PRACTICE EXAM 14: VASCULAR TECHNOLOGY SIMULATION (170 QUESTIONS)

This practice examination contains 170 questions. Allow approximately three hours. Select the single best answer for each question. The official ARDMS VT examination uses a scaled score from 300 to 700, with 555 required to pass; this practice score is not an official scaled score.

1. A technologist is evaluating aortic bifurcation. Which result should be recognized as the best answer?

A. right and left renal arteries
B. superior and inferior mesenteric arteries
C. right and left common iliac arteries
D. common femoral and profunda arteries

2. A technologist is evaluating popliteal artery branches. Which result should be recognized as the best answer?

A. radial artery and ulnar artery
B. anterior tibial artery and tibioperoneal trunk
C. celiac artery and superior mesenteric artery
D. internal carotid and external carotid arteries

3. A technologist is evaluating common femoral artery branches. Which result should be recognized as the best answer?

A. superficial femoral and profunda femoris arteries
B. radial and ulnar arteries
C. anterior and posterior tibial arteries
D. internal and external carotid arteries

4. A technologist is evaluating brachial artery bifurcation. Which result should be recognized as the best answer?

A. axillary and subclavian arteries
B. anterior and posterior tibial arteries
C. radial and ulnar arteries
D. common and profunda femoral arteries

5. A technologist is evaluating common femoral vein landmark. Which result should be recognized as the best answer?

A. lateral to the common femoral artery near the groin
B. medial to the common femoral artery near the groin
C. posterior to the profunda femoris artery only
D. inside the femoral artery wall in the stated examination setting

6. A technologist is evaluating small saphenous vein course. Which result should be recognized as the best answer?

A. anterior thigh toward the femoral vein
B. medial thigh toward the common femoral artery
C. deep calf beside the anterior tibial artery
D. posterior calf toward the popliteal region

7. A technologist is evaluating great saphenous vein location. Which result should be recognized as the best answer?

A. within the saphenous compartment along the medial limb
B. deep to the femoral artery throughout the thigh
C. lateral to the fibula within muscle

D. inside the popliteal artery sheath

8. A technologist is evaluating superior mesenteric artery fasting waveform. Which result should be recognized as the best answer?

A. low-resistance pattern identical to the renal artery
B. continuous nonpulsatile flow
C. high-resistance pattern with limited diastolic flow
D. retrograde flow throughout systole

9. A technologist is evaluating celiac artery fasting waveform. Which result should be recognized as the best answer?

A. high-resistance pattern with minimal diastolic flow
B. continuous venous waveform
C. reversed systolic flow
D. low-resistance pattern with forward diastolic flow

10. A technologist is evaluating renal artery resistance. Which result should be recognized as the best answer?

A. high-resistance waveform with absent diastolic flow
B. low-resistance waveform with continuous diastolic flow
C. venous respiratory phasicity
D. bidirectional systolic flow

11. A technologist is evaluating hepatic vein waveform. Which result should be recognized as the best answer?

A. triphasic high-resistance arterial flow
B. continuous flow without cardiac variation

C. to-and-fro flow at a neck
D. multiphasic flow influenced by the cardiac cycle

12. A technologist is evaluating portal vein flow direction. Which result should be recognized as the best answer?

A. hepatofugal flow away from the liver
B. alternating flow with respiration
C. hepatopetal flow toward the liver
D. retrograde flow toward the spleen

13. A technologist is evaluating normal lower-extremity venous Doppler. Which result should be recognized as the best answer?

A. triphasic arterial pulsatility
B. respiratory phasicity and augmentation
C. continuous high-velocity systolic flow
D. persistent reflux after release

14. A technologist is evaluating normal lower-extremity artery at rest. Which result should be recognized as the best answer?

A. triphasic high-resistance waveform
B. continuous monophasic low-resistance waveform
C. nonphasic venous waveform
D. to-and-fro pseudoaneurysm waveform

15. A technologist is evaluating vertebral artery flow direction. Which result should be recognized as the best answer?

A. retrograde toward the arm

B. antegrade toward the brain
C. bidirectional with every heartbeat
D. absent during diastole

16. A technologist is evaluating normal internal carotid artery waveform. Which result should be recognized as the best answer?

A. high resistance with little diastolic flow
B. venous phasicity with augmentation
C. low resistance with substantial forward diastolic flow
D. to-and-fro flow at the origin

17. A technologist is evaluating normal external carotid artery waveform. Which result should be recognized as the best answer?

A. marked continuous diastolic flow like the ICA
B. respiratory phasicity without pulsatility
C. reversed systolic flow at baseline
D. relatively high resistance with brisk systolic upstroke

18. A technologist is evaluating normal common carotid artery spectral waveform. Which result should be recognized as the best answer?

A. low-resistance flow with persistent forward diastolic velocity
B. high-resistance flow with absent diastolic velocity
C. continuous nonphasic venous flow
D. bidirectional flow throughout systole

19. Which duplex or physiologic description most accurately characterizes aortic bifurcation?

A. right and left renal arteries

B. superior and inferior mesenteric arteries
C. common femoral and profunda arteries
D. right and left common iliac arteries

20. Which duplex or physiologic description most accurately characterizes popliteal artery branches?

A. radial artery and ulnar artery
B. anterior tibial artery and tibioperoneal trunk
C. celiac artery and superior mesenteric artery
D. internal carotid and external carotid arteries

21. Which duplex or physiologic description most accurately characterizes common femoral artery branches?

A. radial and ulnar arteries
B. anterior and posterior tibial arteries
C. superficial femoral and profunda femoris arteries
D. internal and external carotid arteries

22. Which duplex or physiologic description most accurately characterizes brachial artery bifurcation?

A. radial and ulnar arteries
B. axillary and subclavian arteries
C. anterior and posterior tibial arteries
D. common and profunda femoral arteries

23. Which duplex or physiologic description most accurately characterizes common femoral vein landmark?

A. lateral to the common femoral artery near the groin
B. posterior to the profunda femoris artery only

C. medial to the common femoral artery near the groin
D. inside the femoral artery wall in the stated examination setting

24. Which duplex or physiologic description most accurately characterizes small saphenous vein course?

A. posterior calf toward the popliteal region
B. anterior thigh toward the femoral vein
C. medial thigh toward the common femoral artery
D. deep calf beside the anterior tibial artery

25. Which duplex or physiologic description most accurately characterizes great saphenous vein location?

A. deep to the femoral artery throughout the thigh
B. lateral to the fibula within muscle
C. inside the popliteal artery sheath
D. within the saphenous compartment along the medial limb

26. Which duplex or physiologic description most accurately characterizes superior mesenteric artery fasting waveform?

A. low-resistance pattern identical to the renal artery
B. high-resistance pattern with limited diastolic flow
C. continuous nonpulsatile flow
D. retrograde flow throughout systole

27. Which duplex or physiologic description most accurately characterizes celiac artery fasting waveform?

A. high-resistance pattern with minimal diastolic flow
B. low-resistance pattern with forward diastolic flow

C. continuous venous waveform
D. reversed systolic flow

28. Which duplex or physiologic description most accurately characterizes renal artery resistance?

A. high-resistance waveform with absent diastolic flow
B. venous respiratory phasicity
C. bidirectional systolic flow
D. low-resistance waveform with continuous diastolic flow

29. Which duplex or physiologic description most accurately characterizes hepatic vein waveform?

A. multiphasic flow influenced by the cardiac cycle
B. triphasic high-resistance arterial flow
C. continuous flow without cardiac variation
D. to-and-fro flow at a neck

30. Which duplex or physiologic description most accurately characterizes portal vein flow direction?

A. hepatofugal flow away from the liver
B. alternating flow with respiration
C. hepatopetal flow toward the liver
D. retrograde flow toward the spleen

31. Which duplex or physiologic description most accurately characterizes normal lower-extremity venous Doppler?

A. triphasic arterial pulsatility
B. continuous high-velocity systolic flow
C. respiratory phasicity and augmentation
D. persistent reflux after release

32. Which duplex or physiologic description most accurately characterizes normal lower-extremity artery at rest?

A. triphasic high-resistance waveform
B. continuous monophasic low-resistance waveform
C. nonphasic venous waveform
D. to-and-fro pseudoaneurysm waveform

33. Which duplex or physiologic description most accurately characterizes vertebral artery flow direction?

A. retrograde toward the arm
B. bidirectional with every heartbeat
C. absent during diastole
D. antegrade toward the brain

34. Which duplex or physiologic description most accurately characterizes normal internal carotid artery waveform?

A. high resistance with little diastolic flow
B. low resistance with substantial forward diastolic flow
C. venous phasicity with augmentation
D. to-and-fro flow at the origin

35. Which duplex or physiologic description most accurately characterizes normal external carotid artery waveform?

A. marked continuous diastolic flow like the ICA
B. relatively high resistance with brisk systolic upstroke
C. respiratory phasicity without pulsatility

D. reversed systolic flow at baseline

36. Which duplex or physiologic description most accurately characterizes normal common carotid artery spectral waveform?

A. low-resistance flow with persistent forward diastolic velocity
B. high-resistance flow with absent diastolic velocity
C. continuous nonphasic venous flow
D. bidirectional flow throughout systole

37. A technologist is evaluating aortic dissection. Which result should be recognized as the best answer?

A. isolated echogenic plaque without a flap
B. venous valve leaflet in the IVC
C. intimal flap separating true and false lumens
D. normal aortic pulsatility in the stated examination setting

38. A technologist is evaluating aneurysm measurement. Which result should be recognized as the best answer?

A. inner lumen only along an oblique plane
B. color jet width parallel to flow in the stated examination setting
C. spectral envelope height in the stated examination setting
D. outer wall to outer wall perpendicular to the vessel axis

39. A technologist is evaluating compartment syndrome perfusion. Which result should be recognized as the best answer?

A. benign condition excluded by any Doppler signal
B. clinical emergency despite potentially preserved large-artery signals
C. venous disorder diagnosed by reflux alone

D. carotid disorder diagnosed by bruit

40. A technologist is evaluating deep venous obstruction clue. Which result should be recognized as the best answer?

A. brisk augmentation after distal compression
B. complete compressibility at every level
C. normal valve closure in the stated examination setting
D. loss of respiratory phasicity in a peripheral vein

41. A technologist is evaluating thoracic outlet arterial compression. Which result should be recognized as the best answer?

A. dynamic subclavian waveform change with provocative positioning
B. fixed portal reversal after eating
C. renal venous reflux with Valsalva
D. carotid plaque disappearance on inspiration

42. A technologist is evaluating Baker cyst. Which result should be recognized as the best answer?

A. arterial plaque at the femoral bifurcation in the stated examination setting
B. aneurysm of the carotid bulb in the stated examination setting
C. fluid collection in the popliteal fossa that may mimic DVT symptoms
D. thrombus in the portal vein in the stated examination setting

43. A technologist is evaluating carotid body tumor. Which result should be recognized as the best answer?

A. avascular cyst compressing the jugular vein in the stated examination setting
B. thrombus confined to the common carotid lumen
C. plaque at the subclavian origin in the stated examination setting

D. hypervascular mass that splays the internal and external carotid arteries

44. A technologist is evaluating renal artery stenosis consequence. Which result should be recognized as the best answer?

A. portal hypertension through splenic reflux
B. venous claudication through calf reflux
C. renovascular hypertension through reduced renal perfusion
D. carotid bruit through jugular obstruction

45. A technologist is evaluating mesenteric ischemia after a meal. Which result should be recognized as the best answer?

A. postprandial abdominal pain from inadequate flow reserve
B. arm claudication from vertebral reversal
C. leg edema from superficial reflux
D. headache from temporal arteritis

46. A technologist is evaluating popliteal artery aneurysm complication. Which result should be recognized as the best answer?

A. isolated portal hypertension
B. mural thrombus with distal embolization
C. carotid body tumor formation
D. renal cortical infarction only

47. A technologist is evaluating May-Thurner anatomy. Which result should be recognized as the best answer?

A. right renal vein compressed by the SMA in the stated examination setting
B. left common iliac vein compressed by the right common iliac artery

C. left carotid compressed by the jugular vein in the stated examination setting
D. popliteal artery compressed by the tibial vein in the stated examination setting

48. A technologist is evaluating nutcracker phenomenon. Which result should be recognized as the best answer?

A. right renal artery compression behind the IVC
B. portal vein compression by the spleen
C. femoral vein compression by the profunda artery
D. left renal vein compression between the SMA and aorta

49. A technologist is evaluating median arcuate ligament compression. Which result should be recognized as the best answer?

A. elevated celiac velocity that may vary with respiration
B. fixed renal vein occlusion unaffected by breathing
C. carotid stenosis relieved by arm exercise
D. femoral DVT with triphasic flow

50. A technologist is evaluating Budd-Chiari syndrome. Which result should be recognized as the best answer?

A. superior mesenteric arterial embolism
B. isolated carotid bifurcation plaque
C. hepatic venous outflow obstruction
D. lower-extremity superficial reflux

51. A technologist is evaluating portal hypertension. Which result should be recognized as the best answer?

A. dilated portal system with reduced or reversed portal flow and collaterals

B. triphasic peripheral arterial flow in the stated examination setting
C. isolated high-resistance renal flow in the stated examination setting
D. normal hepatopetal flow without collaterals in the stated examination setting

52. A technologist is evaluating fibromuscular dysplasia. Which result should be recognized as the best answer?

A. isolated ostial plaque at the aortic origin
B. uniform venous wall thickening in the stated examination setting
C. alternating stenosis and dilation in the mid-to-distal renal artery
D. complete renal vein thrombosis in the stated examination setting

53. A technologist is evaluating carotid plaque surface ulceration. Which result should be recognized as the best answer?

A. smooth intimal surface without color penetration
B. irregular crater extending into plaque with flow entering it
C. complete acoustic shadow without visible lumen
D. normal jugular venous valve in the stated examination setting

54. A technologist is evaluating subclavian steal physiology. Which result should be recognized as the best answer?

A. carotid flow reversal caused by distal femoral disease
B. portal reversal caused by renal stenosis
C. venous reflux caused by carotid plaque
D. vertebral flow reversal caused by proximal subclavian obstruction

55. A technologist is evaluating tardus-parvus waveform. Which result should be recognized as the best answer?

A. sharp upstroke with high pulsatility in the stated examination setting
B. to-and-fro flow in a pseudoaneurysm neck
C. delayed systolic upstroke and reduced amplitude distal to obstruction
D. normal venous phasicity in the stated examination setting

56. A technologist is evaluating arterial occlusion. Which result should be recognized as the best answer?

A. focal high velocity through a patent lumen
B. no detectable flow with collateral reconstitution distally
C. normal triphasic flow throughout
D. venous reflux after Valsalva

57. A technologist is evaluating hemodynamically significant arterial stenosis. Which result should be recognized as the best answer?

A. uniform velocity decrease without focal disturbance
B. complete venous compressibility in the stated examination setting
C. normal respiratory phasicity in the stated examination setting
D. focal velocity increase with turbulence and distal spectral broadening

58. A technologist is evaluating arteriovenous fistula. Which result should be recognized as the best answer?

A. low-resistance feeding artery and pulsatile draining vein
B. high-resistance feeding artery and nonpulsatile vein
C. absent arterial and venous flow
D. normal triphasic artery with respiratory vein

59. A technologist is evaluating pseudoaneurysm sac. Which result should be recognized as the best answer?

A. yin-yang bidirectional color pattern
B. uniform absence of color in every setting
C. laminar single-color venous flow
D. triphasic spectral tracing only

60. A technologist is evaluating pseudoaneurysm neck. Which result should be recognized as the best answer?

A. continuous antegrade low-resistance flow
B. triphasic arterial flow without reversal
C. to-and-fro spectral Doppler flow
D. respiratory phasic venous flow

61. A technologist is evaluating venous reflux. Which result should be recognized as the best answer?

A. brief forward augmentation after distal compression
B. arterial triphasic flow at rest
C. complete venous compression in the stated examination setting
D. reversed flow persisting beyond the accepted provocative interval

62. A technologist is evaluating chronic deep venous thrombosis. Which result should be recognized as the best answer?

A. dilated vein with free-floating hypoechoic clot
B. retracted vein with echogenic wall-adherent material and collaterals
C. completely compressible vein without residual material
D. normal respiratory phasicity only in the stated examination setting

63. A technologist is evaluating acute deep venous thrombosis. Which result should be recognized as the best answer?

A. small compressible vein with echogenic walls
B. triphasic arterial waveform
C. normal augmentation and complete coaptation
D. dilated noncompressible vein with hypoechoic thrombus

64. Which duplex or physiologic description most accurately characterizes aortic dissection?

A. intimal flap separating true and false lumens
B. isolated echogenic plaque without a flap
C. venous valve leaflet in the IVC
D. normal aortic pulsatility in the stated examination setting

65. Which duplex or physiologic description most accurately characterizes aneurysm measurement?

A. inner lumen only along an oblique plane
B. outer wall to outer wall perpendicular to the vessel axis
C. color jet width parallel to flow in the stated examination setting
D. spectral envelope height in the stated examination setting

66. Which duplex or physiologic description most accurately characterizes compartment syndrome perfusion?

A. benign condition excluded by any Doppler signal
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D. carotid disorder diagnosed by bruit

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B. brisk augmentation after distal compression
C. complete compressibility at every level
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A. fixed portal reversal after eating
B. dynamic subclavian waveform change with provocative positioning
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D. carotid plaque disappearance on inspiration

69. Which duplex or physiologic description most accurately characterizes Baker cyst?

A. arterial plaque at the femoral bifurcation in the stated examination setting
B. aneurysm of the carotid bulb in the stated examination setting
C. thrombus in the portal vein in the stated examination setting
D. fluid collection in the popliteal fossa that may mimic DVT symptoms

70. Which duplex or physiologic description most accurately characterizes carotid body tumor?

A. avascular cyst compressing the jugular vein in the stated examination setting
B. thrombus confined to the common carotid lumen
C. hypervascular mass that splays the internal and external carotid arteries
D. plaque at the subclavian origin in the stated examination setting

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D. carotid bruit through jugular obstruction

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C. headache from temporal arteritis
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73. Which duplex or physiologic description most accurately characterizes popliteal artery aneurysm complication?

A. mural thrombus with distal embolization
B. isolated portal hypertension
C. carotid body tumor formation
D. renal cortical infarction only

74. Which duplex or physiologic description most accurately characterizes May-Thurner anatomy?

A. right renal vein compressed by the SMA in the stated examination setting
B. left carotid compressed by the jugular vein in the stated examination setting
C. left common iliac vein compressed by the right common iliac artery
D. popliteal artery compressed by the tibial vein in the stated examination setting

75. Which duplex or physiologic description most accurately characterizes nutcracker phenomenon?

A. left renal vein compression between the SMA and aorta
B. right renal artery compression behind the IVC
C. portal vein compression by the spleen

D. femoral vein compression by the profunda artery

76. Which duplex or physiologic description most accurately characterizes median arcuate ligament compression?

A. fixed renal vein occlusion unaffected by breathing
B. elevated celiac velocity that may vary with respiration
C. carotid stenosis relieved by arm exercise
D. femoral DVT with triphasic flow

77. Which duplex or physiologic description most accurately characterizes Budd-Chiari syndrome?

A. superior mesenteric arterial embolism
B. isolated carotid bifurcation plaque
C. lower-extremity superficial reflux
D. hepatic venous outflow obstruction

78. Which duplex or physiologic description most accurately characterizes portal hypertension?

A. triphasic peripheral arterial flow in the stated examination setting
B. isolated high-resistance renal flow in the stated examination setting
C. dilated portal system with reduced or reversed portal flow and collaterals
D. normal hepatopetal flow without collaterals in the stated examination setting

79. Which duplex or physiologic description most accurately characterizes fibromuscular dysplasia?

A. isolated ostial plaque at the aortic origin
B. alternating stenosis and dilation in the mid-to-distal renal artery
C. uniform venous wall thickening in the stated examination setting
D. complete renal vein thrombosis in the stated examination setting

80. Which duplex or physiologic description most accurately characterizes carotid plaque surface ulceration?

A. smooth intimal surface without color penetration
B. complete acoustic shadow without visible lumen
C. irregular crater extending into plaque with flow entering it
D. normal jugular venous valve in the stated examination setting

81. Which duplex or physiologic description most accurately characterizes subclavian steal physiology?

A. carotid flow reversal caused by distal femoral disease
B. portal reversal caused by renal stenosis
C. venous reflux caused by carotid plaque
D. vertebral flow reversal caused by proximal subclavian obstruction

82. Which duplex or physiologic description most accurately characterizes tardus-parvus waveform?

A. delayed systolic upstroke and reduced amplitude distal to obstruction
B. sharp upstroke with high pulsatility in the stated examination setting
C. to-and-fro flow in a pseudoaneurysm neck
D. normal venous phasicity in the stated examination setting

83. Which duplex or physiologic description most accurately characterizes arterial occlusion?

A. focal high velocity through a patent lumen
B. no detectable flow with collateral reconstitution distally
C. normal triphasic flow throughout
D. venous reflux after Valsalva

84. Which duplex or physiologic description most accurately characterizes hemodynamically significant arterial stenosis?

A. uniform velocity decrease without focal disturbance
B. complete venous compressibility in the stated examination setting
C. focal velocity increase with turbulence and distal spectral broadening
D. normal respiratory phasicity in the stated examination setting

85. Which duplex or physiologic description most accurately characterizes arteriovenous fistula?

A. high-resistance feeding artery and nonpulsatile vein
B. absent arterial and venous flow
C. normal triphasic artery with respiratory vein
D. low-resistance feeding artery and pulsatile draining vein

86. Which duplex or physiologic description most accurately characterizes pseudoaneurysm sac?

A. uniform absence of color in every setting
B. laminar single-color venous flow
C. yin-yang bidirectional color pattern
D. triphasic spectral tracing only

87. Which duplex or physiologic description most accurately characterizes pseudoaneurysm neck?

A. to-and-fro spectral Doppler flow
B. continuous antegrade low-resistance flow
C. triphasic arterial flow without reversal
D. respiratory phasic venous flow

88. Which duplex or physiologic description most accurately characterizes venous reflux?

A. brief forward augmentation after distal compression

B. arterial triphasic flow at rest
C. complete venous compression in the stated examination setting
D. reversed flow persisting beyond the accepted provocative interval

89. Which duplex or physiologic description most accurately characterizes chronic deep venous thrombosis?

A. retracted vein with echogenic wall-adherent material and collaterals
B. dilated vein with free-floating hypoechoic clot
C. completely compressible vein without residual material
D. normal respiratory phasicity only in the stated examination setting

90. Which duplex or physiologic description most accurately characterizes acute deep venous thrombosis?

A. small compressible vein with echogenic walls
B. dilated noncompressible vein with hypoechoic thrombus
C. triphasic arterial waveform
D. normal augmentation and complete coaptation

91. A technologist is evaluating dialysis steal syndrome. Which result should be recognized as the best answer?

A. portal flow reversal from cirrhosis
B. reduced distal arterial perfusion related to access flow
C. carotid stenosis from plaque in the stated examination setting
D. deep venous reflux after ablation

92. A technologist is evaluating prosthetic graft infection concern. Which result should be recognized as the best answer?

A. uniform graft wall appearance alone
B. normal triphasic distal flow in the stated examination setting
C. perigraft fluid or gas with compatible clinical findings
D. expected color fill throughout in the stated examination setting

93. A technologist is evaluating stent surveillance. Which result should be recognized as the best answer?

A. only grayscale diameter without Doppler
B. venous compression through the metal
C. no evaluation when artifact is present
D. in-stent and edge velocities compared with adjacent segments

94. A technologist is evaluating venous ablation follow-up. Which result should be recognized as the best answer?

A. treated vein closure and absence of thrombus extension into deep veins
B. recanalization of every treated segment as normal in the stated examination setting
C. triphasic flow inside the treated vein in the stated examination setting
D. loss of deep venous compressibility as expected in the stated examination setting

95. A technologist is evaluating renal transplant artery. Which result should be recognized as the best answer?

A. native carotid bifurcation only in the stated examination setting
B. portal vein without renal parenchyma
C. lower-extremity venous reflux only in the stated examination setting
D. anastomosis and entire accessible artery with intrarenal waveforms

96. A technologist is evaluating TIPS evaluation. Which result should be recognized as the best answer?

A. ankle pressures and digital PPG only in the stated examination setting
B. flow direction and velocities through the shunt and portal branches
C. carotid plaque morphology only in the stated examination setting
D. upper-extremity venous compression only in the stated examination setting

97. A technologist is evaluating EVAR endoleak. Which result should be recognized as the best answer?

A. persistent blood flow outside the graft but within the aneurysm sac
B. normal flow confined to the graft lumen in the stated examination setting
C. venous flow in the inferior vena cava in the stated examination setting
D. artifact removed by lowering gain in the stated examination setting

98. A technologist is evaluating bypass graft stenosis. Which result should be recognized as the best answer?

A. uniform velocities with normal contour
B. complete absence of a graft lumen
C. focal velocity increase and abnormal velocity ratio
D. normal venous augmentation in the stated examination setting

99. A technologist is evaluating dialysis access outflow stenosis. Which result should be recognized as the best answer?

A. uniform laminar flow without velocity change
B. focal velocity acceleration with turbulence in the draining vein
C. complete compression of the anastomosis in the stated examination setting
D. triphasic flow in the outflow vein

100. A technologist is evaluating dialysis access inflow. Which result should be recognized as the best answer?

A. normal resting high-resistance waveform
B. absent diastolic flow in every patent access
C. arterialized low-resistance waveform with increased volume flow
D. venous respiratory waveform only

101. A renal waveform has a peak systolic velocity of 120 cm/s and end-diastolic velocity of 30 cm/s. What is the resistive index?

A. 0.25
B. 1.25
C. 4
D. 0.75

102. A technologist is evaluating reactive hyperemia testing. Which result should be recognized as the best answer?

A. assesses arterial reserve after temporary occlusion
B. measures carotid intima thickness
C. confirms venous valve anatomy
D. classifies endoleaks in the stated examination setting

103. A technologist is evaluating proper pressure cuff width. Which result should be recognized as the best answer?

A. approximately 20 percent wider than the limb diameter
B. narrower than the artery lumen
C. identical for every limb size
D. twice the entire limb length

104. A technologist is evaluating venous PPG refill time. Which result should be recognized as the best answer?

A. prolonged refill always proves acute DVT
B. triphasic refill indicates arterial stenosis
C. no refill is normal after exercise
D. shortened refill suggests venous reflux

105. A renal waveform has a peak systolic velocity of 120 cm/s and end-diastolic velocity of 30 cm/s. What is the resistive index?

A. 0.25
B. 1.25
C. 0.75
D. 4

106. A technologist is evaluating exercise ABI purpose. Which result should be recognized as the best answer?

A. diagnose carotid plaque morphology in the stated examination setting
B. unmask flow-limiting disease when resting results are normal or borderline
C. measure venous reflux exclusively in the stated examination setting
D. confirm portal hypertension in the stated examination setting

107. A technologist is evaluating pulse volume recording distal disease. Which result should be recognized as the best answer?

A. sharp peak with normal dicrotic features
B. damped contour with delayed upstroke and reduced amplitude
C. respiratory phasic venous tracing in the stated examination setting
D. to-and-fro pseudoaneurysm tracing in the stated examination setting

108. A technologist is evaluating segmental pressure drop. Which result should be recognized as the best answer?

A. identical pressures prove acute DVT in the stated examination setting
B. higher distal pressure proves aneurysm in the stated examination setting
C. a meaningful decrease between adjacent cuff levels suggests intervening disease
D. all pressure differences are artifact in the stated examination setting

109. A renal waveform has a peak systolic velocity of 120 cm/s and end-diastolic velocity of 30 cm/s. What is the resistive index?

A. 0.75
B. 0.25
C. 1.25
D. 4

110. A technologist is evaluating ankle-brachial index calculation. Which result should be recognized as the best answer?

A. lowest brachial pressure divided by ankle pressure
B. ankle pressure minus brachial pressure
C. brachial pressure plus toe pressure
D. highest ankle pressure divided by highest brachial pressure

111. Which duplex or physiologic description most accurately characterizes upper-extremity arterial pressures?

A. use ankle pressure as the only reference
B. compare bilateral brachial and forearm pressures with waveforms
C. apply venous tourniquets throughout in the stated examination setting
D. ignore side-to-side differences in the stated examination setting

112. Which duplex or physiologic description most accurately characterizes reactive hyperemia testing?

A. measures carotid intima thickness
B. confirms venous valve anatomy
C. assesses arterial reserve after temporary occlusion
D. classifies endoleaks in the stated examination setting

113. A renal waveform has a peak systolic velocity of 120 cm/s and end-diastolic velocity of 30 cm/s. What is the resistive index?

A. 0.75
B. 0.25
C. 1.25
D. 4

114. Which duplex or physiologic description most accurately characterizes venous PPG refill time?

A. prolonged refill always proves acute DVT
B. shortened refill suggests venous reflux
C. triphasic refill indicates arterial stenosis
D. no refill is normal after exercise

115. Which duplex or physiologic description most accurately characterizes toe pressure advantage?

A. toe arteries always have higher pressure than brachial arteries
B. toe pressure diagnoses DVT in the stated examination setting
C. toe cuffs eliminate motion artifact in the stated examination setting
D. digital arteries are less often noncompressible than ankle arteries

116. Which duplex or physiologic description most accurately characterizes exercise ABI purpose?

A. unmask flow-limiting disease when resting results are normal or borderline
B. diagnose carotid plaque morphology in the stated examination setting

C. measure venous reflux exclusively in the stated examination setting
D. confirm portal hypertension in the stated examination setting

117. A renal waveform has a peak systolic velocity of 120 cm/s and end-diastolic velocity of 30 cm/s. What is the resistive index?

A. 0.25
B. 1.25
C. 0.75
D. 4

118. Which duplex or physiologic description most accurately characterizes segmental pressure drop?

A. identical pressures prove acute DVT in the stated examination setting
B. higher distal pressure proves aneurysm in the stated examination setting
C. all pressure differences are artifact in the stated examination setting
D. a meaningful decrease between adjacent cuff levels suggests intervening disease

119. Which duplex or physiologic description most accurately characterizes noncompressible ankle arteries?

A. report a normal ABI without qualification
B. increase cuff pressure indefinitely
C. diagnose venous reflux from the ABI
D. consider toe pressures or alternative physiologic testing

120. Which duplex or physiologic description most accurately characterizes ankle-brachial index calculation?

A. lowest brachial pressure divided by ankle pressure
B. highest ankle pressure divided by highest brachial pressure

C. ankle pressure minus brachial pressure
D. brachial pressure plus toe pressure

121. A technologist is evaluating needle visualization. Which result should be recognized as the best answer?

A. use the steepest possible angle in the stated examination setting
B. turn off all gain in the stated examination setting
C. align the beam to improve reflection from the needle
D. image only after advancement in the stated examination setting

122. A technologist is evaluating postprocedure hematoma. Which result should be recognized as the best answer?

A. evaluate size, internal flow, and relationship to nearby vessels
B. assume every mass is thrombosed in the stated examination setting
C. use compression without checking perfusion in the stated examination setting
D. ignore expanding symptoms in the stated examination setting

123. A technologist is evaluating vasovagal response during procedure. Which result should be recognized as the best answer?

A. continue without monitoring in the stated examination setting
B. stop, assess the patient, and summon appropriate clinical support
C. place the patient upright immediately in the stated examination setting
D. increase compression without evaluation in the stated examination setting

124. A technologist is evaluating procedure timeout. Which result should be recognized as the best answer?

A. perform after needle insertion in the stated examination setting

B. replace informed consent in the stated examination setting
C. omit when the patient is known
D. verify patient, procedure, site, and required resources before starting

125. A technologist is evaluating intraoperative carotid assessment. Which result should be recognized as the best answer?

A. assess only jugular compressibility in the stated examination setting
B. measure ankle pressure only in the stated examination setting
C. evaluate lumen, residual plaque, flap, and flow after repair
D. ignore spectral Doppler in the stated examination setting

126. A technologist is evaluating biopsy or access guidance. Which result should be recognized as the best answer?

A. visualize the needle continuously and plan a path avoiding vessels
B. advance the needle beyond the image plane
C. maximize output without reason in the stated examination setting
D. ignore anticoagulation history in the stated examination setting

127. A technologist is evaluating post-thrombin assessment. Which result should be recognized as the best answer?

A. confirm parent artery occlusion in the stated examination setting
B. expect increased neck flow in the stated examination setting
C. confirm sac thrombosis and parent artery patency with distal perfusion
D. avoid checking pedal signals in the stated examination setting

128. A technologist is evaluating sterile transducer preparation. Which result should be recognized as the best answer?

A. use nonsterile gel inside an open wound in the stated examination setting
B. place the cable across the field uncovered in the stated examination setting
C. omit probe disinfection in the stated examination setting
D. use a sterile cover and sterile coupling medium without contaminating the field

129. A technologist is evaluating intraoperative completion duplex. Which result should be recognized as the best answer?

A. replace all surgical inspection in the stated examination setting
B. identify residual stenosis, flap, thrombosis, or technical defect
C. measure only venous reflux in the stated examination setting
D. exclude flow evaluation in the stated examination setting

130. A technologist is evaluating venous ablation guidance. Which result should be recognized as the best answer?

A. confirm catheter position and tumescent anesthesia around the target vein
B. place the catheter within a deep artery
C. ignore the saphenofemoral junction in the stated examination setting
D. omit postprocedure deep-vein assessment in the stated examination setting

131. A technologist is evaluating manual pseudoaneurysm compression. Which result should be recognized as the best answer?

A. compress only the distal artery in the stated examination setting
B. avoid Doppler monitoring in the stated examination setting
C. stop when sac flow increases in the stated examination setting
D. compress the neck while monitoring sac and distal arterial flow

132. A technologist is evaluating pseudoaneurysm thrombin injection guidance. Which result should be recognized as the best answer?

A. place the needle blindly into the parent artery in the stated examination setting
B. inject without confirming flow in the stated examination setting
C. keep the needle tip visible within the sac away from the neck
D. compress the distal artery throughout injection in the stated examination setting

133. A renal waveform has a peak systolic velocity of 120 cm/s and end-diastolic velocity of 30 cm/s. What is the resistive index?

A. 0.75
B. 0.25
C. 1.25
D. 4

134. A technologist is evaluating critical result workflow. Which result should be recognized as the best answer?

A. leave an unconfirmed voicemail only
B. follow the laboratory's documented escalation and read-back process
C. wait until the next routine visit
D. tell the patient a final diagnosis independently

135. A technologist is evaluating ergonomic scanning. Which result should be recognized as the best answer?

A. abduct the shoulder throughout every study in the stated examination setting
B. twist the trunk to reach the patient in the stated examination setting
C. apply maximum grip pressure in the stated examination setting
D. adjust bed, chair, monitor, and patient position to reduce reach and force

136. A technologist is evaluating infection prevention. Which result should be recognized as the best answer?

A. clean and disinfect equipment according to use and policy
B. reuse contaminated gel containers in the stated examination setting
C. skip hand hygiene with gloves in the stated examination setting
D. store soiled probes with clean probes

137. A renal waveform has a peak systolic velocity of 120 cm/s and end-diastolic velocity of 30 cm/s. What is the resistive index?

A. 0.25
B. 1.25
C. 0.75
D. 4

138. A technologist is evaluating range ambiguity. Which result should be recognized as the best answer?

A. incorrect velocity from angle correction in the stated examination setting
B. echoes from a previous pulse assigned to the wrong depth
C. shadow from plaque in the stated examination setting
D. venous reflux after Valsalva in the stated examination setting

139. A technologist is evaluating mirror artifact. Which result should be recognized as the best answer?

A. color wraparound from low scale
B. duplicated structure across a strong reflector
C. shadow behind calcification
D. loss of slow flow from wall filter

140. A technologist is evaluating transducer frequency choice. Which result should be recognized as the best answer?

A. always use the lowest available frequency
B. frequency does not affect resolution
C. use the highest frequency that provides adequate penetration
D. high frequency always penetrates deepest

141. A renal waveform has a peak systolic velocity of 120 cm/s and end-diastolic velocity of 30 cm/s. What is the resistive index?

A. 0.25
B. 1.25
C. 4
D. 0.75

142. A technologist is evaluating wall filter effect. Which result should be recognized as the best answer?

A. an excessively high filter can remove slow flow signals
B. a high filter always improves venous sensitivity
C. it changes grayscale depth only in the stated examination setting
D. it eliminates angle error in the stated examination setting

143. A technologist is evaluating sample volume placement for stenosis. Which result should be recognized as the best answer?

A. sample only far distal to the lesion
B. sample only the adjacent vein
C. avoid angle correction at the lesion
D. interrogate before, within, and beyond the lesion

144. A technologist is evaluating resistive index. Which result should be recognized as the best answer?

A. end-diastolic divided by peak systolic velocity in the stated examination setting
B. peak systolic plus end-diastolic velocity in the stated examination setting
C. peak systolic minus end-diastolic velocity divided by peak systolic velocity
D. mean velocity divided by vessel diameter in the stated examination setting

145. A renal waveform has a peak systolic velocity of 120 cm/s and end-diastolic velocity of 30 cm/s. What is the resistive index?

A. 0.25
B. 0.75
C. 1.25
D. 4

146. A technologist is evaluating ALARA principle. Which result should be recognized as the best answer?

A. use the lowest output and shortest exposure that answer the clinical question
B. maximize output for every examination in the stated examination setting
C. ignore thermal and mechanical indices in the stated examination setting
D. extend dwell time routinely in the stated examination setting

147. A technologist is evaluating posterior enhancement. Which result should be recognized as the best answer?

A. dark shadow behind calcification in the stated examination setting
B. velocity wraparound on color in the stated examination setting
C. duplicate anatomy across a diaphragm
D. increased brightness deep to a low-attenuation fluid structure

148. A technologist is evaluating acoustic shadowing. Which result should be recognized as the best answer?

A. attenuation behind a strongly reflecting or absorbing structure
B. enhancement behind fluid in the stated examination setting
C. mirror duplication across a reflector
D. aliasing from low PRF in the stated examination setting

149. A renal waveform has a peak systolic velocity of 120 cm/s and end-diastolic velocity of 30 cm/s. What is the resistive index?

A. 0.25
B. 1.25
C. 0.75
D. 4

150. A technologist is evaluating color blooming. Which result should be recognized as the best answer?

A. increase color gain further
B. reduce excessive color gain
C. lower wall filter to zero always
D. increase persistence indefinitely

151. A technologist is evaluating Doppler angle correction. Which result should be recognized as the best answer?

A. align with flow direction and keep the angle at or below 60 degrees
B. place perpendicular to flow for spectral velocity in the stated examination setting
C. use 90 degrees for maximum shift in the stated examination setting
D. ignore vessel direction in the stated examination setting

152. A technologist is evaluating aliasing in pulsed Doppler. Which result should be recognized as the best answer?

A. decrease PRF further in the stated examination setting
B. increase the velocity scale or shift baseline when appropriate
C. increase Doppler angle beyond 60 degrees
D. turn off spectral display in the stated examination setting

153. A renal waveform has a peak systolic velocity of 120 cm/s and end-diastolic velocity of 30 cm/s. What is the resistive index?

A. 0.25
B. 1.25
C. 0.75
D. 4

154. Which duplex or physiologic description most accurately characterizes critical result workflow?

A. leave an unconfirmed voicemail only
B. wait until the next routine visit
C. tell the patient a final diagnosis independently
D. follow the laboratory's documented escalation and read-back process

155. Which duplex or physiologic description most accurately characterizes ergonomic scanning?

A. abduct the shoulder throughout every study in the stated examination setting
B. twist the trunk to reach the patient in the stated examination setting
C. adjust bed, chair, monitor, and patient position to reduce reach and force
D. apply maximum grip pressure in the stated examination setting

156. Which duplex or physiologic description most accurately characterizes infection prevention?

A. clean and disinfect equipment according to use and policy
B. reuse contaminated gel containers in the stated examination setting

C. skip hand hygiene with gloves in the stated examination setting
D. store soiled probes with clean probes

157. A technologist is evaluating exam modification. Which result should be recognized as the best answer?

A. stop after the minimum images regardless of findings in the stated examination setting
B. extend or adapt imaging when real-time findings justify it and policy permits
C. change patient identity to match an order in the stated examination setting
D. omit the symptomatic side in the stated examination setting

158. A technologist is evaluating unexpected incidental finding. Which result should be recognized as the best answer?

A. delete the image because it is outside the order
B. provide a definitive unrelated diagnosis
C. ignore any potentially important mass
D. document and communicate it according to laboratory policy

159. A technologist is evaluating professional communication. Which result should be recognized as the best answer?

A. use ambiguous shorthand without definitions
B. discuss results publicly in the stated examination setting
C. document opinions as confirmed diagnoses
D. use objective terminology and avoid unsupported conclusions

160. A technologist is evaluating medication history. Which result should be recognized as the best answer?

A. stop prescribed medications independently in the stated examination setting

B. ignore anticoagulation before procedures in the stated examination setting
C. recognize that vasoactive and anticoagulant drugs may affect context and risk
D. diagnose stenosis from medication list in the stated examination setting

161. A technologist is evaluating prior intervention review. Which result should be recognized as the best answer?

A. read the operative or procedural report before scanning when available
B. assume standard anatomy after surgery in the stated examination setting
C. ignore graft orientation in the stated examination setting
D. use native-vessel criteria without context in the stated examination setting

162. A technologist is evaluating informed cooperation. Which result should be recognized as the best answer?

A. promise a specific diagnosis in the stated examination setting
B. explain the examination in understandable language and answer questions
C. avoid describing compression maneuvers in the stated examination setting
D. continue despite withdrawn cooperation in the stated examination setting

163. A technologist is evaluating critical finding communication. Which result should be recognized as the best answer?

A. wait for routine report distribution in the stated examination setting
B. tell family members without permission in the stated examination setting
C. notify the designated clinician promptly and document the exchange
D. leave before confirming receipt in the stated examination setting

164. A technologist is evaluating patient positioning. Which result should be recognized as the best answer?

A. force every patient into one standard position
B. adapt safely to symptoms, mobility, and hemodynamic effects
C. ignore orthostatic symptoms in the stated examination setting
D. stand an unstable patient alone

165. A technologist is evaluating image archiving. Which result should be recognized as the best answer?

A. save only one representative image in the stated examination setting
B. delete technically difficult segments in the stated examination setting
C. archive without patient identifiers in the stated examination setting
D. verify required images, labels, measurements, and waveforms are stored

166. A technologist is evaluating preliminary findings. Which result should be recognized as the best answer?

A. communicate within scope and according to laboratory policy
B. issue an independent final physician diagnosis
C. withhold critical observations in the stated examination setting
D. alter images after interpretation in the stated examination setting

167. A technologist is evaluating technical limitation documentation. Which result should be recognized as the best answer?

A. state the limitation and its effect on the examination
B. omit nondiagnostic segments from the report
C. invent normal findings for unseen vessels
D. blame the patient without detail in the stated examination setting

168. A technologist is evaluating abdominal vascular preparation. Which result should be recognized as the best answer?

A. require prolonged fasting for every emergency
B. encourage a large meal immediately before
C. follow laboratory fasting instructions when clinically appropriate
D. omit medication review in the stated examination setting

169. A technologist is evaluating focused vascular history. Which result should be recognized as the best answer?

A. record only the appointment time in the stated examination setting
B. document symptoms, onset, laterality, interventions, medications, and risk factors
C. omit prior imaging and surgery in the stated examination setting
D. ask only about allergies in the stated examination setting

170. A technologist is evaluating patient identification. Which result should be recognized as the best answer?

A. use room number alone
B. ask another patient to confirm
C. identify only after scanning
D. use two approved identifiers before the examination

Practice Exam 14: Answer Key and Explanations

1. C — The distal abdominal aorta bifurcates into the right and left common iliac arteries, typically near the fourth lumbar vertebral level. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging.

2. B — The popliteal artery first gives rise to the anterior tibial artery and then continues as the tibioperoneal trunk. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow.

3. A — The common femoral artery divides into the superficial femoral artery and the profunda femoris artery in the proximal thigh. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

4. C — The brachial artery divides near the antecubital fossa into the radial and ulnar arteries supplying the forearm and hand. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

5. B — At the groin, the common femoral vein usually lies medial to the common femoral artery, a useful orientation landmark. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

6. D — The small saphenous vein usually ascends in the posterior calf and commonly drains near the popliteal fossa. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral.

7. A — The great saphenous vein courses in the superficial saphenous compartment and is commonly followed along the medial leg and thigh. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging.

8. C — During fasting, the superior mesenteric circulation has relatively high resistance; after eating, diastolic flow rises as bowel perfusion increases. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

9. D — The celiac artery supplies the liver and spleen, which maintain low-resistance circulation even during fasting. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler, physiologic.

10. B — The kidneys require continuous perfusion, so normal renal arteries display low resistance and sustained forward flow during diastole. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel,

mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow.

11. D — Hepatic venous waveforms are characteristically pulsatile and multiphasic because right atrial pressure changes are transmitted into the hepatic veins. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

12. C — Normal portal venous flow is hepatopetal, carrying nutrient-rich blood from the gastrointestinal tract and spleen toward the liver. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow.

13. B — Normal peripheral venous flow varies with respiration and increases with distal augmentation, demonstrating patency between the compression site and sample location. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale.

14. A — A healthy resting limb has high peripheral resistance and elastic recoil, producing forward systole, brief early-diastolic reversal, and late forward flow. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale.

15. B — Normal vertebral arterial flow is antegrade, traveling cranially through the transverse foramina toward the basilar circulation. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler.

16. C — The internal carotid supplies the brain, a continuously perfused low-resistance vascular bed, so forward diastolic flow is normally prominent. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

17. D — The external carotid supplies muscular and facial beds, producing a higher-resistance waveform than the internal carotid artery. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral.

18. A — The common carotid supplies both external and internal carotid beds, so its normal waveform has an intermediate-to-low resistance pattern with forward diastolic flow. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation.

19. D — The distal abdominal aorta bifurcates into the right and left common iliac arteries, typically near the fourth lumbar vertebral level. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging.

20. B — The popliteal artery first gives rise to the anterior tibial artery and then continues as the tibioperoneal trunk. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow.

21. C — The common femoral artery divides into the superficial femoral artery and the profunda femoris artery in the proximal thigh. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

22. A — The brachial artery divides near the antecubital fossa into the radial and ulnar arteries supplying the forearm and hand. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

23. C — At the groin, the common femoral vein usually lies medial to the common femoral artery, a useful orientation landmark. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

24. A — The small saphenous vein usually ascends in the posterior calf and commonly drains near the popliteal fossa. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral.

25. D — The great saphenous vein courses in the superficial saphenous compartment and is commonly followed along the medial leg and thigh. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel,

mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging.

26. B — During fasting, the superior mesenteric circulation has relatively high resistance; after eating, diastolic flow rises as bowel perfusion increases. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

27. B — The celiac artery supplies the liver and spleen, which maintain low-resistance circulation even during fasting. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler, physiologic.

28. D — The kidneys require continuous perfusion, so normal renal arteries display low resistance and sustained forward flow during diastole. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow.

29. A — Hepatic venous waveforms are characteristically pulsatile and multiphasic because right atrial pressure changes are transmitted into the hepatic veins. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

30. C — Normal portal venous flow is hepatopetal, carrying nutrient-rich blood from the gastrointestinal tract and spleen toward the liver. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow.

31. C — Normal peripheral venous flow varies with respiration and increases with distal augmentation, demonstrating patency between the compression site and sample location. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale.

32. A — A healthy resting limb has high peripheral resistance and elastic recoil, producing forward systole, brief early-diastolic reversal, and late forward flow. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale.

33. D — Normal vertebral arterial flow is antegrade, traveling cranially through the transverse foramina toward the basilar circulation. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler.

34. B — The internal carotid supplies the brain, a continuously perfused low-resistance vascular bed, so forward diastolic flow is normally prominent. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

35. B — The external carotid supplies muscular and facial beds, producing a higher-resistance waveform than the internal carotid artery. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral.

36. A — The common carotid supplies both external and internal carotid beds, so its normal waveform has an intermediate-to-low resistance pattern with forward diastolic flow. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation.

37. C — Dissection creates a tear and intimal flap that divides the aorta into true and false flow channels with potentially different Doppler characteristics. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with.

38. D — Aneurysm surveillance requires reproducible maximum diameter measurements perpendicular to the vessel axis, commonly from outer wall to outer wall. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

39. B — Compartment pressure can compromise microvascular tissue perfusion before large-artery Doppler signals disappear, so normal signals do not exclude the emergency. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging.

40. D — Continuous peripheral venous flow with loss of respiratory variation can indicate a more proximal obstruction between the sample and the heart. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives

describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale.

41. A — Arterial thoracic outlet compression is dynamic; provocative arm positions may reduce subclavian flow, dampen the waveform, or reproduce symptoms. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

42. C — A Baker cyst is a fluid-filled popliteal lesion that can cause posterior knee pain or swelling and clinically resemble venous thrombosis. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale.

43. D — A carotid body tumor is typically hypervascular and located at the bifurcation, where it separates or splays the internal and external carotid arteries. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation.

44. C — Reduced renal perfusion activates renin-mediated mechanisms that can produce difficult-to-control renovascular hypertension. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler, physiologic data, and clinical.

45. A — Chronic mesenteric arterial disease commonly causes postprandial pain because intestinal demand rises after eating but stenotic vessels cannot supply adequate flow. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale.

46. B — Popliteal aneurysms may thrombose or generate distal emboli, threatening tibial runoff and limb perfusion even without rupture. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral.

47. B — May-Thurner syndrome involves compression of the left common iliac vein by the overlying right common iliac artery against the spine. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging.

48. D — The left renal vein may be compressed between the superior mesenteric artery and aorta, causing venous hypertension and collateralization. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

49. A — Median arcuate ligament compression can narrow the proximal celiac artery, often producing respiratory variation in velocity and vessel configuration. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

50. C — Budd-Chiari syndrome results from obstruction of hepatic venous outflow involving hepatic veins, the inferior vena cava, or both. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow.

51. A — Portal hypertension may enlarge portal veins, reduce or reverse hepatopetal flow, and create portosystemic collateral pathways. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler.

52. C — Renal fibromuscular dysplasia classically affects the mid-to-distal artery and may create alternating narrowed and dilated segments rather than ostial plaque. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging.

53. B — Ulceration is an irregular depression in the plaque surface that may fill with color flow and increases embolic potential. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

54. D — Proximal subclavian obstruction can lower pressure beyond the lesion and draw blood retrograde through the ipsilateral vertebral artery to supply the arm. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with.

55. C — A significant proximal obstruction dampens and delays the downstream systolic pressure wave, producing the tardus-parvus contour. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel,

mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler.

56. B — True occlusion produces no flow within the obstructed segment despite optimized settings; collateral pathways may restore damped flow beyond it. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging.

57. D — A narrowing accelerates flow through the reduced lumen and commonly creates aliasing, turbulence, and spectral broadening at and beyond the lesion. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale.

58. A — An arteriovenous connection lowers downstream resistance, increases feeding-artery diastolic flow, and transmits pulsatility and arterialized velocity to the draining vein. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging.

59. A — Swirling blood in a pseudoaneurysm sac often produces the characteristic red-and-blue yin-yang appearance on color Doppler. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler.

60. C — A pseudoaneurysm neck demonstrates blood entering the sac during systole and returning toward the artery during diastole, creating to-and-fro flow. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging.

61. D — Pathologic reflux is sustained retrograde venous flow after a maneuver that challenges valve closure, not the brief transient response of normal valves. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with.

62. B — Chronic thrombosis commonly produces echogenic organized material, wall thickening, recanalized channels, collateral veins, and a smaller irregular lumen. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow.

63. D — Acute thrombus often makes the vein enlarged and noncompressible, while recently formed clot may be relatively hypoechoic. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral.

64. A — Dissection creates a tear and intimal flap that divides the aorta into true and false flow channels with potentially different Doppler characteristics. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with.

65. B — Aneurysm surveillance requires reproducible maximum diameter measurements perpendicular to the vessel axis, commonly from outer wall to outer wall. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

66. C — Compartment pressure can compromise microvascular tissue perfusion before large-artery Doppler signals disappear, so normal signals do not exclude the emergency. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging.

67. A — Continuous peripheral venous flow with loss of respiratory variation can indicate a more proximal obstruction between the sample and the heart. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale.

68. B — Arterial thoracic outlet compression is dynamic; provocative arm positions may reduce subclavian flow, dampen the waveform, or reproduce symptoms. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

69. D — A Baker cyst is a fluid-filled popliteal lesion that can cause posterior knee pain or swelling and clinically resemble venous thrombosis. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale.

70. C — A carotid body tumor is typically hypervascular and located at the bifurcation, where it separates or splays the internal and external carotid arteries. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives

describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation.

71. B — Reduced renal perfusion activates renin-mediated mechanisms that can produce difficult-to-control renovascular hypertension. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler, physiologic data, and clinical.

72. D — Chronic mesenteric arterial disease commonly causes postprandial pain because intestinal demand rises after eating but stenotic vessels cannot supply adequate flow. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale.

73. A — Popliteal aneurysms may thrombose or generate distal emboli, threatening tibial runoff and limb perfusion even without rupture. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral.

74. C — May-Thurner syndrome involves compression of the left common iliac vein by the overlying right common iliac artery against the spine. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging.

75. A — The left renal vein may be compressed between the superior mesenteric artery and aorta, causing venous hypertension and collateralization. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

76. B — Median arcuate ligament compression can narrow the proximal celiac artery, often producing respiratory variation in velocity and vessel configuration. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

77. D — Budd-Chiari syndrome results from obstruction of hepatic venous outflow involving hepatic veins, the inferior vena cava, or both. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow.

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81. D — Proximal subclavian obstruction can lower pressure beyond the lesion and draw blood retrograde through the ipsilateral vertebral artery to supply the arm. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with.

82. A — A significant proximal obstruction dampens and delays the downstream systolic pressure wave, producing the tardus-parvus contour. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler.

83. B — True occlusion produces no flow within the obstructed segment despite optimized settings; collateral pathways may restore damped flow beyond it. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging.

84. C — A narrowing accelerates flow through the reduced lumen and commonly creates aliasing, turbulence, and spectral broadening at and beyond the lesion. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale.

85. D — An arteriovenous connection lowers downstream resistance, increases feeding-artery diastolic flow, and transmits pulsatility and arterialized velocity to the draining vein. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The

alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging.

86. C — Swirling blood in a pseudoaneurysm sac often produces the characteristic red-and-blue yin-yang appearance on color Doppler. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler.

87. A — A pseudoaneurysm neck demonstrates blood entering the sac during systole and returning toward the artery during diastole, creating to-and-fro flow. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging.

88. D — Pathologic reflux is sustained retrograde venous flow after a maneuver that challenges valve closure, not the brief transient response of normal valves. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with.

89. A — Chronic thrombosis commonly produces echogenic organized material, wall thickening, recanalized channels, collateral veins, and a smaller irregular lumen. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow.

90. B — Acute thrombus often makes the vein enlarged and noncompressible, while recently formed clot may be relatively hypoechoic. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral.

91. B — Dialysis steal occurs when access flow contributes to inadequate hand perfusion, often requiring comparison of distal flow with and without access compression. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with.

92. C — Unexpected perigraft fluid, gas, inflammatory change, or pseudoaneurysm can raise concern for infection when correlated with the clinical presentation. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

93. D — Stent surveillance uses color and spectral Doppler through the stent and its edges, looking for focal acceleration or disturbed flow. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging.

94. A — Post-ablation ultrasound confirms intended treated-vein closure while checking the deep system for thrombus extension or other complications. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral.

95. D — Transplant evaluation includes the arterial anastomosis, main transplant artery, renal vein, and intrarenal perfusion patterns. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler, physiologic.

96. B — TIPS surveillance assesses shunt patency, velocity changes, portal flow direction, and indirect signs of malfunction. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler, physiologic.

97. A — An endoleak is continued perfusion of the excluded aneurysm sac outside the endograft lumen and requires classification and surveillance. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

98. C — Duplex surveillance identifies graft stenosis by focal acceleration, spectral disturbance, and comparison with adjacent graft velocities. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler.

99. B — Outflow narrowing accelerates venous velocity, creates turbulence, and may elevate access pressures or reduce effective dialysis flow. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral.

100. C — A functioning arteriovenous access lowers resistance and increases inflow velocity and volume, creating a strongly diastolic arterial waveform. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives

describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow.

101. D — Resistive index equals PSV minus EDV divided by PSV; using 120 and 30 produces 0.75. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler, physiologic.

102. A — Temporary occlusion followed by release increases flow demand, allowing physiologic assessment of the limb's capacity to augment perfusion. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow.

103. A — An appropriately sized cuff distributes pressure effectively; a cuff that is too small can falsely elevate the measured pressure. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

104. D — Venous photoplethysmography evaluates refilling after calf-muscle emptying; abnormally rapid refill supports incompetent venous valves. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler, physiologic data.

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106. B — Exercise increases limb demand; a postexercise pressure decline can reveal arterial disease not apparent under resting conditions. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral.

107. B — Arterial obstruction progressively rounds and delays the PVR systolic upstroke while reducing amplitude and eliminating normal contour features. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow.

108. C — A substantial pressure decrease between adjacent limb levels localizes hemodynamically significant arterial disease to the intervening segment. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral.

109. A — Resistive index equals PSV minus EDV divided by PSV; using 120 and 30 produces 0.75. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler, physiologic.

110. D — The ABI compares the higher ankle artery pressure with the higher brachial pressure, creating a standardized ratio of limb to systemic pressure. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with.

111. B — Bilateral pressure and waveform comparison helps localize upper-extremity inflow or segmental arterial disease. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler, physiologic data, and.

112. C — Temporary occlusion followed by release increases flow demand, allowing physiologic assessment of the limb's capacity to augment perfusion. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow.

113. A — Resistive index equals PSV minus EDV divided by PSV; using 120 and 30 produces 0.75. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler, physiologic.

114. B — Venous photoplethysmography evaluates refilling after calf-muscle emptying; abnormally rapid refill supports incompetent venous valves. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler, physiologic data.

115. D — Toe vessels are less affected by medial calcification, making toe pressure useful when ankle arteries cannot be compressed reliably. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel,

mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

116. A — Exercise increases limb demand; a postexercise pressure decline can reveal arterial disease not apparent under resting conditions. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral.

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118. D — A substantial pressure decrease between adjacent limb levels localizes hemodynamically significant arterial disease to the intervening segment. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral.

119. D — Medial arterial calcification can prevent cuff compression and falsely elevate ABI, so toe pressures or other methods are more informative. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging.

120. B — The ABI compares the higher ankle artery pressure with the higher brachial pressure, creating a standardized ratio of limb to systemic pressure. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with.

121. C — Needle conspicuity improves when the insonation geometry produces a stronger specular reflection and the needle remains within the imaging plane. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging.

122. A — Ultrasound distinguishes a simple hematoma from active bleeding, pseudoaneurysm, or arteriovenous fistula and helps guide escalation. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler.

123. B — Patient safety takes priority; symptoms such as bradycardia, hypotension, pallor, or syncope require prompt assessment and team response. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow.

124. D — A standardized timeout prevents wrong-patient, wrong-site, and wrong-procedure events and confirms team readiness before intervention. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler, physiologic.

125. C — Intraoperative carotid imaging can identify residual narrowing, intimal flap, thrombus, or abnormal flow that may require immediate revision. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow.

126. A — Real-time visualization and a safe planned trajectory reduce unintended vascular injury during image-guided access or biopsy procedures. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral.

127. C — After thrombin injection, ultrasound should document loss of sac flow while ensuring the native artery and distal circulation remain patent. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging.

128. D — A sterile cover, appropriate sterile gel, and careful cable management protect the procedural field while maintaining image quality. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow.

129. B — Completion duplex provides immediate hemodynamic and anatomic assessment so a correctable technical defect can be addressed before closure. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow.

130. A — Ultrasound confirms intraluminal catheter position, safe distance from deep junctions, and circumferential tumescent coverage before energy delivery. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives

describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral.

131. D — Ultrasound-guided compression targets the neck to interrupt sac inflow while preserving and repeatedly checking distal perfusion. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler.

132. C — Continuous needle visualization and separation from the pseudoaneurysm neck reduce the risk of thrombin entering the native artery. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow.

133. A — Resistive index equals PSV minus EDV divided by PSV; using 120 and 30 produces 0.75. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler, physiologic.

134. B — Critical findings require prompt communication through the approved chain, documentation of recipient and time, and confirmation that the message was understood. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale.

135. D — Neutral posture, close patient positioning, equipment adjustment, and microbreaks reduce cumulative musculoskeletal strain for the sonographer. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler.

136. A — Consistent hand hygiene, transducer reprocessing, gel handling, and surface cleaning reduce cross-contamination risks in vascular laboratories. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler.

137. C — Resistive index equals PSV minus EDV divided by PSV; using 120 and 30 produces 0.75. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler, physiologic.

138. B — At high pulse repetition frequency, late returning echoes may be attributed to a later pulse and displayed at an incorrect depth. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale.

139. B — A strong specular reflector can redirect echoes and create an apparent duplicate structure at an incorrect deeper location. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow.

140. C — Higher frequency improves spatial resolution but reduces penetration, so selection must match vessel depth and patient habitus. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral.

141. D — Resistive index equals PSV minus EDV divided by PSV; using 120 and 30 produces 0.75. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler, physiologic.

142. A — The wall filter suppresses low-frequency Doppler shifts; setting it too high can erase genuine slow venous or diastolic flow. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

143. D — Systematic sampling documents baseline, maximal jet velocity, and downstream disturbance, supporting accurate localization and grading. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler, physiologic.

144. C — The resistive index normalizes the difference between systolic and diastolic velocities to peak systolic velocity and reflects downstream resistance. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

145. B — Resistive index equals PSV minus EDV divided by PSV; using 120 and 30 produces 0.75. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical

response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler, physiologic.

146. A — ALARA guides prudent ultrasound use by minimizing acoustic exposure while still acquiring the diagnostic information needed for patient care. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

147. D — Fluid attenuates less sound than surrounding tissue, leaving relatively greater beam intensity and brightness distal to the structure. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow.

148. A — Calcification may markedly attenuate the beam, creating a dark distal shadow that can obscure the lumen and limit Doppler evaluation. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging.

149. C — Resistive index equals PSV minus EDV divided by PSV; using 120 and 30 produces 0.75. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler, physiologic.

150. B — Excessive color gain causes color to spill beyond vessel boundaries; lowering gain until random extraluminal color disappears improves lumen definition. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging.

151. A — Velocity accuracy depends strongly on the cosine of the insonation angle, so consistent alignment at sixty degrees or less limits error. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale.

152. B — Aliasing occurs when Doppler shift exceeds the Nyquist limit; increasing PRF or scale, shifting baseline, or using another mode can help. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale.

153. C — Resistive index equals PSV minus EDV divided by PSV; using 120 and 30 produces 0.75. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler, physiologic.

154. D — Critical findings require prompt communication through the approved chain, documentation of recipient and time, and confirmation that the message was understood. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale.

155. C — Neutral posture, close patient positioning, equipment adjustment, and microbreaks reduce cumulative musculoskeletal strain for the sonographer. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler.

156. A — Consistent hand hygiene, transducer reprocessing, gel handling, and surface cleaning reduce cross-contamination risks in vascular laboratories. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler.

157. B — Real-time findings may require additional views or segments, but modifications should remain clinically relevant, within protocol, and clearly documented. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

158. D — Potentially important incidental observations should be documented and escalated through policy so the interpreting clinician can determine appropriate follow-up. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

159. D — Objective, standardized language makes preliminary findings understandable and reduces ambiguity while protecting confidentiality and professional scope. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler.

160. C — Medication review provides clinical context, identifies bleeding or procedural considerations, and helps explain physiologic responses without authorizing medication changes. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The

alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

161. A — Procedural details identify conduit type, anastomoses, stents, treated segments, and expected anatomy, guiding a complete and accurate examination. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow.

162. B — A clear explanation improves cooperation and comfort while respecting the technologist's scope and the patient's right to ask questions or decline. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale.

163. C — Timely escalation of acute DVT, critical stenosis, aneurysm, or other urgent findings supports patient safety and continuity of care. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

164. B — Position affects hydrostatic pressure, venous filling, access, and safety; the protocol should be adapted while documenting meaningful limitations. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow.

165. D — Complete, correctly labeled archives allow interpretation, comparison, quality review, and defensible documentation of the examination performed. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler.

166. A — The technologist documents objective findings and communicates them through established policy while the authorized interpreting clinician provides the final interpretation. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging.

167. A — Clear documentation identifies which segments were limited, why they were limited, and how diagnostic confidence was affected. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral.

168. C — Fasting can reduce bowel gas and postprandial mesenteric variation, but urgent examinations and patient safety may require protocol adaptation. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

169. B — A focused history directs protocol selection, helps interpret hemodynamic findings, and identifies prior interventions or risks that alter technique. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color.

170. D — Two independent approved identifiers reduce wrong-patient errors before imaging, procedures, documentation, or communication occurs. This is the single best choice because it integrates anatomy, hemodynamics, and standard vascular laboratory technique. The alternatives describe a different vessel, mechanism, artifact, or clinical response and therefore do not fit the stated finding. Correlation with grayscale imaging, color flow, spectral Doppler, physiologic data.