Chapter 14 Questions

1. In the absence of underlying pathology, which ECG finding is NOT considered a normal variant:

A. Incomplete Right Bundle Branch Block
B. Sinus Bradycardia
C. Right Axis Deviation
D. Mobitz type II (Wenckebach) AV Block

Answer: D (Page 334). Type I is a rare finding and is typically considered a normal variant resulting from enhanced vagal tone. Type II presents a risk of progression to advanced third degree A block with the possibility of syncope and requirement of permanent pacing.

2. The most common secondary cause of prolonged QT interval is due to:

A. Electrolyte imbalances
B. Endocrine abnormalities
C. Medications
D. Nutritional deficiencies.

Answer: C (Page 336). Medications is the most common. The other answers are also secondary causes but are not the most common.

3. The ECG pattern of a short PR interval and a delta wave without any documented tachyarrhythmias is:

A. Acute Myocardial Infarction
B. Congenital Long QT Syndrome (LQTS)
C. Wolff- Parkinson- White
D. Herbert- Parker- Wilson Syndrome

Answer: C (Page 337). This is the classic description for WPW ECG tracing.

4. The leading cause of death in the industrialized world is:

A. Cancer
B. Tuberculosis
C. Atherosclerotic Coronary Artery Disease
D. Infections

Answer: C (Page 338).
5. Which of the following is a classic factor for CAD delineated in the Framingham Heart Study?

A. Race
B. Incomplete Right Bundle Branch Block
C. Diabetes Insipidus
D. Hypertension

Answer: D (Page 339). The following risk factors were found to be clearly delineated in the Framingham Heart Study to increase risk in developing CAD: Gender, Smoking, DM, Age, Family History of CAD, LVH, hypercholesterolemia, and hypertension.

6. Smoking _______ the artherogenic process in both dose and duration dependent fashion.

A. decelerates
B. does not change
C. accelerates
D. None of the Above

Answer: C (Page 339).

7. In the Framingham Study a low HDL was a weaker predictor of coronary risk than was increased LDL for subjects older than 50 years.

A. True
B. False

Answer: False (Page 339). Low HDL was a much stronger predictor of coronary risk than increased LDL.

8. Which of the following EKG findings should result in prompt removal from all flying duties?

A. First-degree AV block with a PR interval of 210 milliseconds
B. Asymptomatic second-degree Mobitz I AV block
C. Asymptomatic second-degree Mobitz II AV block
D. Left axis deviation developing gradually with advancing age and a negative ECHO
E. Asymptomatic paired premature supraventricular contractions (PSVCs)

Answer C (Pages 355-366). Evaluation is not necessary in most instances of mild PR prolongation. Mobitz I AV block is typically considered a normal variant resulting from enhanced vagal tone. Mobitz II AV block presents a risk of progression to advanced and 3rd-degree AV block with the possibility of syncope and other hemodynamic consequences. Many specialists would consider even asymptomatic Mobitz II AV block to be an indication for permanent pacing. A gradual leftward axis shift over time often occurs with advancing age and echocardiography to exclude structural disease is reasonable. PSVCs are generally felt to be benign even when frequent or paired.
9. Which of the following valvular heart diseases is associated with a diastolic murmur?

A. Aortic Stenosis  
B. Aortic Regurgitation  
C. Mitral Regurgitation  
D. Tricuspid Regurgitation  
E. Pulmonary Valvular Stenosis

Answer: B (Page 348-351) Aortic Stenosis: crescendo-decrescendo systolic murmur in upper right sternal area, with radiation to carotids and down the left sternal border to the cardiac apex  
Aortic Regurgitation: high pitched decrescendo diastolic murmur heard along the sternal border  
Mitral Regurgitation: apical systolic murmur radiating laterally to the axilla  
Mitral Stenosis: opening snap and low-pitched diastolic rumble heard best with auscultation in the left lateral decubitus position at the apex with the bell of the stethoscope.  
Tricuspid regurgitation: long or pansystolic murmur at the lower left or right sternal boarder that increases with inspiration  
Pulmonary valvular stenosis: systolic crescendo-decrescendo murmur heard best along the left upper sternal boarder and accentuated by inspiration, which radiated to the left infraclavicular area.

10. You are conducting a flight physical for a new applicant to flight training. He has five years of enlisted service. He is without complaint and denies any significant past medical history. His vital signs, baseline lab work, and physical examination—including cardiovascular exam—are unremarkable. His EKG shows LAD. Your next step should be…

A. Order echocardiography.  
B. Have the applicant exercise for 2 minutes, and repeat EKG.  
C. Nothing further required—it is a disqualifying condition.  
D. Order exercise stress test.  
E. Compare with previous EKGs in his record.

Answer: E (Page 335).

11. Persistent patent foramen ovale, with clinical implications including clot-induced CVA and type II DCS from venous gas emboli, has a population prevalence of approximately…

A. 50%  
B. 25%  
C. 10%  
D. 5%  
E. 1%

Answer: B (Page 355).
12. The acute phase of pericarditis, characterized by fever, CP, dyspnea, PR depression, and STSE, typically lasts for…
   A. 24 hours
   B. 1-3 days
   C. 1 week
   D. 2-6 weeks
   E. > 3 months

Answer: D (Page 359).

13. Current published data for screening for Coronary Artery Disease in aviator populations includes the following EXCEPT:

   A. Electrocardiogram
   B. Stress Testing using Exercise Treadmill
   C. Stress Echocardiography
   D. Exercise Nuclear Scintigraphy

Answer: C. (Page 341) There is no published data regarding stress echocardiography in the aviator population. This technique is used mostly in a hospital setting.

14. One major long term complication of angioplasty utilizing stents is:

   A. Hardware failure
   B. Re-stenosis
   C. Hardware Migration
   D. Vessel Rupture

Answer: B. (Page 344). Re-stenosis occurs in about one third of all angioplasties without stents and 25% with stents. These re-stenotic lesions (comprised primarily of smooth muscle) are not the same as the native atherosclerotic lesions. Most re-stenosis occurs within the first six months after PCI.

15. The majority of hypertension is classified as:

   A. Smoking related
   B. Diabetes Mellitus induced
   C. Essential
   D. Endocrine based

Answer: C (Page 345). The majority of hypertensive patients are classified as essential, meaning that a definable pathologic process is not the cause of the elevated blood pressure.
16. Abnormalities of the mitral valve may be associated with the following EXCEPT:

A. Marfan’s Syndrome  
B. Ehlers-Danlos syndromes  
C. Down’s Syndrome  
D. Reiter’s Syndrome

Answer: D (Page 353).

17. Bicuspid Aortic Valve is a primary concern in aviation because of the potential for complications (found in at least 1/3 of individuals who are born with BAV). The general population prevalence of BAV based on pathology studies is:

A. 1%  
B. 6%  
B. 10%  
C. 15%

Answer: A (Page 352). However, on screening echocardiograms in aircrew candidates, the incidence was found to be only 0.5% to 0.9%. This was thought to be due to selection bias (pass screening medical examination).

18. You are conducting a screening medical exam on a pilot candidate and notice that he has diminished pulses in both of his legs. You take his blood pressure readings and find that his pressure is higher in his arms compared to his legs. You suspect that the candidate may have:

A. Ventricular Septal Dedect  
B. Transposition of the Great Vessels  
C. Coarctation of the Aorta  
D. Tetralogy of Fallot

Answer: C (Page 356). Coarctation of the Aorta is a localized narrowing in the aortic arch which usually occurs just distal to the left subclavian artery, resulting in a pressure differential between upper and lower extremities. Associated disorders include aneurysm of the aorta and Bicuspid Aortic Valve (BAV).
19. Based on recent studies regarding all SVT mechanisms from community-based studies and a military aviator population suggests what percent recurrence rate after an initial episode of sustained SVT?

A. 5%
B. 10%
C. 15%
D. 20%

Answer: B (Page 356). The major aeromedical concern is the risk or likelihood of recurrent sustained episodes of SVT and the possibility of associated symptoms that may incapacitate the aviator or otherwise adversely affect flying performance.

20. In the absence of secondary causes, trace tricuspid regurgitation is detected on what percent of screening echocardiograms in military pilot candidates?

A. 5%
B. 10%
C. 25%
D. 50%

Answer: D (Page 350). In the absence of secondary causes, trace to mild tricuspid regurgitation should be considered physiologic and not a disqualification for aircrew selection.