

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

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15. ANS: A

PTS: 1

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16. ANS: B

PTS: 1

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17. ANS: A

PTS: 1

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18. ANS: A

PTS: 1

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19. ANS: D

PTS: 1

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20. ANS: A

PTS: 1

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21. ANS: B

PTS: 1

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22. ANS: B

PTS: 1

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23. ANS: C

PTS: 1

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24. ANS: B

PTS: 1

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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