

PRACTICE EXAM 9: ARRT COMPUTED TOMOGRAPHY SIMULATION (165 QUESTIONS)

This practice exam contains 165 scored-style questions based on the ARRT CT content specifications effective September 1, 2026. Allow 195 minutes. Select the single best answer for each question. ARRT reports scaled scores from 1 to 99; a scaled score of 75 is required to pass.

1. Exam 9 patient case 1: What is the safest response to a patient who becomes unresponsive during scanning?

- A. Finish the acquisition before entering the room
- B. Stop the scan, assess responsiveness, and summon help
- C. Lower window width to inspect the images
- D. Move the patient without checking attached lines

2. Exam 9 patient case 2: Before iodinated contrast CT, which laboratory result most directly estimates renal filtration?

- A. Serum sodium concentration
- B. White blood cell count
- C. Estimated glomerular filtration rate
- D. Activated clotting time

3. Exam 9 patient case 3: A patient develops wheezing and hypotension immediately after iodinated contrast. What is the priority response?

- A. Activate emergency response and support the airway
- B. Offer oral fluids and continue observation
- C. Remove the IV and discharge the patient

D. Complete the scan before giving assistance

4. Exam 9 patient case 4: Which action is part of a proper preprocedure time-out?

- A. Verify only the room and scanner model
- B. Confirm patient, examination, and intended site
- C. Ask the patient to select the protocol
- D. Document contrast after the patient leaves

5. Exam 9 patient case 5: What is the best initial action when contrast extravasation is suspected?

- A. Increase the flow rate to clear the catheter
- B. Apply firm pressure and continue scanning
- C. Flush forcefully with additional contrast
- D. Stop the injection and assess the affected extremity

6. Exam 9 patient case 6: Which venipuncture practice best supports infection prevention?

- A. Repalpate the cleaned site with an ungloved finger
- B. Use hand hygiene and aseptic skin preparation
- C. Reuse a clean tourniquet as a sterile field
- D. Touch the catheter tip to confirm placement

7. Exam 9 patient case 7: A patient has limited English proficiency. What is the most appropriate communication method?

- A. Rely on a young family member
- B. Proceed using gestures alone
- C. Obtain consent after the scan
- D. Use a qualified medical interpreter

8. Exam 9 patient case 8: Which information must be documented after power injection?

- A. Only the scanner serial number
- B. Only the patient's arrival time
- C. Site, catheter gauge, contrast amount, and flow rate
- D. The radiologist's office schedule

9. Exam 9 patient case 9: A conscious adult refuses contrast after receiving an explanation. What should the technologist do?

- A. Respect the refusal and notify the responsible provider
- B. Administer contrast because the order is signed
- C. Ask security to authorize the injection
- D. Sedate the patient without further discussion

10. Exam 9 patient case 10: Which device requires special attention when transferring a patient to the CT table?

- A. A removable cotton blanket
- B. A paper identification band
- C. A nonmetallic positioning sponge
- D. An indwelling chest tube and drainage system

11. Exam 9 patient case 11: What is the safest response to a patient who becomes unresponsive during scanning?

- A. Finish the acquisition before entering the room
- B. Lower window width to inspect the images
- C. Stop the scan, assess responsiveness, and summon help
- D. Move the patient without checking attached lines

12. Exam 9 patient case 12: Before iodinated contrast CT, which laboratory result most directly estimates renal filtration?

- A. Estimated glomerular filtration rate
- B. Serum sodium concentration
- C. White blood cell count
- D. Activated clotting time

13. Exam 9 patient case 13: A patient develops wheezing and hypotension immediately after iodinated contrast. What is the priority response?

- A. Offer oral fluids and continue observation
- B. Activate emergency response and support the airway
- C. Remove the IV and discharge the patient
- D. Complete the scan before giving assistance

14. Exam 9 patient case 14: Which action is part of a proper preprocedure time-out?

- A. Verify only the room and scanner model
- B. Ask the patient to select the protocol
- C. Document contrast after the patient leaves
- D. Confirm patient, examination, and intended site

15. Exam 9 patient case 15: What is the best initial action when contrast extravasation is suspected?

- A. Increase the flow rate to clear the catheter
- B. Apply firm pressure and continue scanning
- C. Stop the injection and assess the affected extremity
- D. Flush forcefully with additional contrast

16. Exam 9 patient case 16: Which venipuncture practice best supports infection prevention?

- A. Repalpate the cleaned site with an ungloved finger
- B. Use hand hygiene and aseptic skin preparation
- C. Reuse a clean tourniquet as a sterile field
- D. Touch the catheter tip to confirm placement

17. Exam 9 patient case 17: A patient has limited English proficiency. What is the most appropriate communication method?

- A. Use a qualified medical interpreter
- B. Rely on a young family member
- C. Proceed using gestures alone
- D. Obtain consent after the scan

18. Exam 9 patient case 18: Which information must be documented after power injection?

- A. Site, catheter gauge, contrast amount, and flow rate
- B. Only the scanner serial number
- C. Only the patient's arrival time
- D. The radiologist's office schedule

19. Exam 9 patient case 19: A conscious adult refuses contrast after receiving an explanation. What should the technologist do?

- A. Administer contrast because the order is signed
- B. Ask security to authorize the injection
- C. Sedate the patient without further discussion
- D. Respect the refusal and notify the responsible provider

20. Exam 9 patient case 20: Which device requires special attention when transferring a patient to the CT table?

- A. A removable cotton blanket
- B. An indwelling chest tube and drainage system
- C. A paper identification band
- D. A nonmetallic positioning sponge

21. Exam 9 patient case 21: What is the safest response to a patient who becomes unresponsive during scanning?

- A. Finish the acquisition before entering the room
- B. Lower window width to inspect the images
- C. Stop the scan, assess responsiveness, and summon help
- D. Move the patient without checking attached lines

22. Exam 9 safety case 1: What is the primary purpose of automatic tube current modulation?

- A. Keep tube current fixed for every projection
- B. Increase scan length automatically
- C. Replace patient centering requirements
- D. Adapt tube current to patient attenuation

23. Exam 9 safety case 2: How does incorrect off-centering commonly affect a CT examination?

- A. It guarantees uniform low dose
- B. It can impair modulation and increase dose or noise
- C. It eliminates bow-tie filtration
- D. It prevents all motion artifacts

24. Exam 9 safety case 3: Which interaction is the major source of occupational scatter in diagnostic CT?

- A. Compton scattering
- B. Pair production
- C. Photodisintegration
- D. Coherent transmission only

25. Exam 9 safety case 4: Why should scan coverage be limited to the indicated anatomy?

- A. Coverage has no relationship to dose
- B. Short coverage always increases CTDI_{vol}
- C. Longer coverage directly increases dose-length product
- D. Coverage controls only window width

26. Exam 9 safety case 5: Which practice is most appropriate for pediatric CT?

- A. Use the adult protocol for consistent appearance
- B. Increase multiphase acquisitions routinely
- C. Use size-specific protocols and appropriate clinical indications
- D. Repeat every scan after repositioning

27. Exam 9 safety case 6: If all other factors remain constant, which change generally lowers CT radiation dose?

- A. Reducing tube current-time product
- B. Increasing tube current-time product
- C. Repeating the same acquisition
- D. Extending the scan length

28. Exam 9 safety case 7: Which quantity represents integrated scanner output across the imaged length?

- A. Window level
- B. Hounsfield number

- C. Temporal resolution
- D. Dose-length product

29. Exam 9 safety case 8: What is the primary purpose of automatic tube current modulation?

- A. Keep tube current fixed for every projection
- B. Adapt tube current to patient attenuation
- C. Increase scan length automatically
- D. Replace patient centering requirements

30. Exam 9 safety case 9: How does incorrect off-centering commonly affect a CT examination?

- A. It guarantees uniform low dose
- B. It eliminates bow-tie filtration
- C. It can impair modulation and increase dose or noise
- D. It prevents all motion artifacts

31. Exam 9 safety case 10: Which interaction is the major source of occupational scatter in diagnostic CT?

- A. Pair production
- B. Photodisintegration
- C. Coherent transmission only
- D. Compton scattering

32. Exam 9 safety case 11: Why should scan coverage be limited to the indicated anatomy?

- A. Coverage has no relationship to dose
- B. Longer coverage directly increases dose-length product
- C. Short coverage always increases CTDI_{vol}
- D. Coverage controls only window width

33. Exam 9 safety case 12: Which practice is most appropriate for pediatric CT?

- A. Use size-specific protocols and appropriate clinical indications
- B. Use the adult protocol for consistent appearance
- C. Increase multiphase acquisitions routinely
- D. Repeat every scan after repositioning

34. Exam 9 safety case 13: If all other factors remain constant, which change generally lowers CT radiation dose?

- A. Increasing tube current-time product
- B. Reducing tube current-time product
- C. Repeating the same acquisition
- D. Extending the scan length

35. Exam 9 safety case 14: Which quantity represents integrated scanner output across the imaged length?

- A. Window level
- B. Hounsfield number
- C. Dose-length product
- D. Temporal resolution

36. Exam 9 safety case 15: What is the primary purpose of automatic tube current modulation?

- A. Keep tube current fixed for every projection
- B. Increase scan length automatically
- C. Replace patient centering requirements
- D. Adapt tube current to patient attenuation

37. Exam 9 safety case 16: How does incorrect off-centering commonly affect a CT examination?

- A. It can impair modulation and increase dose or noise
- B. It guarantees uniform low dose
- C. It eliminates bow-tie filtration
- D. It prevents all motion artifacts

38. Exam 9 safety case 17: Which interaction is the major source of occupational scatter in diagnostic CT?

- A. Compton scattering
- B. Pair production
- C. Photodisintegration
- D. Coherent transmission only

39. Exam 9 safety case 18: Why should scan coverage be limited to the indicated anatomy?

- A. Coverage has no relationship to dose
- B. Short coverage always increases CTDI_{vol}
- C. Coverage controls only window width
- D. Longer coverage directly increases dose-length product

40. Exam 9 safety case 19: Which practice is most appropriate for pediatric CT?

- A. Use the adult protocol for consistent appearance
- B. Increase multiphase acquisitions routinely
- C. Use size-specific protocols and appropriate clinical indications
- D. Repeat every scan after repositioning

41. Exam 9 safety case 20: If all other factors remain constant, which change generally lowers CT radiation dose?

- A. Increasing tube current-time product
- B. Reducing tube current-time product
- C. Repeating the same acquisition
- D. Extending the scan length

42. Exam 9 safety case 21: Which quantity represents integrated scanner output across the imaged length?

- A. Window level
- B. Hounsfield number
- C. Temporal resolution
- D. Dose-length product

43. Exam 9 image case 1: What is the purpose of a CT number linearity test?

- A. Measure only table weight capacity
- B. Confirm contrast injector pressure
- C. Verify predictable CT numbers across materials
- D. Test the room intercom volume

44. Exam 9 image case 2: Which artifact is reduced by removing metal when possible and using metal-artifact reduction?

- A. Streaking from severe attenuation and photon starvation
- B. Rings from detector drift
- C. Motion from respiration
- D. Aliasing from slow table travel

45. Exam 9 image case 3: What distinguishes raw data from image data?

- A. Raw data are already windowed screenshots
- B. Raw data can support retrospective reconstruction
- C. Image data contain no pixel values
- D. Image data alone change detector collimation

46. Exam 9 image case 4: Which format supports standardized medical image communication?

- A. ASCII-only text
- B. JPEG camera metadata
- C. Spreadsheet formulas
- D. DICOM

47. Exam 9 image case 5: Which CT component converts transmitted x-ray energy into electrical signals?

- A. Slip-ring brush guard
- B. Patient table motor
- C. Detector array
- D. Laser positioning light

48. Exam 9 image case 6: What is the main advantage of slip-ring technology?

- A. Elimination of x-ray detectors
- B. Continuous gantry rotation for helical acquisition
- C. Direct storage of images on film
- D. Removal of the reconstruction computer

49. Exam 9 image case 7: Decreasing display field of view while keeping matrix size constant has what effect?

- A. Smaller pixels and improved displayed spatial sampling

- B. Larger pixels and lower sampling
- C. Longer scan time without pixel change
- D. Higher pitch and thicker detectors

50. Exam 9 image case 8: Which reconstruction approach generally reduces noise at a comparable dose?

- A. Iterative reconstruction
- B. Unfiltered projection display
- C. Scout imaging only
- D. Maximum window width

51. Exam 9 image case 9: What does window level primarily control?

- A. The number of detector rows
- B. The center CT number displayed as gray
- C. The table travel per rotation
- D. The acquired slice thickness

52. Exam 9 image case 10: What does window width primarily control?

- A. The gantry rotation direction
- B. The injected contrast volume
- C. The range of CT numbers displayed
- D. The number of scout images

53. Exam 9 image case 11: Which artifact commonly appears as concentric circles?

- A. Motion artifact from breathing
- B. Partial-volume artifact at edges
- C. Stair-step artifact on reformations
- D. Ring artifact from detector calibration error

54. Exam 9 image case 12: Which postprocessing method emphasizes the highest attenuation voxels along a viewing ray?

- A. Minimum intensity projection
- B. Maximum intensity projection
- C. Surface averaging projection
- D. Simple axial interpolation

55. Exam 9 image case 13: Which factor most directly improves temporal resolution?

- A. Shorter effective gantry rotation time
- B. Larger display field of view
- C. Wider reconstruction interval
- D. Higher window level

56. Exam 9 image case 14: What is the purpose of a CT number linearity test?

- A. Measure only table weight capacity
- B. Confirm contrast injector pressure
- C. Verify predictable CT numbers across materials
- D. Test the room intercom volume

57. Exam 9 image case 15: Which artifact is reduced by removing metal when possible and using metal-artifact reduction?

- A. Rings from detector drift
- B. Motion from respiration
- C. Aliasing from slow table travel
- D. Streaking from severe attenuation and photon starvation

58. Exam 9 image case 16: What distinguishes raw data from image data?

- A. Raw data can support retrospective reconstruction
- B. Raw data are already windowed screenshots
- C. Image data contain no pixel values
- D. Image data alone change detector collimation

59. Exam 9 image case 17: Which format supports standardized medical image communication?

- A. ASCII-only text
- B. DICOM
- C. JPEG camera metadata
- D. Spreadsheet formulas

60. Exam 9 image case 18: Which CT component converts transmitted x-ray energy into electrical signals?

- A. Slip-ring brush guard
- B. Patient table motor
- C. Detector array
- D. Laser positioning light

61. Exam 9 image case 19: What is the main advantage of slip-ring technology?

- A. Elimination of x-ray detectors
- B. Direct storage of images on film
- C. Removal of the reconstruction computer
- D. Continuous gantry rotation for helical acquisition

62. Exam 9 image case 20: Decreasing display field of view while keeping matrix size constant has what effect?

- A. Larger pixels and lower sampling
- B. Smaller pixels and improved displayed spatial sampling
- C. Longer scan time without pixel change
- D. Higher pitch and thicker detectors

63. Exam 9 image case 21: Which reconstruction approach generally reduces noise at a comparable dose?

- A. Iterative reconstruction
- B. Unfiltered projection display
- C. Scout imaging only
- D. Maximum window width

64. Exam 9 image case 22: What does window level primarily control?

- A. The number of detector rows
- B. The table travel per rotation
- C. The acquired slice thickness
- D. The center CT number displayed as gray

65. Exam 9 image case 23: What does window width primarily control?

- A. The gantry rotation direction
- B. The injected contrast volume
- C. The range of CT numbers displayed
- D. The number of scout images

66. Exam 9 image case 24: Which artifact commonly appears as concentric circles?

- A. Ring artifact from detector calibration error
- B. Motion artifact from breathing
- C. Partial-volume artifact at edges
- D. Stair-step artifact on reformations

67. Exam 9 image case 25: Which postprocessing method emphasizes the highest attenuation voxels along a viewing ray?

- A. Minimum intensity projection
- B. Surface averaging projection
- C. Simple axial interpolation
- D. Maximum intensity projection

68. Exam 9 image case 26: Which factor most directly improves temporal resolution?

- A. Larger display field of view
- B. Shorter effective gantry rotation time
- C. Wider reconstruction interval
- D. Higher window level

69. Exam 9 image case 27: What is the purpose of a CT number linearity test?

- A. Measure only table weight capacity
- B. Confirm contrast injector pressure
- C. Verify predictable CT numbers across materials
- D. Test the room intercom volume

70. Exam 9 image case 28: Which artifact is reduced by removing metal when possible and using metal-artifact reduction?

- A. Rings from detector drift

- B. Motion from respiration
- C. Streaking from severe attenuation and photon starvation
- D. Aliasing from slow table travel

71. Exam 9 image case 29: What distinguishes raw data from image data?

- A. Raw data are already windowed screenshots
- B. Image data contain no pixel values
- C. Image data alone change detector collimation
- D. Raw data can support retrospective reconstruction

72. Exam 9 image case 30: Which format supports standardized medical image communication?

- A. ASCII-only text
- B. DICOM
- C. JPEG camera metadata
- D. Spreadsheet formulas

73. Exam 9 image case 31: Which CT component converts transmitted x-ray energy into electrical signals?

- A. Detector array
- B. Slip-ring brush guard
- C. Patient table motor
- D. Laser positioning light

74. Exam 9 image case 32: What is the main advantage of slip-ring technology?

- A. Elimination of x-ray detectors
- B. Continuous gantry rotation for helical acquisition
- C. Direct storage of images on film

D. Removal of the reconstruction computer

75. Exam 9 image case 33: Decreasing display field of view while keeping matrix size constant has what effect?

- A. Larger pixels and lower sampling
- B. Longer scan time without pixel change
- C. Higher pitch and thicker detectors
- D. Smaller pixels and improved displayed spatial sampling

76. Exam 9 image case 34: Which reconstruction approach generally reduces noise at a comparable dose?

- A. Iterative reconstruction
- B. Unfiltered projection display
- C. Scout imaging only
- D. Maximum window width

77. Exam 9 image case 35: What does window level primarily control?

- A. The number of detector rows
- B. The table travel per rotation
- C. The center CT number displayed as gray
- D. The acquired slice thickness

78. Exam 9 image case 36: What does window width primarily control?

- A. The gantry rotation direction
- B. The range of CT numbers displayed
- C. The injected contrast volume
- D. The number of scout images

79. Exam 9 image case 37: Which artifact commonly appears as concentric circles?

- A. Motion artifact from breathing
- B. Partial-volume artifact at edges
- C. Ring artifact from detector calibration error
- D. Stair-step artifact on reformations

80. Exam 9 image case 38: Which postprocessing method emphasizes the highest attenuation voxels along a viewing ray?

- A. Maximum intensity projection
- B. Minimum intensity projection
- C. Surface averaging projection
- D. Simple axial interpolation

81. Exam 9 image case 39: Which factor most directly improves temporal resolution?

- A. Larger display field of view
- B. Wider reconstruction interval
- C. Higher window level
- D. Shorter effective gantry rotation time

82. Exam 9 image case 40: What is the purpose of a CT number linearity test?

- A. Measure only table weight capacity
- B. Confirm contrast injector pressure
- C. Verify predictable CT numbers across materials
- D. Test the room intercom volume

83. Exam 9 image case 41: Which artifact is reduced by removing metal when possible and using metal-artifact reduction?

- A. Rings from detector drift
- B. Motion from respiration
- C. Aliasing from slow table travel
- D. Streaking from severe attenuation and photon starvation

84. Exam 9 image case 42: What distinguishes raw data from image data?

- A. Raw data can support retrospective reconstruction
- B. Raw data are already windowed screenshots
- C. Image data contain no pixel values
- D. Image data alone change detector collimation

85. Exam 9 image case 43: Which format supports standardized medical image communication?

- A. ASCII-only text
- B. DICOM
- C. JPEG camera metadata
- D. Spreadsheet formulas

86. Exam 9 image case 44: Which CT component converts transmitted x-ray energy into electrical signals?

- A. Slip-ring brush guard
- B. Patient table motor
- C. Detector array
- D. Laser positioning light

87. Exam 9 image case 45: What is the main advantage of slip-ring technology?

- A. Continuous gantry rotation for helical acquisition
- B. Elimination of x-ray detectors
- C. Direct storage of images on film
- D. Removal of the reconstruction computer

88. Exam 9 image case 46: Decreasing display field of view while keeping matrix size constant has what effect?

- A. Larger pixels and lower sampling
- B. Smaller pixels and improved displayed spatial sampling
- C. Longer scan time without pixel change
- D. Higher pitch and thicker detectors

89. Exam 9 image case 47: Which reconstruction approach generally reduces noise at a comparable dose?

- A. Unfiltered projection display
- B. Scout imaging only
- C. Maximum window width
- D. Iterative reconstruction

90. Exam 9 image case 48: What does window level primarily control?

- A. The number of detector rows
- B. The center CT number displayed as gray
- C. The table travel per rotation
- D. The acquired slice thickness

91. Exam 9 image case 49: What does window width primarily control?

- A. The gantry rotation direction
- B. The injected contrast volume
- C. The number of scout images
- D. The range of CT numbers displayed

92. Exam 9 image case 50: Which artifact commonly appears as concentric circles?

- A. Motion artifact from breathing
- B. Partial-volume artifact at edges
- C. Ring artifact from detector calibration error
- D. Stair-step artifact on reformations

93. Exam 9 image case 51: Which postprocessing method emphasizes the highest attenuation voxels along a viewing ray?

- A. Maximum intensity projection
- B. Minimum intensity projection
- C. Surface averaging projection
- D. Simple axial interpolation

94. Exam 9 image case 52: Which factor most directly improves temporal resolution?

- A. Larger display field of view
- B. Wider reconstruction interval
- C. Shorter effective gantry rotation time
- D. Higher window level

95. For CT pulmonary angiography, which anatomy should be included and evaluated most directly?

- A. pulmonary arteries
- B. unrelated superficial soft tissues only

- C. a distant joint outside the ordered region
- D. only the scout image without diagnostic sections

96. Which protocol choice is most appropriate when performing HRCT chest?

- A. use thick images only and omit reformations
- B. use thin high-spatial-frequency reconstructions
- C. apply the same noncontrast protocol to every indication
- D. limit coverage before the target anatomy is included

97. The principal diagnostic concern prompting coronary CT angiography is which condition?

- A. an unrelated condition outside the scanned region
- B. a disorder assessed only with plain radiography
- C. a finding that cannot involve the target anatomy
- D. coronary stenosis

98. For low-dose lung screening, which anatomy should be included and evaluated most directly?

- A. unrelated superficial soft tissues only
- B. entire lungs
- C. a distant joint outside the ordered region
- D. only the scout image without diagnostic sections

99. Which protocol choice is most appropriate when performing soft-tissue neck CT?

- A. cover from skull base through the thoracic inlet
- B. use thick images only and omit reformations
- C. apply the same noncontrast protocol to every indication
- D. limit coverage before the target anatomy is included

100. The principal diagnostic concern prompting multiphase liver CT is which condition?

- A. an unrelated condition outside the scanned region
- B. a disorder assessed only with plain radiography
- C. hypervascular or hypovascular lesion
- D. a finding that cannot involve the target anatomy

101. For pancreatic protocol CT, which anatomy should be included and evaluated most directly?

- A. unrelated superficial soft tissues only
- B. a distant joint outside the ordered region
- C. only the scout image without diagnostic sections
- D. pancreas and peripancreatic vessels

102. Which protocol choice is most appropriate when performing adrenal CT?

- A. use thick images only and omit reformations
- B. obtain the ordered phases needed for attenuation characterization
- C. apply the same noncontrast protocol to every indication
- D. limit coverage before the target anatomy is included

103. The principal diagnostic concern prompting renal stone CT is which condition?

- A. urinary calculus
- B. an unrelated condition outside the scanned region
- C. a disorder assessed only with plain radiography
- D. a finding that cannot involve the target anatomy

104. For CT enterography, which anatomy should be included and evaluated most directly?

- A. unrelated superficial soft tissues only
- B. a distant joint outside the ordered region
- C. only the scout image without diagnostic sections
- D. small bowel and mesentery

105. Which protocol choice is most appropriate when performing CT colonography?

- A. use thick images only and omit reformations
- B. apply the same noncontrast protocol to every indication
- C. use bowel preparation, insufflation, and supine-prone acquisitions
- D. limit coverage before the target anatomy is included

106. The principal diagnostic concern prompting CT urogram is which condition?

- A. urothelial abnormality
- B. an unrelated condition outside the scanned region
- C. a disorder assessed only with plain radiography
- D. a finding that cannot involve the target anatomy

107. For abdominopelvic trauma CT, which anatomy should be included and evaluated most directly?

- A. unrelated superficial soft tissues only
- B. a distant joint outside the ordered region
- C. solid organs and mesentery
- D. only the scout image without diagnostic sections

108. Which protocol choice is most appropriate when performing lower-extremity CTA?

- A. use thick images only and omit reformations
- B. time the acquisition to follow the contrast bolus distally
- C. apply the same noncontrast protocol to every indication

D. limit coverage before the target anatomy is included

109. The principal diagnostic concern prompting TAVR planning CT is which condition?

- A. an unrelated condition outside the scanned region
- B. a disorder assessed only with plain radiography
- C. a finding that cannot involve the target anatomy
- D. valve and access measurements

110. For noncontrast head CT, which anatomy should be included and evaluated most directly?

- A. basal ganglia
- B. unrelated superficial soft tissues only
- C. a distant joint outside the ordered region
- D. only the scout image without diagnostic sections

111. Which protocol choice is most appropriate when performing CT brain perfusion?

- A. use thick images only and omit reformations
- B. apply the same noncontrast protocol to every indication
- C. maintain consistent dynamic coverage during contrast passage
- D. limit coverage before the target anatomy is included

112. The principal diagnostic concern prompting temporal bone CT is which condition?

- A. an unrelated condition outside the scanned region
- B. fine osseous abnormality
- C. a disorder assessed only with plain radiography
- D. a finding that cannot involve the target anatomy

113. For orbital CT, which anatomy should be included and evaluated most directly?

- A. globes and extraocular muscles
- B. unrelated superficial soft tissues only
- C. a distant joint outside the ordered region
- D. only the scout image without diagnostic sections

114. Which protocol choice is most appropriate when performing sinus CT?

- A. use thick images only and omit reformations
- B. apply the same noncontrast protocol to every indication
- C. limit coverage before the target anatomy is included
- D. use thin noncontrast data suitable for coronal reformations

115. The principal diagnostic concern prompting maxillofacial CT is which condition?

- A. an unrelated condition outside the scanned region
- B. a disorder assessed only with plain radiography
- C. complex facial fracture
- D. a finding that cannot involve the target anatomy

116. For cervical spine CT, which anatomy should be included and evaluated most directly?

- A. unrelated superficial soft tissues only
- B. vertebral bodies and posterior elements
- C. a distant joint outside the ordered region
- D. only the scout image without diagnostic sections

117. Which protocol choice is most appropriate when performing lumbar spine CT?

- A. use thick images only and omit reformations
- B. apply the same noncontrast protocol to every indication
- C. limit coverage before the target anatomy is included
- D. reconstruct in bone and soft-tissue algorithms

118. The principal diagnostic concern prompting shoulder CT is which condition?

- A. an unrelated condition outside the scanned region
- B. complex fracture anatomy
- C. a disorder assessed only with plain radiography
- D. a finding that cannot involve the target anatomy

119. For CT pulmonary angiography, which anatomy should be included and evaluated most directly?

- A. unrelated superficial soft tissues only
- B. a distant joint outside the ordered region
- C. only the scout image without diagnostic sections
- D. pulmonary arteries

120. Which protocol choice is most appropriate when performing HRCT chest?

- A. use thick images only and omit reformations
- B. apply the same noncontrast protocol to every indication
- C. use thin high-spatial-frequency reconstructions
- D. limit coverage before the target anatomy is included

121. The principal diagnostic concern prompting coronary CT angiography is which condition?

- A. coronary stenosis
- B. an unrelated condition outside the scanned region
- C. a disorder assessed only with plain radiography

D. a finding that cannot involve the target anatomy

122. For low-dose lung screening, which anatomy should be included and evaluated most directly?

- A. unrelated superficial soft tissues only
- B. a distant joint outside the ordered region
- C. only the scout image without diagnostic sections
- D. entire lungs

123. Which protocol choice is most appropriate when performing soft-tissue neck CT?

- A. cover from skull base through the thoracic inlet
- B. use thick images only and omit reformations
- C. apply the same noncontrast protocol to every indication
- D. limit coverage before the target anatomy is included

124. The principal diagnostic concern prompting multiphase liver CT is which condition?

- A. an unrelated condition outside the scanned region
- B. hypervascular or hypovascular lesion
- C. a disorder assessed only with plain radiography
- D. a finding that cannot involve the target anatomy

125. For pancreatic protocol CT, which anatomy should be included and evaluated most directly?

- A. unrelated superficial soft tissues only
- B. a distant joint outside the ordered region
- C. pancreas and peripancreatic vessels
- D. only the scout image without diagnostic sections

126. Which protocol choice is most appropriate when performing adrenal CT?

- A. obtain the ordered phases needed for attenuation characterization
- B. use thick images only and omit reformations
- C. apply the same noncontrast protocol to every indication
- D. limit coverage before the target anatomy is included

127. The principal diagnostic concern prompting renal stone CT is which condition?

- A. an unrelated condition outside the scanned region
- B. a disorder assessed only with plain radiography
- C. a finding that cannot involve the target anatomy
- D. urinary calculus

128. For CT enterography, which anatomy should be included and evaluated most directly?

- A. unrelated superficial soft tissues only
- B. small bowel and mesentery
- C. a distant joint outside the ordered region
- D. only the scout image without diagnostic sections

129. Which protocol choice is most appropriate when performing CT colonography?

- A. use thick images only and omit reformations
- B. apply the same noncontrast protocol to every indication
- C. use bowel preparation, insufflation, and supine-prone acquisitions
- D. limit coverage before the target anatomy is included

130. The principal diagnostic concern prompting CT urogram is which condition?

- A. an unrelated condition outside the scanned region
- B. urothelial abnormality
- C. a disorder assessed only with plain radiography
- D. a finding that cannot involve the target anatomy

131. For abdominopelvic trauma CT, which anatomy should be included and evaluated most directly?

- A. unrelated superficial soft tissues only
- B. a distant joint outside the ordered region
- C. only the scout image without diagnostic sections
- D. solid organs and mesentery

132. Which protocol choice is most appropriate when performing lower-extremity CTA?

- A. time the acquisition to follow the contrast bolus distally
- B. use thick images only and omit reformations
- C. apply the same noncontrast protocol to every indication
- D. limit coverage before the target anatomy is included

133. The principal diagnostic concern prompting TAVR planning CT is which condition?

- A. an unrelated condition outside the scanned region
- B. a disorder assessed only with plain radiography
- C. valve and access measurements
- D. a finding that cannot involve the target anatomy

134. For noncontrast head CT, which anatomy should be included and evaluated most directly?

- A. unrelated superficial soft tissues only
- B. basal ganglia
- C. a distant joint outside the ordered region

D. only the scout image without diagnostic sections

135. Which protocol choice is most appropriate when performing CT brain perfusion?

- A. use thick images only and omit reformations
- B. apply the same noncontrast protocol to every indication
- C. limit coverage before the target anatomy is included
- D. maintain consistent dynamic coverage during contrast passage

136. The principal diagnostic concern prompting temporal bone CT is which condition?

- A. an unrelated condition outside the scanned region
- B. a disorder assessed only with plain radiography
- C. fine osseous abnormality
- D. a finding that cannot involve the target anatomy

137. For orbital CT, which anatomy should be included and evaluated most directly?

- A. globes and extraocular muscles
- B. unrelated superficial soft tissues only
- C. a distant joint outside the ordered region
- D. only the scout image without diagnostic sections

138. Which protocol choice is most appropriate when performing sinus CT?

- A. use thick images only and omit reformations
- B. apply the same noncontrast protocol to every indication
- C. limit coverage before the target anatomy is included
- D. use thin noncontrast data suitable for coronal reformations

139. The principal diagnostic concern prompting maxillofacial CT is which condition?

- A. an unrelated condition outside the scanned region
- B. complex facial fracture
- C. a disorder assessed only with plain radiography
- D. a finding that cannot involve the target anatomy

140. For cervical spine CT, which anatomy should be included and evaluated most directly?

- A. unrelated superficial soft tissues only
- B. a distant joint outside the ordered region
- C. vertebral bodies and posterior elements
- D. only the scout image without diagnostic sections

141. Which protocol choice is most appropriate when performing lumbar spine CT?

- A. reconstruct in bone and soft-tissue algorithms
- B. use thick images only and omit reformations
- C. apply the same noncontrast protocol to every indication
- D. limit coverage before the target anatomy is included

142. The principal diagnostic concern prompting shoulder CT is which condition?

- A. complex fracture anatomy
- B. an unrelated condition outside the scanned region
- C. a disorder assessed only with plain radiography
- D. a finding that cannot involve the target anatomy

143. For CT pulmonary angiography, which anatomy should be included and evaluated most directly?

- A. unrelated superficial soft tissues only
- B. pulmonary arteries
- C. a distant joint outside the ordered region
- D. only the scout image without diagnostic sections

144. Which protocol choice is most appropriate when performing HRCT chest?

- A. use thick images only and omit reformations
- B. apply the same noncontrast protocol to every indication
- C. use thin high-spatial-frequency reconstructions
- D. limit coverage before the target anatomy is included

145. The principal diagnostic concern prompting coronary CT angiography is which condition?

- A. an unrelated condition outside the scanned region
- B. a disorder assessed only with plain radiography
- C. a finding that cannot involve the target anatomy
- D. coronary stenosis

146. For low-dose lung screening, which anatomy should be included and evaluated most directly?

- A. entire lungs
- B. unrelated superficial soft tissues only
- C. a distant joint outside the ordered region
- D. only the scout image without diagnostic sections

147. Which protocol choice is most appropriate when performing soft-tissue neck CT?

- A. use thick images only and omit reformations
- B. apply the same noncontrast protocol to every indication
- C. cover from skull base through the thoracic inlet

D. limit coverage before the target anatomy is included

148. The principal diagnostic concern prompting multiphase liver CT is which condition?

- A. an unrelated condition outside the scanned region
- B. a disorder assessed only with plain radiography
- C. a finding that cannot involve the target anatomy
- D. hypervascular or hypovascular lesion

149. For pancreatic protocol CT, which anatomy should be included and evaluated most directly?

- A. unrelated superficial soft tissues only
- B. pancreas and peripancreatic vessels
- C. a distant joint outside the ordered region
- D. only the scout image without diagnostic sections

150. Which protocol choice is most appropriate when performing adrenal CT?

- A. obtain the ordered phases needed for attenuation characterization
- B. use thick images only and omit reformations
- C. apply the same noncontrast protocol to every indication
- D. limit coverage before the target anatomy is included

151. The principal diagnostic concern prompting renal stone CT is which condition?

- A. an unrelated condition outside the scanned region
- B. a disorder assessed only with plain radiography
- C. urinary calculus
- D. a finding that cannot involve the target anatomy

152. For CT enterography, which anatomy should be included and evaluated most directly?

- A. unrelated superficial soft tissues only
- B. small bowel and mesentery
- C. a distant joint outside the ordered region
- D. only the scout image without diagnostic sections

153. Which protocol choice is most appropriate when performing CT colonography?

- A. use thick images only and omit reformations
- B. apply the same noncontrast protocol to every indication
- C. limit coverage before the target anatomy is included
- D. use bowel preparation, insufflation, and supine-prone acquisitions

154. The principal diagnostic concern prompting CT urogram is which condition?

- A. an unrelated condition outside the scanned region
- B. a disorder assessed only with plain radiography
- C. urothelial abnormality
- D. a finding that cannot involve the target anatomy

155. For abdominopelvic trauma CT, which anatomy should be included and evaluated most directly?

- A. unrelated superficial soft tissues only
- B. solid organs and mesentery
- C. a distant joint outside the ordered region
- D. only the scout image without diagnostic sections

156. Which protocol choice is most appropriate when performing lower-extremity CTA?

- A. time the acquisition to follow the contrast bolus distally
- B. use thick images only and omit reformations
- C. apply the same noncontrast protocol to every indication
- D. limit coverage before the target anatomy is included

157. The principal diagnostic concern prompting TAVR planning CT is which condition?

- A. an unrelated condition outside the scanned region
- B. a disorder assessed only with plain radiography
- C. a finding that cannot involve the target anatomy
- D. valve and access measurements

158. For noncontrast head CT, which anatomy should be included and evaluated most directly?

- A. unrelated superficial soft tissues only
- B. basal ganglia
- C. a distant joint outside the ordered region
- D. only the scout image without diagnostic sections

159. Which protocol choice is most appropriate when performing CT brain perfusion?

- A. maintain consistent dynamic coverage during contrast passage
- B. use thick images only and omit reformations
- C. apply the same noncontrast protocol to every indication
- D. limit coverage before the target anatomy is included

160. The principal diagnostic concern prompting temporal bone CT is which condition?

- A. an unrelated condition outside the scanned region
- B. a disorder assessed only with plain radiography
- C. a finding that cannot involve the target anatomy

D. fine osseous abnormality

161. For orbital CT, which anatomy should be included and evaluated most directly?

- A. unrelated superficial soft tissues only
- B. a distant joint outside the ordered region
- C. globes and extraocular muscles
- D. only the scout image without diagnostic sections

162. Which protocol choice is most appropriate when performing sinus CT?

- A. use thick images only and omit reformations
- B. apply the same noncontrast protocol to every indication
- C. limit coverage before the target anatomy is included
- D. use thin noncontrast data suitable for coronal reformations

163. The principal diagnostic concern prompting maxillofacial CT is which condition?

- A. complex facial fracture
- B. an unrelated condition outside the scanned region
- C. a disorder assessed only with plain radiography
- D. a finding that cannot involve the target anatomy

164. For cervical spine CT, which anatomy should be included and evaluated most directly?

- A. unrelated superficial soft tissues only
- B. vertebral bodies and posterior elements
- C. a distant joint outside the ordered region
- D. only the scout image without diagnostic sections

165. Which protocol choice is most appropriate when performing lumbar spine CT?

- A. use thick images only and omit reformations
- B. apply the same noncontrast protocol to every indication
- C. reconstruct in bone and soft-tissue algorithms
- D. limit coverage before the target anatomy is included

Practice Exam 9: Answer Key and Explanations

1. B — Immediate assessment and emergency activation take priority over completing images when responsiveness is lost. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

2. C — eGFR estimates filtration and helps assess renal status before iodinated contrast administration. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

3. A — Wheezing with hypotension indicates a severe acute reaction requiring immediate airway and emergency management. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

4. B — A time-out prevents wrong-patient and wrong-procedure errors by confirming essential identifiers and the planned examination. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

5. D — Stopping injection limits additional infiltration; the site and distal circulation then require prompt assessment. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

6. B — Hand hygiene and aseptic preparation reduce transfer of organisms during vascular access. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

7. D — A qualified interpreter supports accurate education and valid consent without placing responsibility on family members. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

8. C — Injection documentation creates a traceable record of access, agent, dose, and delivery conditions. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

9. A — A capable patient may refuse; the refusal should be respected, documented, and communicated for an alternative plan. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

10. D — Chest tubing must remain patent, secured, and correctly positioned during movement to prevent dislodgment or impaired drainage. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

11. C — Immediate assessment and emergency activation take priority over completing images when responsiveness is lost. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

12. A — eGFR estimates filtration and helps assess renal status before iodinated contrast administration. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

13. B — Wheezing with hypotension indicates a severe acute reaction requiring immediate airway and emergency management. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or

reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

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16. B — Hand hygiene and aseptic preparation reduce transfer of organisms during vascular access. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

17. A — A qualified interpreter supports accurate education and valid consent without placing responsibility on family members. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

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19. D — A capable patient may refuse; the refusal should be respected, documented, and communicated for an alternative plan. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

20. B — Chest tubing must remain patent, secured, and correctly positioned during movement to prevent dislodgment or impaired drainage. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

21. C — Immediate assessment and emergency activation take priority over completing images when responsiveness is lost. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

22. D — Tube current modulation varies output according to attenuation to maintain image quality with more efficient dose use. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

23. B — Off-centering changes how the scout and bow-tie filter represent the patient, degrading dose modulation and image uniformity. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

24. A — Compton interactions redirect photons and are the principal source of scatter reaching personnel near the patient. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

25. C — Because DLP incorporates scan length, unnecessary z-axis coverage adds radiation without diagnostic benefit. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

26. C — Children require tailored technique and justified phases because their size and radiosensitivity differ from adults. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

27. A — Reducing mAs decreases photon output and dose, although image noise may rise and diagnostic adequacy must be maintained. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

28. D — DLP is CTDIvol multiplied by scan length and reflects scanner output over the examination range. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce

diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

29. B — Tube current modulation varies output according to attenuation to maintain image quality with more efficient dose use. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

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33. A — Children require tailored technique and justified phases because their size and radiosensitivity differ from adults. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

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36. D — Tube current modulation varies output according to attenuation to maintain image quality with more efficient dose use. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

37. A — Off-centering changes how the scout and bow-tie filter represent the patient, degrading dose modulation and image uniformity. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

38. A — Compton interactions redirect photons and are the principal source of scatter reaching personnel near the patient. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

39. D — Because DLP incorporates scan length, unnecessary z-axis coverage adds radiation without diagnostic benefit. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

40. C — Children require tailored technique and justified phases because their size and radiosensitivity differ from adults. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

41. B — Reducing mAs decreases photon output and dose, although image noise may rise and diagnostic adequacy must be maintained. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

42. D — DLP is CTDIvol multiplied by scan length and reflects scanner output over the examination range. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

43. C — Linearity testing confirms that measured attenuation values follow expected CT numbers for reference materials. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or

reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

44. A — Dense metal causes beam hardening and photon starvation, often producing bright and dark streaks. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

45. B — Projection measurements are raw data and can be reconstructed again with different parameters. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

46. D — DICOM standardizes image objects and related information for transfer among imaging systems and archives. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

47. C — Detectors receive the remnant beam and convert its energy into signals for the data acquisition system. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

48. B — Slip rings transfer power and data without winding cables, enabling continuous rotation and helical scanning. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

49. A — Pixel dimension equals DFOV divided by matrix size, so a smaller DFOV produces smaller pixels. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

50. A — Iterative methods model acquisition and noise, often reducing noise compared with filtered backprojection. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

51. B — Window level centers the displayed grayscale range on a selected CT number. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

52. C — Window width sets the span of CT numbers mapped across the available grayscale. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

53. D — A miscalibrated or failing detector repeatedly contributes error at the same radius, producing rings. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

54. B — MIP selects the maximum voxel value along each ray and is useful for contrast-enhanced vessels. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

55. A — Temporal resolution improves when acquisition data for an image are collected over a shorter interval. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

56. C — Linearity testing confirms that measured attenuation values follow expected CT numbers for reference materials. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

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68. B — Temporal resolution improves when acquisition data for an image are collected over a shorter interval. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

69. C — Linearity testing confirms that measured attenuation values follow expected CT numbers for reference materials. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

70. C — Dense metal causes beam hardening and photon starvation, often producing bright and dark streaks. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

71. D — Projection measurements are raw data and can be reconstructed again with different parameters. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

72. B — DICOM standardizes image objects and related information for transfer among imaging systems and archives. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

73. A — Detectors receive the remnant beam and convert its energy into signals for the data acquisition system. This choice connects the clinical goal with the relevant CT principle. The alternatives address a

different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

74. B — Slip rings transfer power and data without winding cables, enabling continuous rotation and helical scanning. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

75. D — Pixel dimension equals DFOV divided by matrix size, so a smaller DFOV produces smaller pixels. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

76. A — Iterative methods model acquisition and noise, often reducing noise compared with filtered backprojection. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

77. C — Window level centers the displayed grayscale range on a selected CT number. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

78. B — Window width sets the span of CT numbers mapped across the available grayscale. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

79. C — A miscalibrated or failing detector repeatedly contributes error at the same radius, producing rings. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

80. A — MIP selects the maximum voxel value along each ray and is useful for contrast-enhanced vessels. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

81. D — Temporal resolution improves when acquisition data for an image are collected over a shorter interval. This choice connects the clinical goal with the relevant acquisition, safety, or patient-care principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability without solving the issue. Careful protocol selection preserves useful information while avoiding unnecessary risk and repeat exposure.

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95. A — The principal target of CT pulmonary angiography is pulmonary arteries; complete coverage is required to evaluate pulmonary embolism. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

96. B — For HRCT chest, the appropriate approach is to use thin high-spatial-frequency reconstructions, aligning acquisition with the diagnostic task of assessing interstitial lung disease. This choice follows the relevant CT principle. The alternatives address another problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging.

97. D — coronary CT angiography is designed to evaluate coronary stenosis in the coronary arteries, using protocol choices tailored to that clinical question. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

98. B — The principal target of low-dose lung screening is entire lungs; complete coverage is required to evaluate pulmonary nodules. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

99. A — For soft-tissue neck CT, the appropriate approach is to cover from skull base through the thoracic inlet, aligning acquisition with the diagnostic task of assessing infection or mass. This choice follows the relevant CT principle. The alternatives address another problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging.

100. C — multiphase liver CT is designed to evaluate hypervascular or hypovascular lesion in the hepatic parenchyma and vessels, using protocol choices tailored to that clinical question. This choice follows the relevant CT principle. The alternatives address another problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging.

101. D — The principal target of pancreatic protocol CT is pancreas and peripancreatic vessels; complete coverage is required to evaluate pancreatic mass. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

102. B — For adrenal CT, the appropriate approach is to obtain the ordered phases needed for attenuation characterization, aligning acquisition with the diagnostic task of assessing indeterminate adrenal lesion. This choice follows the relevant CT principle. The alternatives address another problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging.

103. A — renal stone CT is designed to evaluate urinary calculus in the kidneys, ureters, and bladder, using protocol choices tailored to that clinical question. This choice follows the relevant CT principle. The alternatives address another problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging.

104. D — The principal target of CT enterography is small bowel and mesentery; complete coverage is required to evaluate active bowel inflammation. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

105. C — For CT colonography, the appropriate approach is to use bowel preparation, insufflation, and supine-prone acquisitions, aligning acquisition with the diagnostic task of assessing colonic polyp. This choice follows the relevant CT principle. The alternatives address another problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging.

106. A — CT urogram is designed to evaluate urothelial abnormality in the renal collecting systems and ureters, using protocol choices tailored to that clinical question. This choice follows the relevant CT principle. The alternatives address another problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging.

107. C — The principal target of abdominopelvic trauma CT is solid organs and mesentery; complete coverage is required to evaluate traumatic injury. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

108. B — For lower-extremity CTA, the appropriate approach is to time the acquisition to follow the contrast bolus distally, aligning acquisition with the diagnostic task of assessing stenosis or occlusion. This choice follows the relevant CT principle. The alternatives address another problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging.

109. D — TAVR planning CT is designed to evaluate valve and access measurements in the aortic root and access vessels, using protocol choices tailored to that clinical question. This choice follows the relevant CT principle. The alternatives address another problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging.

110. A — The principal target of noncontrast head CT is basal ganglia; complete coverage is required to evaluate acute intracranial hemorrhage. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

111. C — For CT brain perfusion, the appropriate approach is to maintain consistent dynamic coverage during contrast passage, aligning acquisition with the diagnostic task of assessing ischemic core and penumbra. This choice follows the relevant CT principle. The alternatives address another problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging.

112. B — temporal bone CT is designed to evaluate fine osseous abnormality in the ossicles and petrous bone, using protocol choices tailored to that clinical question. This choice follows the relevant CT principle. The alternatives address another problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging.

113. A — The principal target of orbital CT is globes and extraocular muscles; complete coverage is required to evaluate orbital trauma or inflammation. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

114. D — For sinus CT, the appropriate approach is to use thin noncontrast data suitable for coronal reformations, aligning acquisition with the diagnostic task of assessing chronic inflammatory disease. This choice follows the relevant CT principle. The alternatives address another problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging.

115. C — maxillofacial CT is designed to evaluate complex facial fracture in the facial buttresses, using protocol choices tailored to that clinical question. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

116. B — The principal target of cervical spine CT is vertebral bodies and posterior elements; complete coverage is required to evaluate traumatic fracture. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

117. D — For lumbar spine CT, the appropriate approach is to reconstruct in bone and soft-tissue algorithms, aligning acquisition with the diagnostic task of assessing osseous stenosis or fracture. This choice follows the relevant CT principle. The alternatives address another problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging.

118. B — shoulder CT is designed to evaluate complex fracture anatomy in the glenoid and proximal humerus, using protocol choices tailored to that clinical question. This choice follows the relevant CT principle. The alternatives address another problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging.

119. D — The principal target of CT pulmonary angiography is pulmonary arteries; complete coverage is required to evaluate pulmonary embolism. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

120. C — For HRCT chest, the appropriate approach is to use thin high-spatial-frequency reconstructions, aligning acquisition with the diagnostic task of assessing interstitial lung disease. This choice follows the relevant CT principle. The alternatives address another problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging.

121. A — coronary CT angiography is designed to evaluate coronary stenosis in the coronary arteries, using protocol choices tailored to that clinical question. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

122. D — The principal target of low-dose lung screening is entire lungs; complete coverage is required to evaluate pulmonary nodules. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

123. A — For soft-tissue neck CT, the appropriate approach is to cover from skull base through the thoracic inlet, aligning acquisition with the diagnostic task of assessing infection or mass. This choice follows the relevant CT principle. The alternatives address another problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging.

124. B — multiphase liver CT is designed to evaluate hypervascular or hypovascular lesion in the hepatic parenchyma and vessels, using protocol choices tailored to that clinical question. This choice follows the relevant CT principle. The alternatives address another problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging.

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126. A — For adrenal CT, the appropriate approach is to obtain the ordered phases needed for attenuation characterization, aligning acquisition with the diagnostic task of assessing indeterminate adrenal lesion. This choice follows the relevant CT principle. The alternatives address another problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging.

127. D — renal stone CT is designed to evaluate urinary calculus in the kidneys, ureters, and bladder, using protocol choices tailored to that clinical question. This choice follows the relevant CT principle.

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128. B — The principal target of CT enterography is small bowel and mesentery; complete coverage is required to evaluate active bowel inflammation. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

129. C — For CT colonography, the appropriate approach is to use bowel preparation, insufflation, and supine-prone acquisitions, aligning acquisition with the diagnostic task of assessing colonic polyp. This choice follows the relevant CT principle. The alternatives address another problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging.

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131. D — The principal target of abdominopelvic trauma CT is solid organs and mesentery; complete coverage is required to evaluate traumatic injury. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

132. A — For lower-extremity CTA, the appropriate approach is to time the acquisition to follow the contrast bolus distally, aligning acquisition with the diagnostic task of assessing stenosis or occlusion. This choice follows the relevant CT principle. The alternatives address another problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging.

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134. B — The principal target of noncontrast head CT is basal ganglia; complete coverage is required to evaluate acute intracranial hemorrhage. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

135. D — For CT brain perfusion, the appropriate approach is to maintain consistent dynamic coverage during contrast passage, aligning acquisition with the diagnostic task of assessing ischemic core and

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137. A — The principal target of orbital CT is globes and extraocular muscles; complete coverage is required to evaluate orbital trauma or inflammation. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

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139. B — maxillofacial CT is designed to evaluate complex facial fracture in the facial buttresses, using protocol choices tailored to that clinical question. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

140. C — The principal target of cervical spine CT is vertebral bodies and posterior elements; complete coverage is required to evaluate traumatic fracture. This choice connects the clinical goal with the relevant CT principle. The alternatives address a different problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging and avoids unnecessary repeat exposure.

141. A — For lumbar spine CT, the appropriate approach is to reconstruct in bone and soft-tissue algorithms, aligning acquisition with the diagnostic task of assessing osseous stenosis or fracture. This choice follows the relevant CT principle. The alternatives address another problem, reverse the expected relationship, or reduce diagnostic reliability. Applying the principle supports safe, consistent, patient-centered imaging.

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