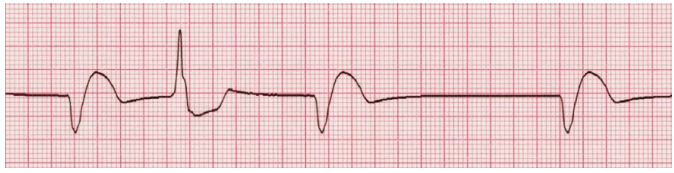
Interval:_____QRS:_____
Interpretation:_____

17.



Rate: _____Rhythm:_____
P Waves: _____PR_____
Interval:_____QRS:_____
Interpretation:_____

18.

Rate: _____Rhythm:_____
P Waves: _____PR_____
Interval:_____QRS:_____
Interpretation:_____

19.

Rate: _____Rhythm:_____
P Waves: _____PR_____
Interval:_____QRS:_____
Interpretation:_____

20.

Rate: _____Rhythm:_____
P Waves: _____PR_____
Interval:_____QRS:_____
Interpretation:_____

21.

Rate: _____Rhythm:_____
P Waves: _____PR_____
Interval:_____QRS:_____
Interpretation:_____

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P Waves: _____PR_____
Interval:_____QRS:_____
Interpretation:_____

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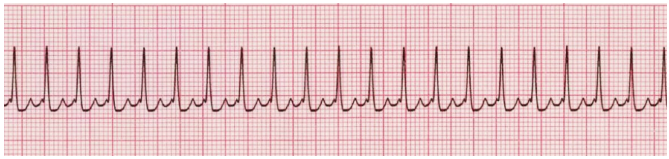

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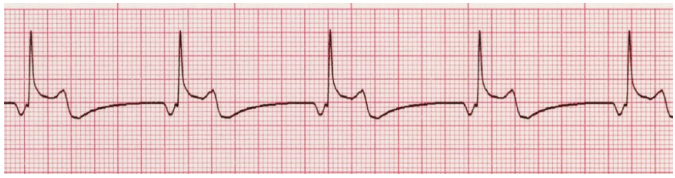
P Waves: _____PR_____
Interval:_____QRS:_____
Interpretation:_____

24.



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P Waves: _____PR_____
Interval:_____QRS:_____
Interpretation:_____

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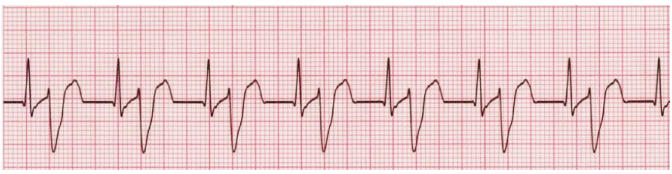

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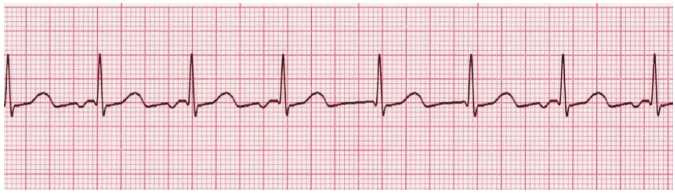
P Waves: _____PR_____
Interval:_____QRS:_____
Interpretation:_____

26.



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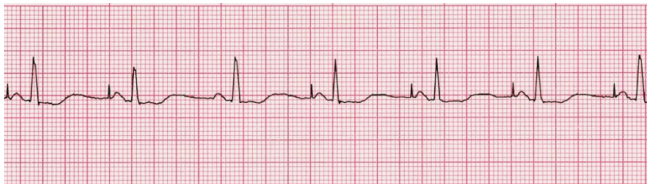
P Waves: _____PR_____
Interval:_____QRS:_____
Interpretation:_____

27.



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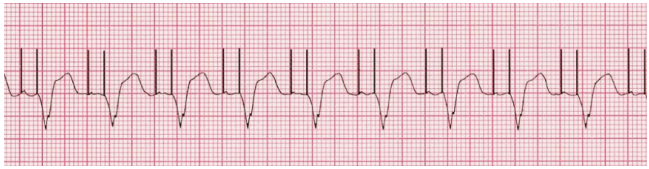
P Waves: _____PR_____
Interval:_____QRS:_____
Interpretation:_____

28.



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Interval:_____QRS:_____
Interpretation:_____

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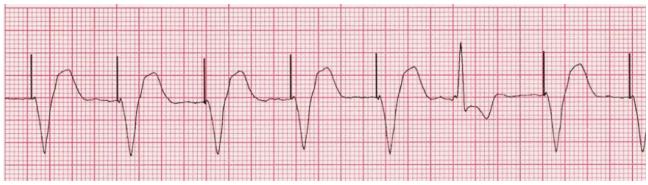


Rate: _____Rhythm:_____
P Waves: _____PR_____
Interval:_____QRS:_____
Interpretation:_____

30.

Rate: _____Rhythm:_____
P Waves: _____PR_____
Interval:_____QRS:_____
Interpretation:_____

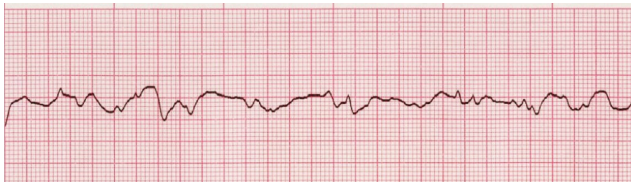
31.

Rate: _____Rhythm:_____
P Waves: _____PR_____
Interval:_____QRS:_____
Interpretation:_____

32.

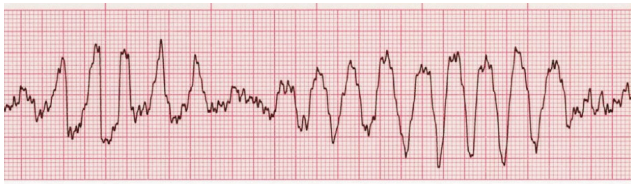
Rate: _____Rhythm:_____
P Waves: _____PR_____
Interval:_____QRS:_____
Interpretation:_____

33.



Rate: _____Rhythm:_____
P Waves: _____PR_____
Interval:_____QRS:_____
Interpretation:_____

34.



Rate: _____Rhythm:_____
P Waves: _____PR_____
Interval:_____QRS:_____
Interpretation:_____

35.

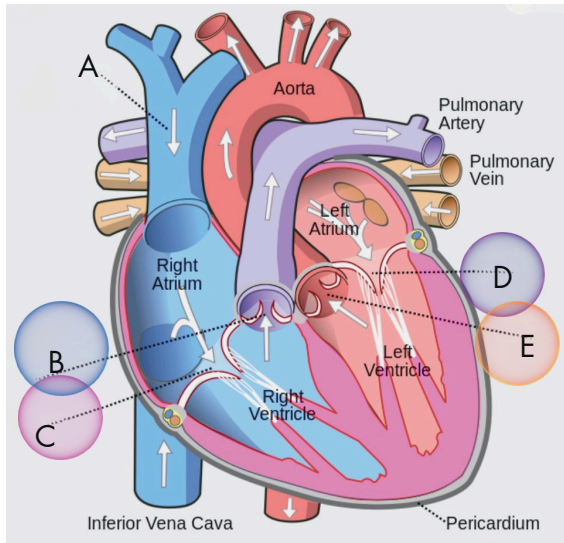
Rate: _____Rhythm:_____
P Waves: _____PR_____
Interval:_____QRS:_____
Interpretation:_____

Answers

15. Image Labeling Exercises

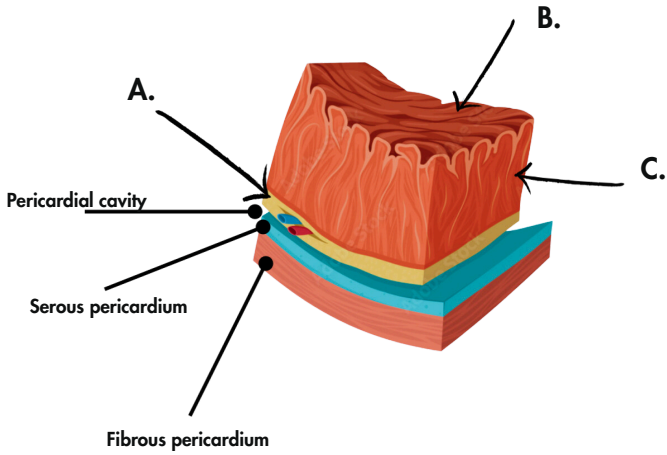
Examine the provided images and identify the correct answers. You can verify your answers using the answer key at the end.

1.

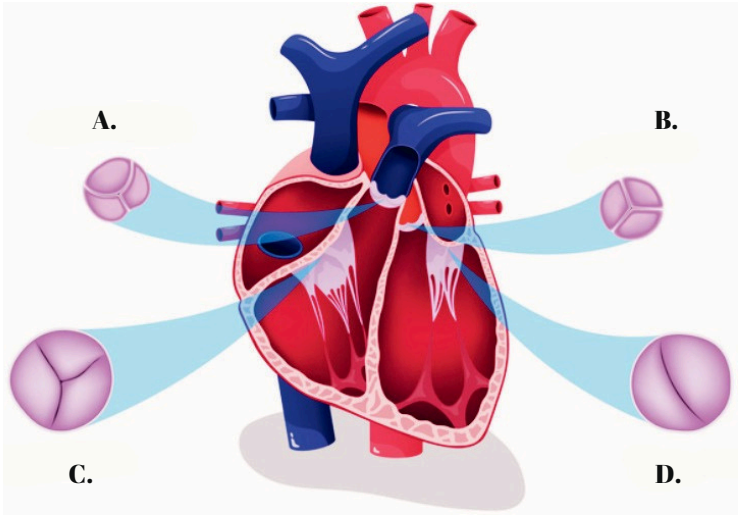


A. _____
B. _____
C. _____
D. _____
E. _____

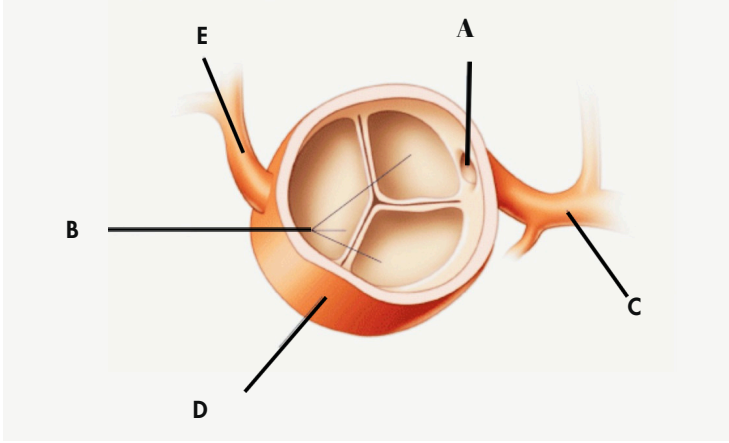
2.


B.
A.
C.
Pericardial cavity
Serous pericardium
Fibrous pericardium

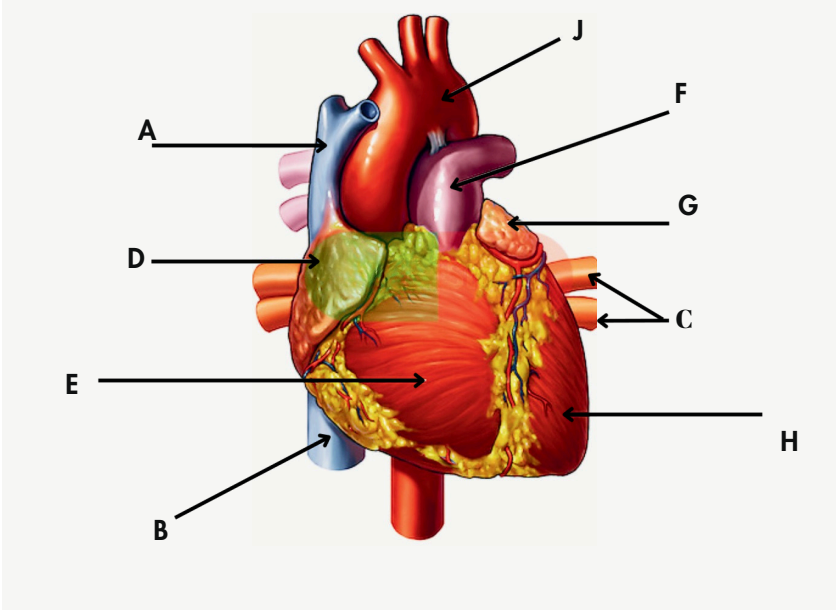
3.


A.
B.
C.
D.

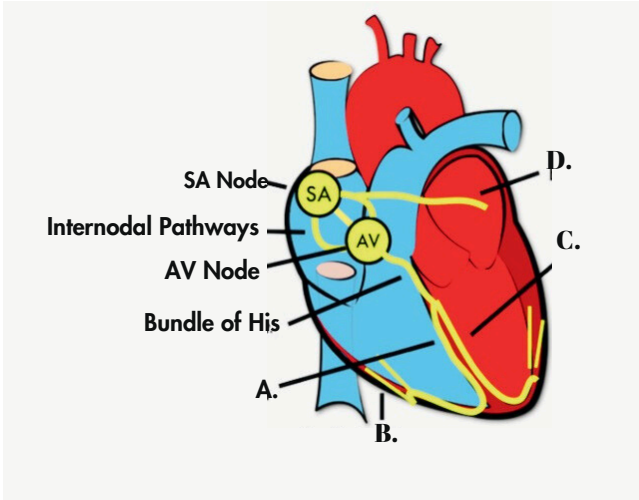
4.



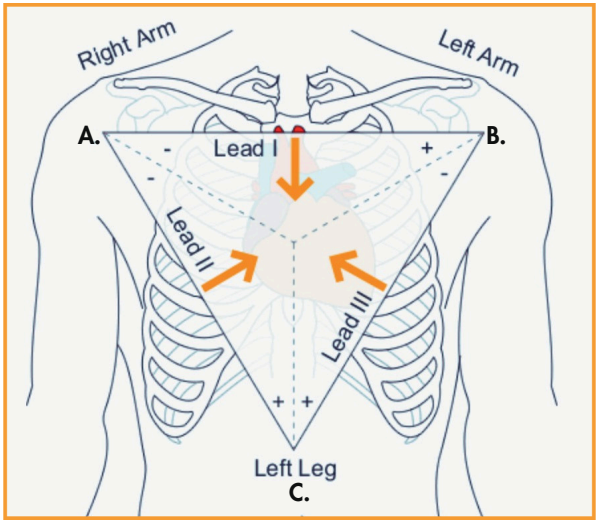
5.



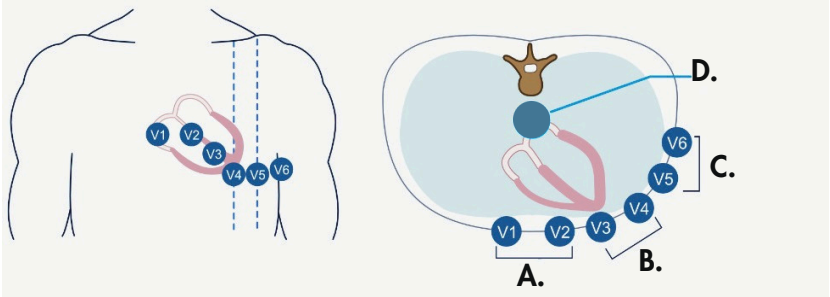
6.


SA Node
Internodal Pathways
AV Node
Bundle of His
SA
AV
A.
B.
C.
D.

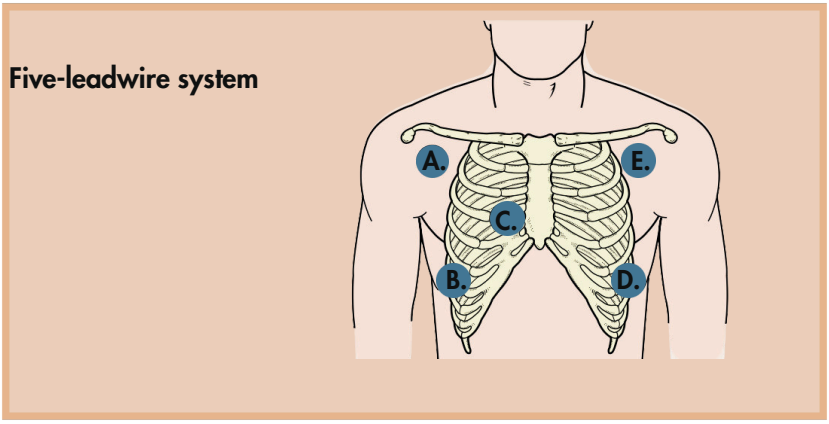
7.


Right Arm
Left Arm
A.
B.
Lead I
Lead II
Lead III
Left Leg
C.

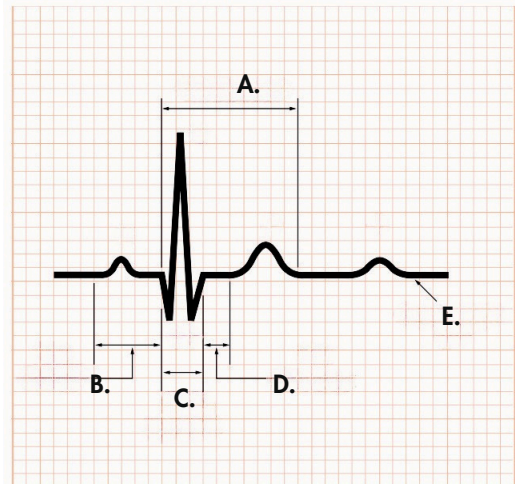
8.



9.



10.



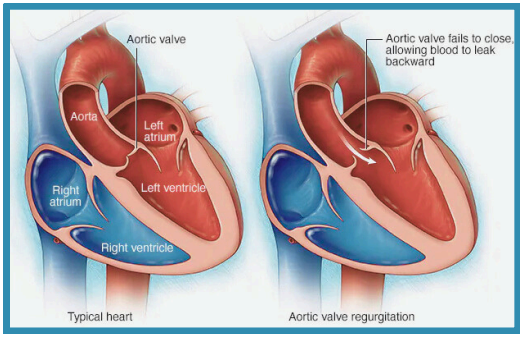
Answers

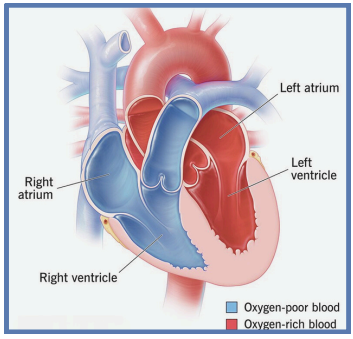
16. ANSWERS

1.Cardiac anatomy and physiology

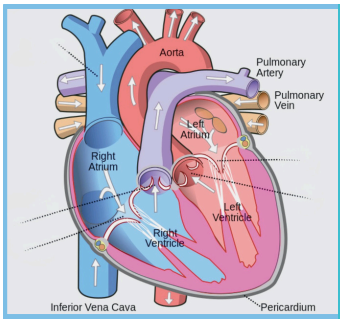
1.D
2.B
3.C
4.B
5.B
6.D
7.A
8.B
9.A
10.A
11.B
12.C
13.D
14.A
15.C
16.C
17.D
18.A
19.B
20.D

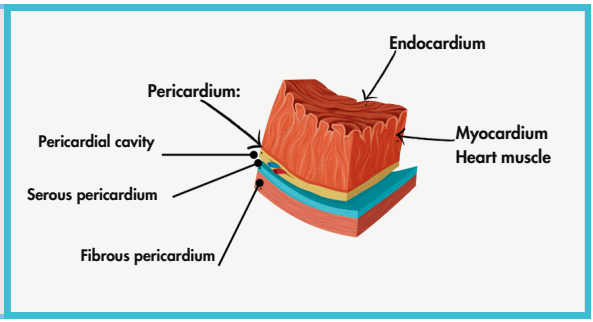
21. four
22. atria, ventricles
23. sinoatrial (SA) node
24. tricuspid
25. bicuspid (mitral)
26. pulmonary semilunar
27. aortic semilunar
28. three, two
29. myocardium
30. left
31. outermost
32. true
33. 7,200
34. left
35. 12, 8.5, 6
36. myocardium
37. aortic semilunar
38. pulmonary semilunar
39. pulmonary semilunar
40. endocardium





41. A
42. D
43. B
44. A
45. A
46. A
47. B
48. A
49. C
50. B
51. B
52. B
53. C
54. A
55. C
56. D
57. B
58. C
59. C
60. D
61. B
62. C
63. D
64. A
65. B
66. depolarizing
67. splitting
68. conducting
69. Purkinje
70. Bachmann's
71. Purkinje
72. Bachmann's bundle
73. Purkinje
74. splitting
75. Purkinje
76. Bachmann's
77. Purkinje
78. split
79. conducting
80. arrhythmias
81. Atrial fibrillation
82. conduction block
83. heart block
84. sinoatrial node
85. Tachycardia
86. asystole
87. pacemaker
88. Bradycardia
89. arrhythmia episode
90. pulmonary semilunar valve

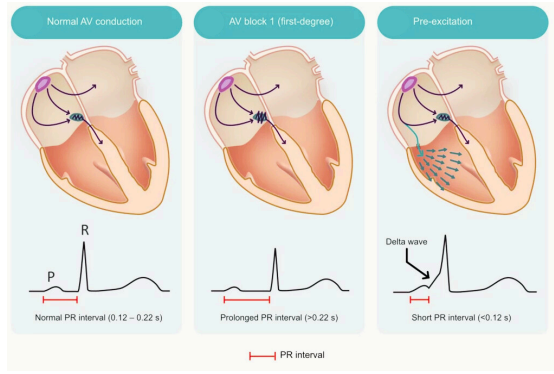


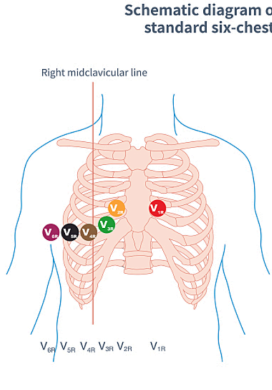


2. Obtaining a Rhythm Strip

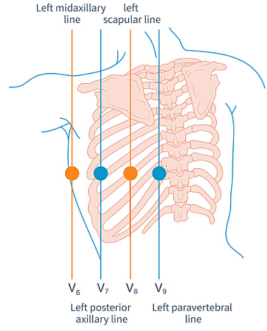
1. diagnostic
2. electrical impulses
3. P wave
4. QRS complex
5. T wave
6. PR interval
7. QT interval
8. heart rate
9. arrhythmia
10. tachycardia
11. bradycardia
12. tachydysrhythmia
13. bradydysrhythmia
14. 12-lead ECG
15. ECG waveform
16. voltage
17. time
18. QRS axis
19. ST segment
20. amplitude
21. B
22. D
23. C
24. A
25. A
26. B
27. B
28. B
29. B
30. B
31. C
32. A
33. A
34. C
35. B
36. C
37. A
38. A
39. B
40. C
41. A
42. D
43. D
44. C
45. D
46. D
47. D
48. A
49. B
50. D
51. D
52. A
53. B
54. A
55. D
56. D
57. A
58. C
59. D
60. A

61. 12
62. Einthoven's
63. chest, arms, legs
64. right arm, left leg
65. left arm, left leg
66. left arm, left leg
67. arrhythmias
68. atrial
69. Einthoven's, Augmented, Vector, Inferior
70. ventricular
71. rate, rhythm, morphology
72. R-R interval
73. organized
74. disorganized
75. P wave
76. QRS complex
77. T wave
78. atrial fibrillation
79. bradycardia
80. D
81. B
82. D
83. A
84. C
85. B
86. B
87. D
88. B
89. C
90. D





Schematic diagram of the placement of the right chest lead electrode

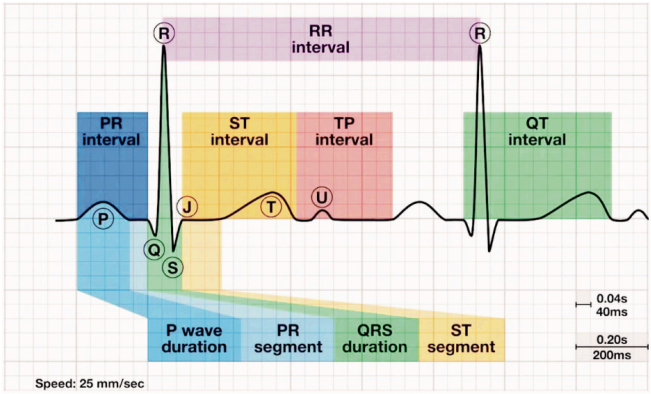


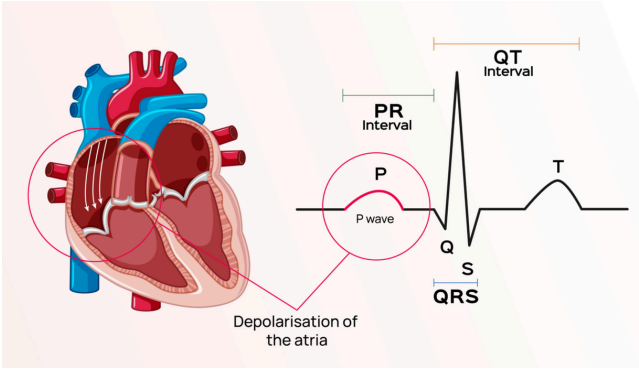
Schematic diagram of the placement of the Posterior lead electrode

Schematic diagram of the placement of standard six-chest lead electrodes

3. Interpreting a Rhythm Strip

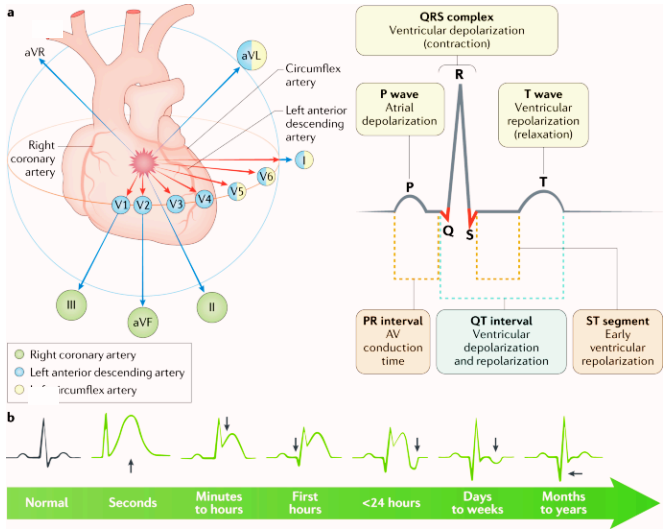
1. a
2. a
3. b
4. b
5. a
6. a
7. a
8. a
9. b
10. a
11. a
12. d
13. a
14. a
15. a
16. b
17. a
18. d
19. b
20. a
21. a
22. b
23. d
24. a
25. b
26. a
27. c
28. a
29. d
30. a





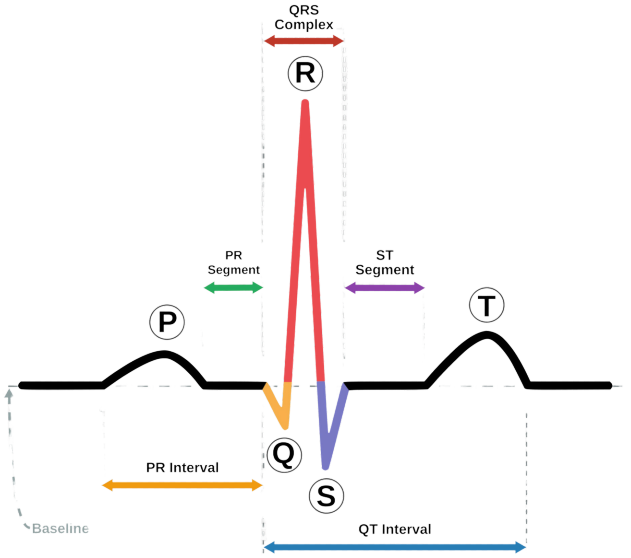
4. Obtaining a 12-Lead ECG

1. B
2. B
3. B
4. C
5. D
6. D
7. B
8. B
9. B
10. C
11. B
12. A
13. B
14. A
15. A
16. B
17. fourth
18. fourth
19. fifth
20. fourth
21. fifth
22. fifth
23. low-amplitude
24. arrhythmias
25. cardiac disease
26. Three
27. Ag/AgCl
28. V1, V2, V3, V4, V5, V6
29. Neck and back
30. Ventricular arrhythmias
31. Late potentials
32. Myocardial infarction
33. Cardiomyopathy
34. Electrocardiogram
35. Heart
36. low-amplitude
37. ventricular arrhythmias
38. QRS complex
39. heart
40. stress



5. Interpreting a 12-Lead ECG

1. electrocardiogram (ECG or EKG)
2. amplitude, direction
3. positive, positive
4. positive, negative
5. negative, positive
6. direction
7. arrhythmias
8. -30, +90
9. negative
10. age, sex, body habitus
11. c
12. d
13. a
14. b
15. d
16. a
17. d
18. d
19. b
20. d
21. c
22. b
23. a
24. d
25. b
26. a
27. a
28. a
29. d
30. a



6. Sinus Node Arrhythmias

1. SA
2. young
3. irregular
4. vagal
5. ECG
6. timing
7. benign
8. increases, decreases
9. deep
10. endurance
11. anxiety
12. pulse
13. treatment
14. dysrhythmia
15. electrocardiogram (ECG)
16. 60
17. increased vagal tone, hypothyroidism, medications
18. athletes
19. normal P wave, normal QRS complex, prolonged PR interval
20. dizziness, fatigue, weakness
21. medications, pacemaker implantation
22. increased intracranial pressure
23. sleep
24. normal P waves
25. symptoms of low cardiac output
26. 100
27. upright
28. emotional
29. young
30. exercise

31. PR
32.regular
33. normal
34. QT
35. cause
36. anxiety
37. dehydration
38. palpitations
39. cardiac
40. ECG
41. Sinoatrial (SA)
42. Cardiac
43. Electrolyte imbalances
44. Normal
45. 2.0
46. Significant
47. Electrolyte
48. Sick sinus syndrome
49. 1%
50. Cardiac
51. rhythm
52. tachycardia
53. palpitations
54. pacemaker implantation
55. aging
56. asystole
57. Holter monitoring
58. medication
59. 1-2%
60. beta blockers

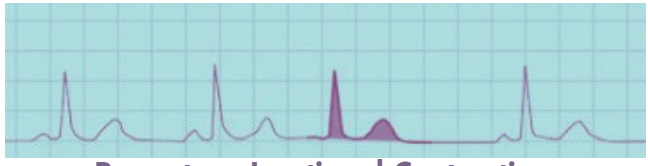
7. Atrial Arrhythmias

1.B
2. C
3. C
4. C
5. C
6. A
7. A
8. A
9. A
10. B
11. supraventricular
12. atria
13. 150 to 250
14. excessive use of caffeine or other stimulants, marijuana use, electrolyte imbalances, hypoxia, and physical or psychological stress. Is often associated with primary or secondary cardiac problems.

15. normal or widened
16. medication, cardioversion, or ablation
17. electrocardiogram (ECG)
18. palpitations, shortness of breath, or chest pain
19. chronic obstructive pulmonary disease (COPD)
20. the heart rate is more regular in atrial tachycardia
21. B
22. A
23. C
24. D
25. B
26. A
27. B
28. B
29. C
30. A
31. B
32. B
33. D
34. D
35. D
36. D
37. D
38. D
39. C
40. A
41. B
42. B
43. D
44. B
45. B
46. A
47. B
48. B
49. B
50. B

8. Junctional Arrhythmias

1. D
2. C
3. D
4. B
5. A
6. A
7. C
8. A
9. D
10. D
11. B
12. B
13. B
14. A
15. B
16. A
17. D
18. B
19. B
20. D
21. B
22. C
23. D
24. B
25. D
26. D
27. D
28. B
29. D
30. B
31. C
32. A
33. C
34. D
35. B
36. A
37. C
38. B
39. A
40. B



Premature Junctional Contraction

9. Ventricular Arrhythmias

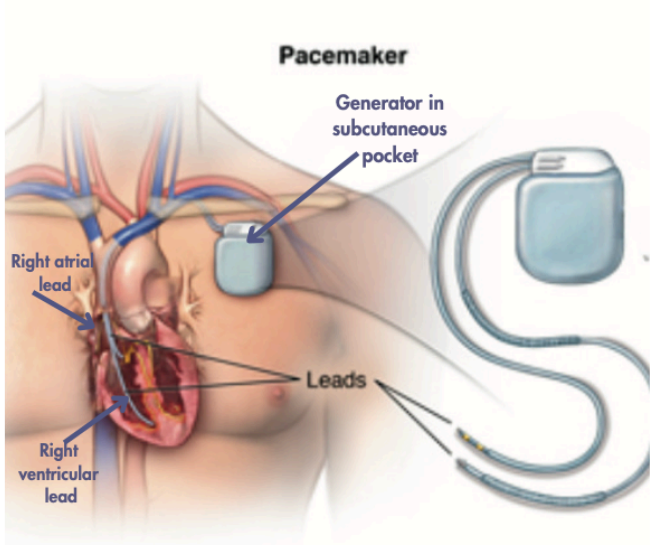
1. c
2. c
3. b
4. d
5. c
6. d
7. d
8. d
9. c
10. a
11. c
12. b
13. d
14. a
15. a
16. a
17. a
18. c
19. b
20. a
21. d
22. a
23. b
24. a
25. b
26. c
27. a
28. c
29. a
30. b
31. a
32. a
33. d
34. a
35. d
36. c
37. b
38. a
39. d
40. d
41. c
42. b
43. a
44. b
45. b
46. c
47. b
48. b
49. b
50. a

10. Atrioventricular Blocks

1. B
2. A
3. A
4. C
5. A
6. C
7. D
8. B
9. A
10. D
11. B
12. A
13. C
14. D
15. C
16. D
17. D
18. B
19. A
20. D
21. D
22. D
23. A
24. B
25. A
26. B
27. C
28. D

11. Nonpharmacologic Treatments

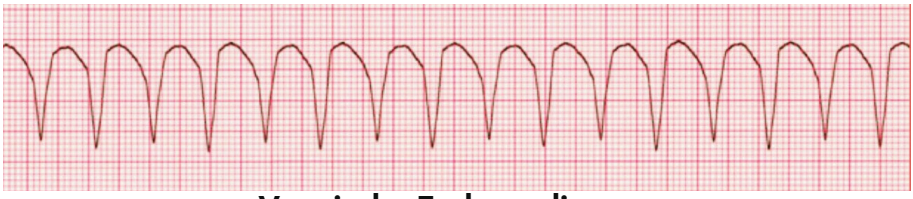
1. A
2. A
3. A
4. A
5. B
6. A
7. B
8. A
9. A
10. A
11. B
12. D
13. D
14. A
15. C
16. C
17. B
18. B
19. D
20. A
21. B
22. C
23. A
24. C
25. A
26. A
27. A
28. D
29. A
30. C
31. D
32. B
33. C
34. A
35. A
36. D
37. A
38. C
39. D
40. B



12. Pharmacologic Treatments

1. E
2. D
3. A
4. E
5. D
6. A
7. E
8. C
9. B
10. A
11. B
12. A
13. A
14. B
15. A
16. C
17. C
18. C
19. A
20. B
21. C
22. B
23. C
24. D
25. D
26. D
27. C
28. D
29. D
30. B
31. D
32. D
33. C
34. D
35. A
36. A
37. C
38. C
39. B
40. C
41. B
42. C
43. D
44. D
45. C
46. C
47. B
48. B
49. D
50. D
51. C
52. A
53. tachycardia
54. AV
55. bradycardia
56. parasympathetic
57. bolus
58. injection
59. flushing
60. dry mouth

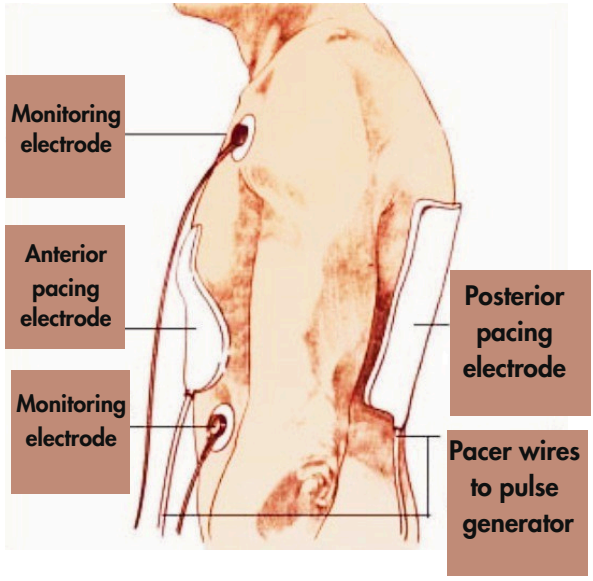
61. asthma
62. glaucoma
63. heart failure
64. increasing
65. Adrenalin
66. severe allergic reactions, cardiac arrest, and asthma
67. increased heart rate, high blood pressure, and anxiety
68. kidney disease
69. heart disease, high blood pressure, and diabetes
70. together without medical supervision
71. A
72. C
73. B
74. A
75. C
76. C
77. C
78. C
79. A
80. Torsades de pointes
81. vasodilator
82. intravenously
83. hypotension
84. ventricular arrhythmias
85. bolus



Ventricular Tachycardia

13. Emergency Medical Skills

1. A
2. C
3. C
4. A
5. C
6. C
7. C
8. B
9. A
10. D
11. A
12. C
13. C
14. C
15. C
16. B
17. C
18. A
19. D
20. B
21. B
22. D
23. D
24. A
25. B
26. A
27. A
28. D
29. C
30. C



14. ECG PRACTICE STRIPS

1.
Rate: 70 bpm
Rhythm: Irregular
P Waves: Normal
PR Interval: 0.16 sec
QRS: 0.10 sec
Interpretation: Sinoatrial block

2.
Rate: 75 bpm
Rhythm: Regular
P Waves: Normal
PR Interval: 0.16 sec
QRS: 0.10 sec
Interpretation: Normal sinus rhythm

3.
Rate: 50 bpm
Rhythm: Irregular
P Waves: Normal
PR Interval: 0.16 sec
QRS: 0.10 sec
Interpretation: Sinus pause (sinus arrest)

4.
Rate: 70 bpm
Rhythm: Irregular
P Waves: Normal
PR Interval: 0.16 sec
QRS: 0.10 sec
Interpretation: Sinus arrhythmia

5.
Rate: 80 bpm
Rhythm: Irregular
P Waves: Normal
PR Interval: 0.16 sec
QRS: 0.10 sec
Interpretation: Sinus rhythm with ST segment depression and one PVC at beat 6

6.
Rate: 80 bpm
Rhythm: Irregular
P Waves: None following pacemaker spike
PR Interval: None
QRS: Wide—greater than 0.10 sec following pacemaker spike
Interpretation: Pacemaker—atrial and ventricular, with one PVC at beat 5. Notice that there is no P wave generated with the atrial spike. This would be a failure to capture with the atrial spike.

7.
Rate: 80 bpm
Rhythm: Irregular
P Waves: None
PR Interval: None
QRS: Wide—greater than 0.10 sec following pacemaker spike
Interpretation: Pacemaker—ventricular, with PVCs at beats 4 and 6

8.
Rate: 167 bpm
Rhythm: Regular
P Waves: None
PR Interval: None
QRS: Wide—greater than 0.10 sec
Interpretation: Ventricular tachycardia— monomorphic

9.
Rate: 70 bpm
Rhythm: Irregular
P Waves: Normal
PR Interval: Progressive lengthening
QRS: 0.10 sec
Interpretation: Second-degree AV block Type I (Wenckebach)

10.
Rate: 40 bpm
Rhythm: Irregular
P Waves: Normal
PR Interval: 0.16 sec and constant
QRS: 0.08 sec
Interpretation: Second-degree AV block Type II with inverted T waves

11.
Rate: 90 bpm (counting PVCs), 94 in underlying rate
Rhythm: Irregular
P Waves: Normal
PR Interval: 0.28 sec
QRS: 0.10 sec
Interpretation: Normal sinus rhythm with firstdegree AV block with multiform PVCs at beats 4, 7, and 9

12.
Rate: 60 bpm
Rhythm: Irregular
P Waves: None
PR Interval: None
QRS: 0.10 sec
Interpretation: Atrial fibrillation

13.
Rate: 50 bpm
Rhythm: Irregular
P Waves: Normal
PR Interval: 0.20 sec
QRS: 0.08 sec
Interpretation: Sinus bradycardia with two PACs at beats 2 and 4

14.
Rate: 120 bpm
Rhythm: Irregular
P Waves: Normal in first three beats
PR Interval: 0.16 sec in first three beats
QRS: 0.10 sec
Interpretation: Paroxysmal supraventricular tachycardia

15.
Rate: 214 bpm
Rhythm: Regular
P Waves: None
PR Interval: None
QRS: Wide—greater than 0.10 sec
Interpretation: Ventricular tachycardia— monomorphic

16.
Rate: 43 bpm
Rhythm: Regular
P Waves: None
PR Interval: None
QRS: Wide—greater than 0.10 sec
Interpretation: Accelerated idioventricular rhythm

17.
Rate: 40 bpm
Rhythm: Irregular
P Waves: None
PR Interval: None
QRS: Wide—greater than 0.10 sec
Interpretation: Idioventricular rhythm with one PVC at beat 2

18.
Rate: 38 bpm
Rhythm: Regular
P Waves: Present, but hard to see because of artifact
PR Interval: Not possible to measure
QRS: 0.10 sec
Interpretation: Sinus bradycardia with muscle artifact

19.
Rate: 60 bpm (counting PVCs), 66 bpm in underlying rate
Rhythm: Irregular
P Waves: Present, but hard to see because of artifact
PR Interval: Not possible to measure
QRS: 0.10 sec
Interpretation: Normal sinus rhythm with uniform PVCs and muscle artifact

20.
Rate: 80 bpm
Rhythm: Irregular
P Waves: Normal in beats 5 through 8
PR Interval: 0.16 sec in beats 5 through 8
QRS: 0.10 sec in beats 5 through 8
Interpretation: Normal sinus rhythm beginning with muscle artifact and adjusting to a normal baseline in beats 5 through 8

21.
Rate: 68 bpm
Rhythm: Regular
P Waves: Flutter waves
PR Interval: Not possible to measure
QRS: 0.20 sec with notched appearance
Interpretation: Atrial flutter with a bundle branch block

22.
Rate: 180 bpm
Rhythm: Irregular
P Waves: None
PR Interval: None
QRS: 0.08 sec
Interpretation: Atrial fibrillation

23.
Rate: 214 bpm
Rhythm: Regular
P Waves: Not clearly visible
PR Interval: Not measurable
QRS: 0.08 sec
Interpretation: Supraventricular tachycardia with ST segment depression

24.
Rate: 47 bpm
Rhythm: Regular
P Waves: Inverted
PR Interval: 0.10 sec
QRS: 0.10 sec
Interpretation: Junctional rhythm with ST segment elevation

25.
Rate: 160 bpm
Rhythm: Irregular
P Waves: None
PR Interval: None
QRS: 0.10 sec
Interpretation: Accelerated junctional rhythm with bigeminal uniform PVCs

26.
Rate: 75 bpm
Rhythm: Regular
P Waves: Inverted or absent
PR Interval: 0.16 sec with inverted P waves
QRS: 0.10 sec
Interpretation: Accelerated junctional rhythm

27.
Rate: 65 bpm
Rhythm: Regular
P Waves: Normal
PR Interval: 0.16 sec
QRS: 0.10 sec
Interpretation: Pacemaker—atrial, with nonpaced P wave at beat 3

28.
Rate: 100 bpm
Rhythm: Regular
P Waves: Normal with low voltage following pacemaker spike
PR Interval: 0.16 sec
QRS: Wide—greater than 0.10 sec with notched appearance following pacemaker spike
Interpretation: Pacemaker—atrial and ventricular

29.
Rate: 80 bpm
Rhythm: Irregular
P Waves: None
PR Interval: None
QRS: Wide—greater than 0.10 sec following pacemaker spike
Interpretation: Pacemaker—ventricular, with one junctional complex with ST segment depression and inverted T wave at beat 6

30.
Rate: 56 bpm
Rhythm: Regular
P Waves: Normal but not associated with QRS
PR Interval: Variable
QRS: 0.10 sec
Interpretation: Third-degree AV block 31. Rate: 80 bpm Rhythm: Irregular P Waves: Normal PR Interval: 0.32 sec QRS: 0.10 sec Interpretation: First-degree AV block with a PJC at beat 6

32.
Rate: 60 bpm
Rhythm: Irregular
P Waves: Normal
PR Interval: Progressive lengthening
QRS: Wide—greater than 0.10 sec
Interpretation: Second- degree AV block Type I (Wenckebach) with wide QRS

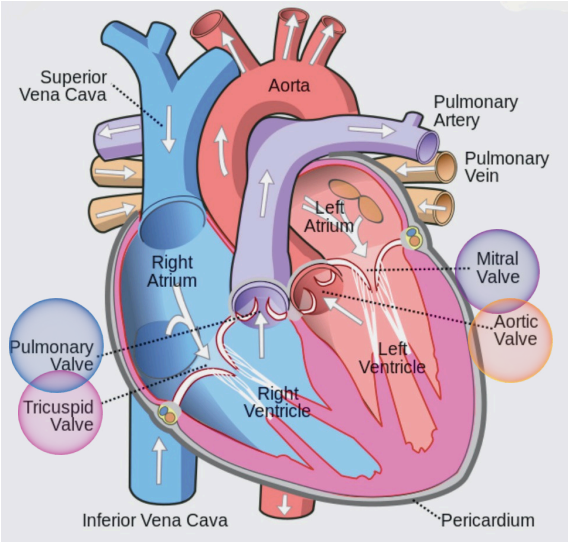
33.
Rate: Indeterminate
Rhythm: Chaotic
P Waves: None
PR Interval: None
QRS: None
Interpretation: Ventricular fibrillation

34.
Rate: Not possible to measure
Rhythm: Irregular
P Waves: None
PR Interval: None
QRS: Wide—greater than 0.10 sec
Interpretation: Torsade de pointes with muscle artifact

35.
Rate: 90 bpm
Rhythm: Irregular
P Waves: None
PR Interval: None
QRS: 0.10 sec
Interpretation: Atrial fibrillation with muscle artifact

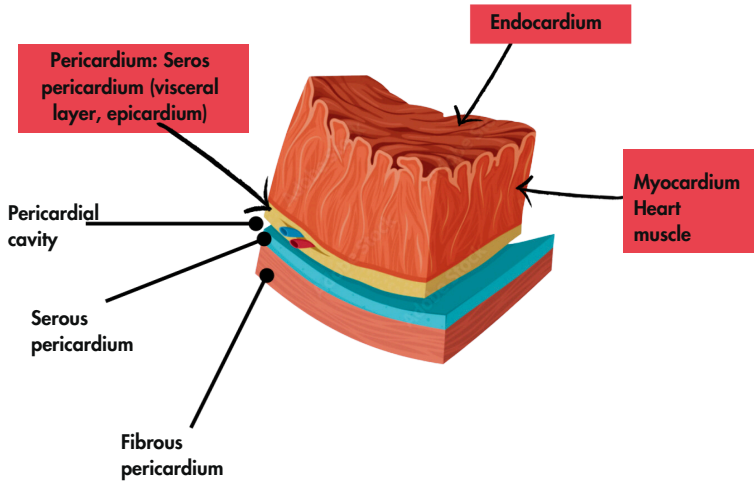
15. Image Labeling Exercises

1.



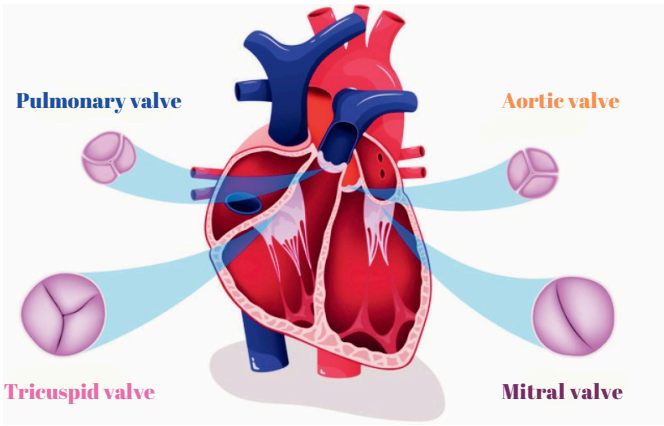
A. Superior Vena Cava
B. Pulmonary Valve
C. Tricuspid Valve
D. Mitral Valve
E. Aortic Valve

2.



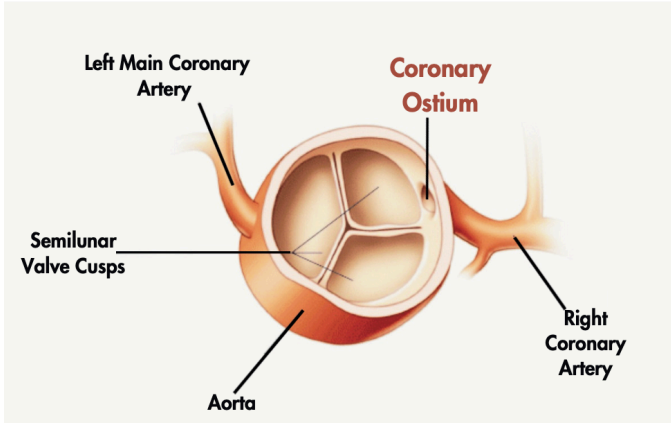
A. Pericardium: Seros pericardium
B. Endocardium
C. Myocardium Heart muscle

3.



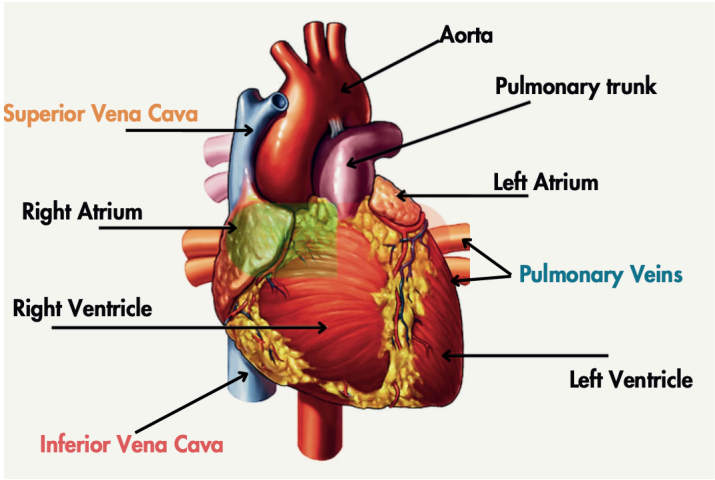
A. Pulmonary valve
B. Aortic valve
C. Tricuspid valve
D. Mitral valve

4.



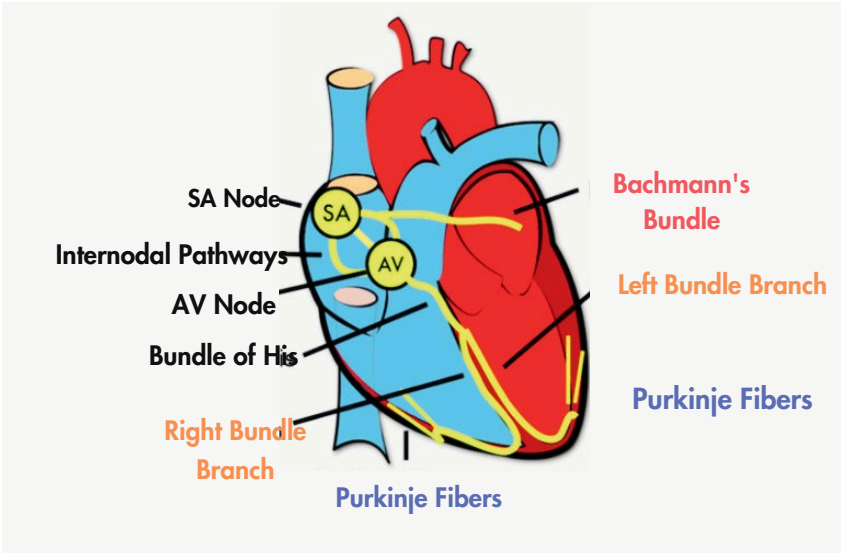
A. Coronary Ostium
B. Semilunar Valve Cusps
C. Right Coronary Artery
D. Aorta
E. Left Main Coronary Artery

5.



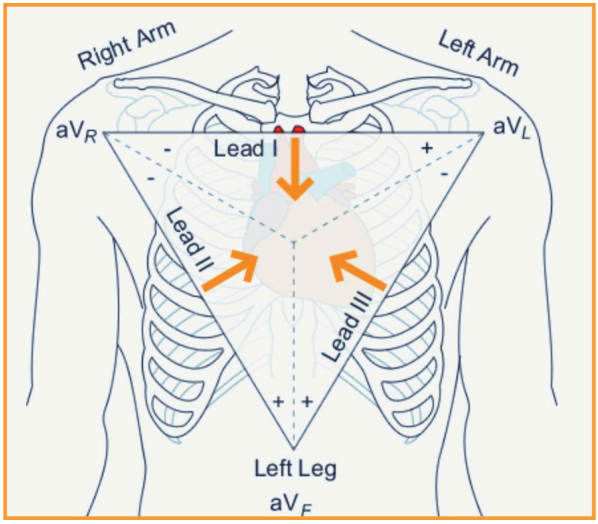
A. Superior vena cava
B. Inferior Vena Cava
C. Pulmonary veins
D. Right Atrium
E. Right Ventricle
F. Pulmonary trunk
G. Left Atrium
H. Left Ventricle

6.



A. Right Bundle Branch
B. Purkinje Fibers
C. Left Bundle Branch
D. Bachmann's Bundle

7.

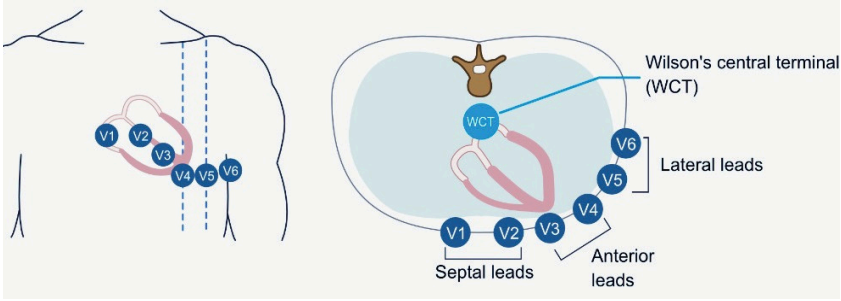


A. aV_R

B. aVL

C. aV_F

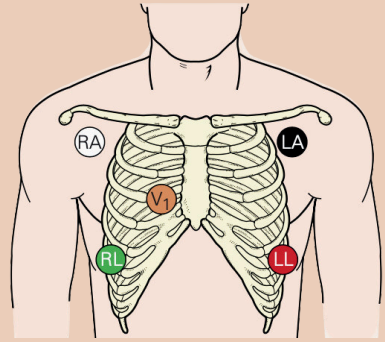
8.



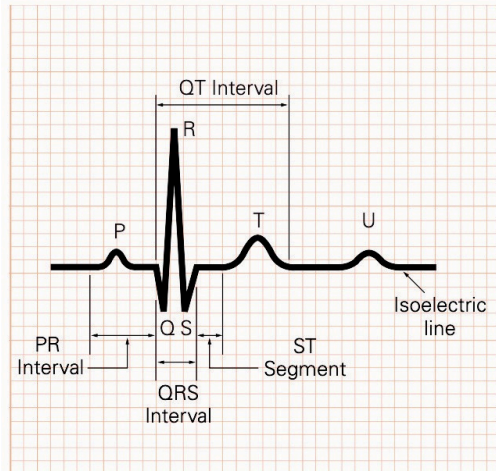
9.

Five-leadwire system

A. White: right arm (RA)
B. Green: right leg (RL)
C. Black: left arm (LA)
D. Red: left leg (LL)
E. Brown: chest (C)



10.



A. QT Interval
B. PR Interval
C. QRS Interval
D. ST Segment
E. Isoelectric line

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