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Test Questions

Chapter 1

1. Which of the following can occur instantly during cardiac arrest?
 - A. pulse or blood pressure drop
 - B. loss of consciousness
 - C. collapse
 - D. All of the above
2. Which of the following increases the risk of irreversible brain and organ injury?
 - A. delay in restoring a heart rhythm
 - B. delay in restoring blood flow
 - C. immediate treatment
 - D. A and B only
3. Which of the following is the **third** leading cause of death in the United States?
 - A. cardiac arrest
 - B. cancer
 - C. heart diseases
 - D. diabetes
4. Which of the following factors can affect cardiac arrest outcome?
 - A. bystander cardiopulmonary resuscitation (CPR) rates
 - B. variation in care processes
 - C. variation in care protocols
 - D. all of the above
5. Which of the following can significantly improve survival and neurologic function following cardiac arrest?
 - A. bystanders
 - B. first responders and emergency medical technicians
 - C. paramedics and hospital-based health care providers
 - D. all of the above
6. Approximately _____ out of 10 cardiac arrests occur in a home setting.
 - A. 6
 - B. 7
 - C. 8
 - D. 10
7. Which of the following are **recent** advancements available in cardiac treatments?
 - A. percutaneous coronary interventions
 - B. emergency cardiopulmonary bypass
 - C. cardiac revascularization and post-resuscitation care algorithms
 - D. all of the above
8. In order to improve cardiac arrest, the study will focus on which of the following topics and questions?
 - A. *CPR and use of automated external defibrillators (AEDs)*
 - B. *EMS and hospital resuscitation systems of care*
 - C. *Resuscitation research*

- D. all of the above
9. Cardiac arrest is a severe malfunction or cessation of the electrical and mechanical activity of the _____.
A. lungs
B. heart
C. liver
D. pancreas
10. Under **normal** circumstances, _____ initiates and sends an electrical signal to the right and left atria.
A. left ventricles
B. right ventricles
C. the sinoatrial node
D. pulmonary artery
11. Which of the following pumps blood out of the heart and in to the lungs?
A. right and left ventricles
B. right and left atria
C. the sinoatrial node
D. none of the above
12. Cardiac arrest is different and medically distinct from a heart attack.
A. TRUE
B. FALSE
13. What is the **immediate** cause of **cardiac arrest**?
A. *stopping of mechanical* activity of the heart
B. *blockage or significant* narrowing of a coronary artery
C. *high glucose level*
D. none of the above
14. What is the **immediate** cause of **heart attack**?
A. *stopping of mechanical* activity of the heart
B. *blockage or significant* narrowing of a coronary artery
C. *high glucose level*
D. none of the above
15. Which of the following is **non-cardiac** cause/s of cardiac arrest?
A. *electrolyte imbalance*
B. *severe blood loss*
C. *drug use and drowning*
D. all of the above
16. Which of the following are treatments of cardiac arrest?
A. *Cardiopulmonary resuscitation*
B. *Defibrillation*
C. *Advanced cardiac life support and Post-arrest care*
D. all of the above
17. Which of the following represents the ECG appearance during Asystole in cardiac arrest?
A. Usually wide QRS complexes
B. Regular QRS complexes
C. No electrical activity-flat line
D. Irregular electrical pattern on ECG
18. Which of the following is the **first** step in the cardiac arrest chain of survival?
A. Early access
B. Early CPR

- C. Early defibrillation
 - D. Early ACLS
19. _____ uses electrical shock to the heart to reestablish a normal spontaneous heart rhythm.
- A. CPR
 - B. Defibrillation
 - C. *Post-Resuscitative Care*
 - D. none of the above
20. The EMS systems includes which of the following personnel to respond cardiac arrest?
- A. 911 call takers
 - B. dispatchers and first responders
 - C. emergency medical technicians and paramedics
 - D. all of the above

Chapter 2

21. Approximately how many cases of out-of-hospital cardiac arrest (OHCA) occur in the United States every year among patients of all ages?
- A. 50,000
 - B. 100,000
 - C. 395,000
 - D. 850,000
22. Which of the following helps emergency medical services (EMS) agencies evaluate and improve their performance in cardiac arrest monitoring and alert response?
- A. CARES
 - B. CCI
 - C. FDA
 - D. AHA
23. Survival and neurologic recovery following cardiac arrest are influenced by which of the following factors?
- A. individual patient characteristics
 - B. EMS or hospital system characteristics
 - C. circumstantial factors specific to the event
 - D. all of the above
24. Which of the following cardiac arrest location has a **highest** survival rate for patients?
- A. Private home
 - B. Public transportation center
 - C. *Street/highway*
 - D. Nursing home/assisted living facility
25. OHCA's that occur in rural areas are associated with relatively worse outcomes because of a number of structural barriers.
- A. TRUE
 - B. FALSE
26. Which of the following age group has **lowest** OHCA survival rate?
- A. 13-17
 - B. 50-64
 - C. ≥ 80
 - D. < 1
27. Men, compared to Women, are less likely to experience and survive a cardiac arrest.
- A. TRUE
 - B. FALSE

28. What is the approximate post-cardiac arrest cost for patients following hospital discharge?
- A. \$4,000 for 30 days
 - B. \$10,000 for 30 days
 - C. \$15,000 for 30 days
 - D. \$42,000 for 30 days
29. Which of the following **primary** OHCA registries collect cardiac arrest data in the United States?
- A. CARES
 - B. ROC Epistry
 - C. GWTG-R
 - D. all of the above
30. Which of the following national network of research institutions conducts randomized clinical trials that evaluate promising treatments and therapies for patients with OHCA and life-threatening trauma?
- A. ROC
 - B. CCI
 - C. FDA
 - D. AHA
31. The cardiac arrest monitoring incidence and outcomes are limited by which of the following?
- A. voluntary OHCA registry data
 - B. voluntary IHCA registry data
 - C. FDA reports
 - D. A and B only
32. Cerebral Performance Category **CPC: 5** represents which of the following?
- A. coma
 - B. brain death
 - C. severe dysfunction
 - D. none of the above
33. Currently, data systems between EMS and hospitals lack interoperability due to which of the following?
- A. proprietary nature of each system
 - B. funding limitations
 - C. concerns regarding patient privacy laws
 - D. all of the above
34. Future surveillance and research efforts to improve cardiac arrest survival can promote state-based data integration by leveraging electronic medical records from EMS and hospitals.
- A. TRUE
 - B. FALSE
- Chapter 3**
35. Approximately _____ percent of EMS-treated out-of-hospital cardiac arrests (OHCA) occur in a public place.
- A. 5 to 10
 - B. 30 to 35
 - C. 15 to 20
 - D. 40 to 50
36. Which of the following critical action should be done **first** after recognizing a medical emergency by a bystander?
- A. CPR
 - B. call 911
 - C. injecting medication

D. AED

37. CPR provides _____, keeping vital organs alive until the heart is able to resume pumping blood.

- A. oxygenated blood flow
- B. deoxygenated blood flow
- C. insulin supply
- D. electrical current

38. The bystander CPR can increase cardiac survival rate between _____ & _____ %.

- A. 20 & 200
- B. 30 & 300
- C. 40 & 400
- D. 50 & 500

39. The wide variation in bystander CPR rates in the United States based which of the following factors?

- A. community
- B. neighborhood
- C. socioeconomic
- D. all of the above

40. Due to which of the following reasons, bystander **do not** engage in performing CPR?

- A. An inability to recognize cardiac arrest
- B. A lack of adequate CPR training and rescuer confusion
- C. Concerns about possible liability, psychological factors and health concerns
- D. All of the above

41. A cardiac arrest sometimes can be mistaken for fainting or a seizure.

- A. TRUE
- B. FALSE

42. Which of the following are commonly cited barriers for providing CPR by bystanders?

- A. fear of harming the unresponsive individual
- B. performing CPR improperly
- C. lack of CPR training
- D. all of the above

43. _____ are designed to protect those who choose to aid during an emergency, and are intended to reduce bystanders' hesitation to assist.

- A. Patient Protection laws
- B. Good Samaritan laws
- C. Sarbanes-Oxley laws
- D. none of the above

44. Which of the following are **psychological barriers** to performing CPR in emergency settings?

- A. panic
- B. apprehension
- C. feelings of inadequacy
- D. all of the above

45. _____ also known as mouth-to-mouth ventilation.

- A. rescue breathing
- B. AED
- C. insulin supply
- D. oxygen therapy

46. The bystander CPR can be improved by offering which of the following?
- A. Biology course
 - B. resuscitation equipment
 - C. certificate-based CPR courses
 - D. AED
47. The country of Denmark recognized the low frequency of bystander CPR and low 30-day survival from cardiac arrest and took steps by adopting which of the following national initiatives to strengthen bystander resuscitation attempts?
- A. mandatory resuscitation training in school and when getting driver's license
 - B. voluntary first-aid training & free distribution of CPR kits
 - C. increase in the number of AEDs placed in public locations
 - D. all of the above
48. What is the survival rates among children and adolescents in cardiac arrest?
- A. 2 to 6%
 - B. 3 to 12%
 - C. 30 to 40%
 - D. 45 to 55%
49. Which of the following program can improve cardiac arrest outcome?
- A. Public Access Defibrillation (PAD)
 - B. First Aid
 - C. Cancer awareness
 - D. none of the above
50. Cardiac arrest *First-Responder Programs* (FRPs) designed for _____ have also proven effective under some circumstances.
- A. radiologists
 - B. surgical technologists
 - C. law enforcement officers
 - D. nurses
51. In-hospital PAD programs focus on enhancing _____ access and use for both the public and health care providers.
- A. rescue breathing
 - B. AED
 - C. insulin supply
 - D. oxygen therapy
52. Ensuring that AEDs are safe for use as medical devices is one responsibility of the _____.
- A. CDC
 - B. American Heart Association
 - C. Public Access Defibrillation Program (PAD)
 - D. U.S. Food and Drug Administration (FDA)
53. Which of the following can be used to improve and track AED location awareness and public knowledge?
- A. mobile media
 - B. social media
 - C. crowdsourcing
 - D. all of the above
54. Ideal characteristics of an AED registry includes which of the following?
- A. Linkages
 - B. Location and structural information

- C. Process information
- D. all of the above

Chapter 4

55. _____% of patients treated by emergency medical services (EMS) personnel for cardiac arrest survive to discharge.
- A. 3%
 - B. 11%
 - C. 30%
 - D. 50%
56. Which of the following is/are contributing sector/s of the emergency medical services system (EMS)?
- A. Health
 - B. Public Health
 - C. Public Safety
 - D. all of the above
57. The 911 dispatchers, operators or telecommunicators are known as which of the following?
- A. Emergency medical dispatchers
 - B. Emergency medical technicians
 - C. Advanced-level providers
 - D. EMS medical directors
58. The team of medical technicians includes which of the following?
- A. Basic EMTs (EMT-Bs)
 - B. Advanced EMTs (EMT-As)
 - C. Paramedics (EMT-Ps)
 - D. all of the above
59. Paramedics (EMT-Ps) are trained to provide advanced life support and they receive _____ hours of training depending on state requirements and paramedic school.
- A. 500 to 600
 - B. 600 to 700
 - C. 1,000 to 2,500
 - D. none of the above
60. Lack of integration among the federal government programs that support and regulate EMS systems contributes to which of the following?
- A. unnecessary redundancies
 - B. regulatory gaps and confusion
 - C. wasted resources
 - D. all of the above
61. _____ Division of Heart Disease and Stroke Prevention provides public health leadership to improve cardiovascular health, reduce the burden, and eliminate disparities associated with heart disease and cardiac arrest.
- A. Centers for Disease Control and Prevention's (CDC's)
 - B. American Heart Association
 - C. Public Access Defibrillation Program (PAD)
 - D. U.S. Food and Drug Administration (FDA)
62. Which of the following ensures coordination among federal agencies involved with state, local, tribal, and regional EMS and 911 systems?
- A. Centers for Disease Control and Prevention's (CDC's)
 - B. The Federal Interagency Committee on EMS (FICEMS)
 - C. Public Access Defibrillation Program (PAD)
 - D. U.S. Food and Drug Administration (FDA)

63. In most states, state law governs the scope, authority, and operation of EMS agencies, leading to considerable variability in the size, organizational structure, and funding of EMS agencies from state to state.
- A. TRUE
 - B. FALSE
64. Which of the following is an operational framework that can be used to assess the EMS response to OHCA?
- A. early access and CPR
 - B. early defibrillation and ACLS
 - C. early post-resuscitative care
 - D. all of the above
65. What is the **last** action within the overarching EMS system response to cardiac arrest?
- A. Transport to Hospital & Transition of Care
 - B. CPR & Defibrillation
 - C. EMS Dispatch
 - D. Access 911
66. EMS response intervals are strongly associated with cardiac arrest survival rates, with longer response intervals linked to worse outcomes.
- A. TRUE
 - B. FALSE
67. Which of the following are barriers to early EMS activation in minority and immigrant communities?
- A. Resigned attitudes about delays in EMS response in stigmatized neighborhoods
 - B. Fear of deportation
 - C. Language barriers
 - D. All of the above
68. _____ underpins all successful cardiac resuscitation and includes CPR and defibrillation.
- A. Chest x-ray
 - B. EKG
 - C. BLS
 - D. none of the above
69. The purpose of ventilation during CPR is to ensure sufficient oxygenation and adequate removal of _____, while minimizing interruptions in chest compressions and not hyperventilating.
- A. Oxygen
 - B. carbon dioxide (CO₂)
 - C. foreign object
 - D. mucus
70. Excessive oxygenation during CPR causes acute _____ injury, and is a risk factor for aspiration.
- A. lung
 - B. heart
 - C. liver
 - D. kidney
71. CPR protocols are slightly different for pediatric populations: chest compressions are _____ and compression-to-ventilation ratio is _____ when two rescuers are present.
- A. shallower, lower
 - B. deeper, lower
 - C. deeper, higher
 - D. none of the above

72. High-quality CPR leads to improved _____ blood pressure and outcomes among children with in-hospital cardiac arrest.
- A. femoral
 - B. pulmonary
 - C. arterial
 - D. renal
73. Paramedics (EMT-Ps) use manual defibrillators, which are capable of performing defibrillation and also of monitoring which of the following several **physiological** parameters?
- A. heart rhythm
 - B. blood pressure
 - C. pulse oximetry and end-tidal CO₂
 - D. All of the above
74. Advances in defibrillator technology hold the promise of reducing or eliminating _____.
- A. Oxygen
 - B. carbon dioxide (CO₂)
 - C. perischock pauses
 - D. blood pressure
75. ACLS is the _____ link in the chain of survival and includes advanced airway management, drug therapies, intravenous and intraosseous access, physiological monitoring, and hemodynamic support.
- A. 1st
 - B. 2nd
 - C. 3rd
 - D. 4th
76. Post-cardiac arrest syndrome includes the possibility of which of the following?
- A. post-cardiac arrest brain injury
 - B. myocardial dysfunction and ischemia
 - C. reperfusion injuries
 - D. All of the above
77. For transportation of the cardiac arrest patient to the hospital to be successful, which of the following factors must be addressed?
- A. rapid transportation with few interruptions
 - B. taking patients to appropriate hospital
 - C. proper patient data transfer
 - D. All of the above
78. To effectively and safely transfer the care of a cardiac arrest patient from EMS to another health care provider, a formal written or **printed report** of the EMS care **should** be provided at the time of the transfer.
- A. TRUE
 - B. FALSE
79. _____ CPR involves the identification of cardiac arrest and the provision of CPR instructions to the 911 caller prior to the arrival of EMS providers at the scene of the cardiac arrest and can improve the outcome.
- A. Dispatcher-assisted
 - B. Cardiologist
 - C. EMT
 - D. none of the above
80. Which of the following is **not relevant** to aspects of high-performance CPR?
- A. Chest Compression Fraction
 - B. Compression Depth
 - C. Patient's gender

D. Compression Rate

Chapter 5

81. The post-arrest care most frequently occurs within a _____ setting.

- A. home
- B. hospital
- C. lab
- D. none of the above

82. _____ occur as patients move between different health care providers and departments and are fundamental components of managing care for patients who initially survive cardiac arrest.

- A. Transitions of care
- B. Billing charge
- C. Loss of patient data
- D. none of the above

83. Approximately how many cases of IHCA are reported in adults?

- A. 10,000
- B. 50,000
- C. 90,000
- D. 200,000

84. Cardiac arrest remains a largely _____ event that can happen at any time with outcomes that are highly dependent on rapid diagnosis and treatment.

- A. predictable
- B. foreseeable
- C. unpredictable
- D. none of the above

85. The Resuscitation team is also called _____.

- A. Rapid Response Teams
- B. Emergency Code Team
- C. Medical Emergency Teams
- D. none of the above

86. The Pediatric RRT-METs are similar to adult teams, but consist of varying personnel such as:

- A. physicians
- B. nurses
- C. respiratory therapists
- D. All of the above

87. Hospital resuscitation teams are required to possess specific clinical skills and therefore, often include which of the following in emergency or acute hospital care?

- A. specialized physicians
- B. critical care nurse
- C. a respiratory therapist
- D. All of the above

88. Post-cardiac arrest syndrome is a complex clinical condition with which of the following **primary** pathophysiological consequences?

- A. myocardial dysfunction
- B. neurologic and systemic injury
- C. subsequent restoration of blood flow (reperfusion)
- D. All of the above

89. All of the following are priority areas for research in in-hospital care **EXCEPT**:
- A. Transition of care
 - B. Early detection of IHCA
 - C. Disparities in IHCA
 - D. Insurance coverage
90. _____ is a concerning and destructive consequence of cardiac arrest affecting the likelihood of short- and long-term survival, disability, and quality of life.
- A. Neurologic injury
 - B. Asthma
 - C. Diabetes
 - D. Low Blood Pressure
91. _____ is an early post-arrest intervention designed to reduce the body temperature in resuscitated, comatose cardiac arrest patients.
- A. Targeted Temperature Management (TTM)
 - B. Cardiovascular and Hemodynamic Management
 - C. Cardiac Catheterization
 - D. Percutaneous Coronary Intervention (PCI)
92. Hemodynamic management is needed to improve the impaired pumping function of the _____ after ROSC.
- A. liver
 - B. kidneys
 - C. heart
 - D. lungs
93. Cardiac Catheterization and Percutaneous Coronary Intervention (PCI) is a procedure that uses a catheter to place a stent across a blocked artery to hold the artery open as a treatment for _____.
- A. pulmonary arrest
 - B. myocardial ischemia
 - C. meningitis
 - D. pneumonia
94. _____ are used to facilitate the elevation of low blood pressure and have been the accepted standard of care for cardiac arrest patients without immediate ROSC and for post-cardiac arrest patients with compromised hemodynamics.
- A. hydralazine
 - B. ACE inhibitors
 - C. epinephrine
 - D. minoxidil
95. Cardiac arrest patients commonly experience hyperglycemia and require close monitoring of _____ levels.
- A. glucose
 - B. insulin
 - C. cholesterol
 - D. sodium
96. Which of the following highly sensitive imaging techniques can detect specific structural disorders that are known risk factors for cardiac arrest?
- A. Magnetic resonance imaging (MRI)
 - B. Cardiac CT tests
 - C. Chest X ray
 - D. Both A and B

97. Brain imaging with CT or MRI is **common** for _____ in cardiac arrest.
- A. diabetic patients
 - B. comatose patients
 - C. pediatric patients
 - D. female patients
98. Continuous _____ monitoring is helpful among unresponsive post-arrest patients to assess for status epilepticus and monitor for non-convulsive status epilepticus.
- A. chest x ray
 - B. blood test
 - C. electroencephalogram (EEG)
 - D. none of the above
99. On Targeted urgency scale, the level 1 on patient status represents _____.
- A. failure to restore circulation
 - B. persistent hemodynamic stability
 - C. hemodynamically stable
 - D. no evidence of acute coronary syndrome
100. More research targeting simulation training, debriefing strategies, and mechanical devices can improve quality of CPR and resuscitation care.
- A. TRUE
 - B. FALSE

Chapter 6

101. Research, along with the implementation of best practices that are based on that research, provides the foundation necessary to improve cardiac arrest outcomes over the next decade.
- A. TRUE
 - B. FALSE
102. **Schematic** of today's system of response to cardiac arrest is made of which of the following?
- A. Culture
 - B. Science
 - C. Evidence and Care
 - D. All of the above
103. There are how many operational phases of translational research that can improve cardiac arrest survival?
- A. 2
 - B. 3
 - C. 4
 - D. 5
104. Research to reduce time to defibrillation, including the use of AEDs, implantable medical devices and wearable defibrillators can be done in which of the following phases?
- A. Circulatory Phase
 - B. Metabolic Phase
 - C. Electrical Phase
 - D. none of the above
105. The circulatory phase offers research to improve efficiency of CPR, which currently only provides _____ percent of regular blood flow to the heart.
- A. 2 to 8
 - B. 10 to 30
 - C. 35 to 40
 - D. 45 to 55

106. Which of the following phase is designed to control and minimize reperfusion injury, the inflammatory response responsible for cellular death and diminished organ function?

- A. Circulatory Phase
- B. Metabolic Phase
- C. Electrical Phase
- D. none of the above

107. A prospective biomedical or behavioral research study that is designed to test the safety and effectiveness of a therapeutic agent or intervention using consenting human subjects is called:

- A. Traditional clinical trial
- B. Adaptive clinical trial
- C. Platform trial
- D. Pragmatic trial

108. _____ is a clinical trial designed to simultaneously evaluate multiple treatments or combinations of treatment.

- A. Traditional clinical trial
- B. Adaptive clinical trial
- C. Platform trial
- D. Pragmatic trial

109. Simulation training, team training, high-performance CPR and dispatcher-assisted CPR falls in which of the following research area subjects?

- A. Preclinical science
- B. Systems of care
- C. Clinical studies
- D. Population studies

110. Mobile applications, technologies, and devices that can track outpatient physiological data, monitor electrocardiograms and pulse and cardiac arrhythmias, and activate the "chain of survival" could have a profound effect on saving lives.

- A. TRUE
- B. FALSE

111. There are more than _____ smartphone applications currently on the market that can perform a variety of tasks including providing a platform that connects cardiac arrest patients with the nearest bystander.

- A. 2
- B. 3
- C. 4
- D. 50

112. The ability of resuscitation research to improve cardiac arrest outcomes relies on sustained _____ and widespread implementation of practices based on newly generated evidence.

- A. traditional clinical trial
- B. adaptive clinical trial
- C. funding
- D. pragmatic trial

113. _____ implemented a statewide database to measure OHCA incidence and care processes, and EMS systems throughout the state.

- A. Texas
- B. Arizona
- C. Nevada
- D. Florida

Chapter 7

114. Cardiac arrest is a treatable medical event that requires immediate action to save a life, affecting nearly _____ people per year.

- A. 600,000
- B. 60,000
- C. 6,000
- D. 600

115. Which of the following are **foundational elements** of a continuously learning system of response to cardiac arrest and resuscitation research?

- A. Science and informatics
- B. Multi-stakeholder partnerships
- C. Incentives and Culture of continuous learning
- D. All of the above

116. Resuscitation research in the United States is hindered by a paucity of high-quality data for both out-of-hospital cardiac arrest (OHCA) and in-hospital cardiac arrest (IHCA) because of the **lack of** national EMS and health care system performance metrics.

- A. TRUE
- B. FALSE

117. Bystanders who witness an OHCA are key to providing early access, CPR, and defibrillation—the _____ links in the chain of survival and the links that are most strongly associated with improved outcomes.

- A. first
- B. second
- C. third
- D. fourth

118. Developing which of the following is the **first step** to encourage the adoption of practices that have demonstrated a positive effect on saving lives from cardiac arrest?

- A. standardized protocols
- B. educational standards
- C. training curricula
- D. All of the above

119. BLS training programs based in which of the following settings help the communities for providing lifesaving care during cardiac arrest?

- A. schools
- B. the workplace
- C. other public locations
- D. All of the above

120. Surviving cardiac arrest depends on the provision of **high-quality care** by which of the following?

- A. First responders
- B. EMS providers
- C. Hospital personnel
- D. All of the above