

PRACTICE EXAM 6: 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. 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

2. A patient develops wheezing and hypotension immediately after iodinated contrast. What is the priority response?

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

3. 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. Confirm patient, examination, and intended site
- D. Document contrast after the patient leaves

4. What is the best initial action when contrast extravasation is suspected?

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

5. 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

6. 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

7. 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

8. A conscious adult refuses contrast after receiving an explanation. What should the technologist do?

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

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

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

10. What is the safest response to a patient who becomes unresponsive during scanning?

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

11. Scenario 11: 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

12. Scenario 12: 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

13. Scenario 13: 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

14. Scenario 14: 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

15. Scenario 15: Which venipuncture practice best supports infection prevention?

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

16. Scenario 16: A patient has limited English proficiency. What is the most appropriate communication method?

- A. Rely on a young family member
- B. Use a qualified medical interpreter
- C. Proceed using gestures alone

D. Obtain consent after the scan

17. Scenario 17: 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

18. Scenario 18: 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

19. Scenario 19: Which device requires special attention when transferring a patient to the CT table?

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

20. Scenario 20: What is the safest response to a patient who becomes unresponsive during scanning?

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

21. Scenario 21: Before iodinated contrast CT, which laboratory result most directly estimates renal filtration?

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

22. If all other factors remain constant, which change generally lowers CT radiation dose?

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

23. Which quantity represents integrated scanner output across the imaged length?

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

24. 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

25. 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

26. Which interaction is the major source of occupational scatter in diagnostic CT?

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

27. 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

28. 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

29. Dose review 8: 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

30. Dose review 9: Which quantity represents integrated scanner output across the imaged length?

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

31. Dose review 10: 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

32. Dose review 11: 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

33. Dose review 12: Which interaction is the major source of occupational scatter in diagnostic CT?

- A. Pair production
- B. Photodisintegration
- C. Coherent transmission only

D. Compton scattering

34. Dose review 13: Why should scan coverage be limited to the indicated anatomy?

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

35. Dose review 14: Which practice is most appropriate for pediatric CT?

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

36. Dose review 15: 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

37. Dose review 16: Which quantity represents integrated scanner output across the imaged length?

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

38. Dose review 17: 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

39. Dose review 18: 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

40. Dose review 19: Which interaction is the major source of occupational scatter in diagnostic CT?

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

41. Dose review 20: 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

42. Dose review 21: 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

43. Which CT component converts transmitted x-ray energy into electrical signals?

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

44. 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

45. 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

46. Which reconstruction approach generally reduces noise at a comparable dose?

- A. Unfiltered projection display
- B. Iterative reconstruction
- C. Scout imaging only

D. Maximum window width

47. 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

48. What does window width primarily control?

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

49. 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

50. 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

51. 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

52. What is the purpose of a CT number linearity test?

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

53. 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

54. 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

55. Which format supports standardized medical image communication?

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

56. Image-quality review 14: 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

57. Image-quality review 15: 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

58. Image-quality review 16: 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. Smaller pixels and improved displayed spatial sampling
- D. Higher pitch and thicker detectors

59. Image-quality review 17: 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

60. Image-quality review 18: 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

61. Image-quality review 19: 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

62. Image-quality review 20: 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

63. Image-quality review 21: 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

64. Image-quality review 22: 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

65. Image-quality review 23: What is the purpose of a CT number linearity test?

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

66. Image-quality review 24: Which artifact is reduced by removing metal when possible and using metal-artifact reduction?

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

67. Image-quality review 25: 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

68. Image-quality review 26: Which format supports standardized medical image communication?

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

69. Image-quality review 27: Which CT component converts transmitted x-ray energy into electrical signals?

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

70. Image-quality review 28: 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

71. Image-quality review 29: 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

72. Image-quality review 30: Which reconstruction approach generally reduces noise at a comparable dose?

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

73. Image-quality review 31: 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

74. Image-quality review 32: 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

75. Image-quality review 33: 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

76. Image-quality review 34: 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

77. Image-quality review 35: 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

78. Image-quality review 36: What is the purpose of a CT number linearity test?

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

79. Image-quality review 37: Which artifact is reduced by removing metal when possible and using metal-artifact reduction?

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

80. Image-quality review 38: 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

81. Image-quality review 39: Which format supports standardized medical image communication?

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

82. Image-quality review 40: Which CT component converts transmitted x-ray energy into electrical signals?

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

83. Image-quality review 41: What is the main advantage of slip-ring technology?

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

84. Image-quality review 42: 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

85. Image-quality review 43: Which reconstruction approach generally reduces noise at a comparable dose?

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

86. Image-quality review 44: 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

87. Image-quality review 45: 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

88. Image-quality review 46: 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

89. Image-quality review 47: 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

90. Image-quality review 48: 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

91. Image-quality review 49: What is the purpose of a CT number linearity test?

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

92. Image-quality review 50: 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

93. Image-quality review 51: 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

94. Image-quality review 52: Which format supports standardized medical image communication?

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

95. For noncontrast head 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. basal ganglia
- D. only the scout image without diagnostic sections

96. 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

97. 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

98. 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

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

- A. use thin noncontrast data suitable for coronal reformations
- 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 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

101. 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. only the scout image without diagnostic sections
- D. vertebral bodies and posterior elements

102. 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

103. 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

104. 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

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

- A. use thin high-spatial-frequency reconstructions
- 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

106. 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

107. 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

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

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

109. 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

110. 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

111. 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

112. 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

113. 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

114. 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

115. 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

116. 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

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

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

118. 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

119. For noncontrast head 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. basal ganglia

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

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

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

- A. fine osseous 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

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

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

123. 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

124. 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

125. 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

126. 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

127. 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

128. 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

129. 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

130. 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

131. 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. entire lungs
- D. only the scout image without diagnostic sections

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

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

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

- A. hypervascular or hypovascular lesion
- 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

134. 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

135. 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

136. 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

137. 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. small bowel and mesentery
- D. only the scout image without diagnostic sections

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

- A. use bowel preparation, insufflation, and supine-prone acquisitions
- 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

139. 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

140. 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

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

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

142. 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

143. For noncontrast head 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. basal ganglia
- D. only the scout image without diagnostic sections

144. 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

145. 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

146. 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

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

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

148. 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. a finding that cannot involve the target anatomy
- D. complex facial fracture

149. 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

150. 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

151. The principal diagnostic concern prompting shoulder 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. complex fracture anatomy

152. 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

153. 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

154. 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. coronary stenosis
- D. a finding that cannot involve the target anatomy

155. 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

156. 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. limit coverage before the target anatomy is included
- D. cover from skull base through the thoracic inlet

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

- A. hypervascular or hypovascular lesion
- 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

158. 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

159. 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

160. 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

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

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

162. 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

163. 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

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

- A. solid organs and mesentery
- B. unrelated superficial soft tissues only
- 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 lower-extremity CTA?

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

Practice Exam 6: Answer Key and Explanations

- 1. 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.
- 2. D** — 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.
- 3. C** — 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.
- 4. A** — 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.
- 5. 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.
- 6. 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.
- 7. 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.

8. B — 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.

9. A — 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.

10. A — 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.

11. 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.

12. 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.

13. D — 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.

14. 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.

15. C — 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.

16. B — 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.

17. A — 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.

18. 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.

19. C — 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.

20. A — 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.

21. B — 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.

22. C — 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.

23. B — 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.

24. 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.

25. 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.

26. 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.

27. 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.

28. 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.

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42. 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.

43. D — 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.

44. A — 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.

45. B — 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.

46. B — 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.

47. 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.

48. A — 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.

49. 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.

50. 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.

51. 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.

52. D — 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.

53. 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.

54. 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.

55. 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.

56. 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.

57. A — 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.

58. C — 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.

59. 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.

60. D — 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.

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70. 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.

71. 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.

72. C — 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.

73. 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.

74. D — 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.

75. 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.

76. 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.

77. C — 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.

78. D — 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.

79. B — 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.

80. A — 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.

81. C — 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.

82. D — 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.

83. C — 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.

84. 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.

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95. C — 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.

96. A — 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.

97. 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.

98. C — 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.

99. A — 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.

100. 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.

101. D — 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.

102. C — 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.

103. A — 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.

104. B — 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.

105. A — 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.

106. 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.

107. 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.

108. B — 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.

109. 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.

110. B — 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.

111. 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.

112. C — 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.

113. 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.

114. D — 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.

115. 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.

116. B — 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.

117. C — 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.

118. C — 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.

119. D — 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.

120. B — 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.

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122. B — 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.

123. 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.

124. A — 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.

125. 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.

126. C — 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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128. 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.

129. 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.

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137. C — 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.

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141. C — 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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