

## Exposure Factors Modification

### Multiple Choice

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. Assuming all produce appropriate density images, which of the following would be the best exposure technique choice when performing a chest radiograph on an infant?
- Use 40 ms exposure time.
  - Use 60 ms exposure time.
  - Use 200 ms exposure time.
  - Use at least 80 kVp.
- \_\_\_\_\_ 2. Generally speaking, what is the kVp value for a pediatric (less than 6 years old) skull compared with the adult skull?
- 5% less
  - 15% less
  - 50% less
  - 50% more
- \_\_\_\_\_ 3. Which one of the following immobilizing devices requires an increase in the exposure technique?
- Fiberglass cast
  - Plaster cast
  - Air splint
  - B and C
- \_\_\_\_\_ 4. With all other factors remaining the same, a patient with which body habitus would require the highest exposure factors?
- Asthenic
  - Sthenic
  - Hypersthenic
  - Hyposthenic
- \_\_\_\_\_ 5. Generally speaking, what do additive pathologic conditions require?
- Increased focal spot size
  - Increased mA
  - Increased kVp
  - Increased SID
- \_\_\_\_\_ 6. If 8 mAs produces an appropriate exposure to the IR with a single-phase generator, a three-phase generator should:
- use higher mAs
  - use lower mAs
  - keep the mAs the same
  - none of the above
- \_\_\_\_\_ 7. Increasing tube filtration:
- increases the beam energy
  - decreases radiographic contrast
  - A and B
  - none of the above

- \_\_\_ 8. A compensating filter:
- is used for specific anatomic areas
  - produces a more uniform exposure to the IR
  - requires an increase in mAs
  - all of the above
- \_\_\_ 9. Which type of body habitus is the thickest, requiring higher exposure factors?
- asthenic
  - hypersthenic
  - sthenic
  - hyposthenic
- \_\_\_ 10. Which type of body habitus is the thinnest, requiring a reduction in exposure factors?
- asthenic
  - hypersthenic
  - sthenic
  - hyposthenic
- \_\_\_ 11. The \_\_\_\_\_ body habitus accounts for approximately 50% of the adult population.
- asthenic
  - hypersthenic
  - sthenic
  - hyposthenic
- \_\_\_ 12. For most pediatric examinations, it is recommended that the kVp:
- be reduced by 15%
  - be increased by 15%
  - be reduced by 50%
  - be increased by 50%
- \_\_\_ 13. Which of the following is a destructive pathology?
- Pneumonia
  - Edema
  - Pleural effusion
  - Emphysema
- \_\_\_ 14. Tissue density refers to the \_\_\_\_\_ of the body part.
- density of muscle
  - density of fat
  - mass density or atomic number
  - density of bone
- \_\_\_ 15. A good reason for sometimes selecting the highest available mA station to obtain a given amount of mAs is to:
- keep the exposure time as short as possible.
  - use the small focal spot.
  - prevent excessive anode heat.
  - accommodate breathing technique.

- \_\_\_ 16. A good reason for selecting a low mA station to obtain a given amount of mAs is to:
- reduce motion blur.
  - use the small focal spot.
  - obtain optimum kilovoltage.
  - maintain the SID at 40 inches.
- \_\_\_ 17. An increase in exposure technique would be required if a patient had:
- cardiomegaly.
  - osteoporosis
  - pneumonia.
  - advanced age.
- \_\_\_ 18. Which of the following pathologic conditions require an increase in exposure factors?
- Pneumonia
  - Paget disease
  - Bowel obstruction
- 1 and 2 only
  - 1 and 3 only
  - 2 and 3 only
  - 1, 2, and 3
- \_\_\_ 19. Which of the following pathologic conditions require a decrease in exposure technique?
- Multiple myeloma
  - Emphysema
  - Osteoporosis
- 1 and 2 only
  - 1 and 3 only
  - 2 and 3 only
  - 1, 2, and 3
- \_\_\_ 20. Which of the following body parts can benefit from the use of a compensating filter?
- AP thoracic spine
  - AP abdomen
  - AP cervical spine
  - AP skull
- \_\_\_ 21. Which category of patient seldom requires a compensating filter for general radiographic examinations?
- Geriatric
  - Pediatric
  - Age 18 to 24
  - Age 18 to 35
- \_\_\_ 22. A decrease in exposure technique would be required if a patient had:
- cardiomegaly.
  - degenerative arthritis.
  - pleural effusion.
  - rheumatoid arthritis.

- \_\_\_\_\_ 23. What is the major limitation in obtaining images of obese patients?
- A strong enough table to hold the patient
  - Reduced resolution due to motion
  - Inadequate penetration of the body part
  - Inability to adjust the mAs high enough
- \_\_\_\_\_ 24. What is the single most important technical exposure adjustment that should be made when imaging an obese patient?
- Decreasing the kVp
  - Increasing the kVp
  - Decreasing the mAs
  - Increasing the mAs

**True/False**

*Indicate whether the statement is true or false.*

- \_\_\_\_\_ 1. As compared to a three-phase x-ray unit, a single phase unit requires higher exposure techniques to produce a comparable image.
- True
  - False

## Exposure Factors Modification Answer Section

### MULTIPLE CHOICE

1. ANS: A  
When imaging an infant for a chest radiograph, a short exposure time is critical in order to stop patient motion.  
  
PTS: 1                    OBJ: 15
2. ANS: B  
Due to the lack of bone density, it is recommended that 15% less of the adult kVp be used for a pediatric skull.  
  
PTS: 1                    OBJ: 15
3. ANS: B  
Only the plaster cast requires an increase in exposure technique.  
  
PTS: 1                    OBJ: 15
4. ANS: C  
The hypersthenic patient has a large, stocky build and will require the highest exposure factors.  
  
PTS: 1                    OBJ: 15
5. ANS: C  
Generally, additive conditions are harder to penetrate, requiring use of higher kVp.  
  
PTS: 1                    OBJ: 15
6. ANS: B  
Because a three-phase generator produces radiation more efficiently, less mAs is required.  
  
PTS: 1                    OBJ: 13
7. ANS: C  
Although the effect is minimal, increased tube filtration results in a beam with higher energy photons, producing a lower-contrast image.  
  
PTS: 1                    OBJ: 13
8. ANS: D  
The purpose of a compensating filter is to produce a more uniform exposure to the IR for specific anatomy that has both thick and thin parts. This requires additional mAs and therefore additional patient exposure.  
  
PTS: 1                    OBJ: 13
9. ANS: B  
The hypersthenic patient is the thickest, requiring an increase in exposure factors.  
  
PTS: 1                    OBJ: 14
10. ANS: A

The asthenic patient is the thinnest, requiring a decrease in exposure factors.

PTS: 1                    OBJ: 14

11. ANS: C

The sthenic body habitus accounts for approximately 50% of the adult population.

PTS: 1                    OBJ: 14

12. ANS: A

For most pediatric examinations it is recommended that the kVp be reduced by 15%.

PTS: 1                    OBJ: 14

13. ANS: D

Emphysema results in over-aeration of the lungs, therefore requiring reduced exposure factors.

PTS: 1                    OBJ: 15

14. ANS: C

PTS: 1

REF: Page 80

15. ANS: A

PTS: 1

REF: Page 126

16. ANS: B

PTS: 1

REF: Page 126

17. ANS: A

PTS: 1

REF: Page 127

18. ANS: A

PTS: 1

REF: Page 127

19. ANS: D

PTS: 1

REF: Page 128

20. ANS: A

PTS: 1

REF: Page 131

21. ANS: B

PTS: 1

REF: Page 132

22. ANS: B

PTS: 1

REF: Page 128

23. ANS: C

PTS: 1

REF: Page 128

24. ANS: B

PTS: 1

REF: Page 128

## TRUE/FALSE

1. ANS: T

A single phase x-ray unit operates less efficiently than does a three-phase, resulting in higher exposure factors being used to produce comparable images.

PTS: 1

OBJ: 15