

CT Image Manipulation

1. What parameter determines the midpoint of the Hounsfield Unit (HU) range displayed on a CT image?
 - A. Window Level (WL)
 - B. Window Width (WW)
 - C. Matrix Size
 - D. Pitch

2. The window width (WW) controls the image's:
 - A. Contrast
 - B. Brightness
 - C. Sharpness
 - D. Spatial resolution

3. Raising the WL shifts the grayscale toward higher HU values, making the image appear:
 - A. Darker
 - B. Brighter
 - C. Sharper
 - D. Softer

4. Lowering the WL results in the image appearing:
 - A. Brighter
 - B. Darker
 - C. Noisier
 - D. Overexposed

5. A narrow window width is most useful for:
 - A. Low-contrast regions such as brain or liver
 - B. Bone and lung
 - C. Metal artifacts
 - D. Dense structures

6. A wide window width is most appropriate for:
 - A. High-contrast tissues such as bone or lung
 - B. Brain gray-white differentiation

- C. Fat visualization
- D. Parenchymal lesions

7. If the WW is too narrow, the image will appear:

- A. Over-contrasted and noisy
- B. Low in contrast
- C. Flat and smooth
- D. Blurred

8. If the WW is too wide, the image will appear:

- A. Low in contrast; subtle lesions less visible
- B. Overexposed
- C. Pixelated
- D. Over-sharpened

9. When WL is decreased too much, dense structures will appear:

- A. Too bright (overexposed)
- B. Too dark
- C. Uniform gray
- D. High in contrast

10. Typical mediastinal soft-tissue window settings are:

- A. WL +40 / WW 400
- B. WL -500 / WW 2000
- C. WL +500 / WW 2000
- D. WL +70 / WW 150

11. The lung window is typically centered around:

- A. WL -500 HU / WW 2000
- B. WL +40 HU / WW 400
- C. WL +500 HU / WW 2000
- D. WL +60 HU / WW 150

12. Brain window settings usually include:

- A. WL +40 / WW 80
- B. WL +60 / WW 400
- C. WL 0 / WW 2000
- D. WL +300 / WW 500

13. When evaluating free air in the abdomen, the most appropriate display is the:

- A. Lung window
- B. Bone window
- C. Soft-tissue window
- D. Liver window

14. A common WL/WW error is:

- A. Using identical settings for all anatomical regions
- B. Applying mA modulation
- C. Setting kVp too high
- D. Adjusting rotation time

15. A narrow WW increases:

- A. Both visible noise and image contrast
- B. Smoothness
- C. Pixel averaging
- D. Dose efficiency

16. A wide WW reduces:

- A. Apparent noise but may obscure subtle lesions
- B. Matrix resolution
- C. Temporal detail
- D. Edge sharpness

17. Select all correct statements about window level (WL):

- A. WL controls image brightness
- B. WL increases when evaluating dense tissue
- C. Lower WL brightens the image
- D. WL should approximate the HU of the tissue of interest

18. Select all correct reasons for using multiple window settings in one CT study:

- A. Different tissues in the same region have different attenuation values
- B. Soft-tissue and bone must be reviewed separately
- C. To ensure no lesion is missed in parenchyma or bone
- D. To evaluate vessels, mediastinum, and lungs in the same exam

19. Select all examples of proper WL/WW pairings:

- A. Soft Tissue: WL +40 / WW 400
- B. Lung: WL -500 / WW 2000
- C. Bone: WL +500 / WW 2000
- D. Brain: WL +40 / WW 80

20. WL should always be centered near:

- A. The HU value of the tissue being examined
- B. 0 HU (water)
- C. -1000 HU (air)
- D. +1000 HU (bone)