

Technique Compensation

Multiple Choice

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

- _____ 1. In order to reduce patient exposure, _____ kVp and _____ mAs should be used when possible.
- Lower, higher
 - Higher, higher
 - Higher, lower
 - It makes no difference.
- _____ 2. With film-screen imaging, what would be the appropriate change in mAs if the kVp were decreased by 15% and the exposure needed to be maintained?
- Double the mAs
 - Halve the mAs
 - Use one fourth of the mAs
 - No change would be necessary.
- _____ 3. 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.
- _____ 4. 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
- _____ 5. Which one of the following immobilizing devices requires an increase in the exposure technique?
- Fiberglass cast
 - Plaster cast
 - Air splint
 - B and C
- _____ 6. With all other factors remaining the same, a patient with which body habitus would require the highest exposure factors?
- Asthenic
 - Sthenic
 - Hypersthenic
 - Hyposthenic
- _____ 7. Generally speaking, what do additive pathologic conditions require?
- Increased focal spot size
 - Increased mA
 - Increased kVp
 - Increased SID
- _____ 8. Which of the following is a destructive pathology?

- a. Pneumonia
- b. Edema
- c. Pleural effusion
- d. Emphysema

- _____ 9. The digital imaging exposure indicator reflects the amount of radiation:
- a. Leaving the tube
 - b. Entering the patient
 - c. Exiting the patient
 - d. Reaching the IR
- _____ 10. As compared to a patient with a 24 cm thick abdomen, imaging a patient with a 20 cm thick abdomen will result in _____ scatter being produced and _____ image contrast.
- a. Less; lower
 - b. More; lower
 - c. Less; higher
 - d. More; higher

True/False

Indicate whether the statement is true or false.

- _____ 1. Changes in kVp do not affect the digital exposure indicator.
- A. True
 - B. False
- _____ 2. In order to see the effect of changing kVp, a greater change is needed when operating at low kVp as compared to high kVp.
- A. True
 - B. False
- _____ 3. As compared to a three-phase x-ray unit, a single phase unit requires higher exposure techniques to produce a comparable image.
- A. True
 - B. False
- _____ 4. With digital imaging, the same mAs and kVp should be used for an AP lumbar spine and a lateral lumbar spine.
- A. True
 - B. False
- _____ 5. With digital imaging, exposure factors do not need to be adjusted in order to visualize soft tissue.
- A. True
 - B. False

Technique Compensation Answer Section

MULTIPLE CHOICE

1. ANS: C
Using a higher kVp and lower mAs is best, because the higher kVp provides more penetration, requiring less patient exposure.

PTS: 1 OBJ: 14
2. ANS: A
Decreasing the kVp by 15% would require two times the mAs in order to maintain film-screen image density.

PTS: 1 OBJ: 6
3. 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
4. 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
5. ANS: B
Only the plaster cast requires an increase in exposure technique.

PTS: 1 OBJ: 15
6. ANS: C
The hypersthenic patient has a large, stocky build and will require the highest exposure factors.

PTS: 1 OBJ: 15
7. ANS: C
Generally, additive conditions are harder to penetrate, requiring use of higher kVp.

PTS: 1 OBJ: 15
8. ANS: D
Emphysema results in over-aeration of the lungs, therefore requiring reduced exposure factors.

PTS: 1 OBJ: 15
9. ANS: D
The exposure indicator for digital images measures the amount of radiation reaching the IR.

PTS: 1 OBJ: 3
10. ANS: C
As compared to a patient with a 24 cm thick abdomen, imaging a patient with a 20 cm thick abdomen will result in less scatter being produced and therefore higher image contrast.

PTS: 1

OBJ: 13

TRUE/FALSE

1. ANS: F

Increasing kVp will increase beam transmission, resulting in more radiation reaching the IR and a change in the exposure indicator.

PTS: 1

OBJ: 7

2. ANS: F

In order to see the effect of changing kVp, a greater change is needed when operating at high kVp as compared to low kVp.

PTS: 1

OBJ: 7

3. 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

4. ANS: F

The thickness of the part is significantly greater for the lateral lumbar spine as compared to the AP projection. Therefore, more radiation is needed in order to produce a quality image.

PTS: 1

OBJ: 15

5. ANS: T

Because computer postprocessing techniques can be used to adjust the digital image brightness and contrast, exposure factors do not need to be adjusted in order to visualize soft tissue.

PTS: 1

OBJ: 15