

Lab Experiment # 6

Digital Radiography *Direct Radiography (DR)*

Purpose

This experiment is designed to demonstrate the effect of changes in mAs on radiation exposure to the digital image receptor, the exposure index, overall image brightness, and radiation exposure to the patient when using direct radiography.

Learning Objectives

After completing this lab, you should be able to:

1. Use the laboratory equipment properly.
2. Set up the control console and ceiling tube mount correctly.
3. Function effectively in group work.
4. Perform the experiment independently.
5. Explain the effect of mAs on the radiation exposure to the IR.
6. Evaluate the effect of mAs on the EI and DI numbers.
7. Explain the use of EI numbers to improve image quality and reduce patient exposure.
8. Predict the effect of the change in mAs on digital image quality and patient exposure.

Materials Needed

- 14 x 17 inch wireless digital (DR) image receptors.
- Abdomen phantom
- Set of lead numbers
- Lead rubber sheets

Procedure Direct Radiography

Abdomen KUB

Instructions for Exposures 1 through 10

1. Place the wireless digital (DR) image receptor in the table bucky and set the SID to 40 inches.
2. Direct the central ray **perpendicular** to the **sagittal plane at the level of iliac crest**.
3. Tape the appropriate ID markers onto the image receptor within the collimated light field so they do not obscure any areas of interest.
(The room, side and exposure number must be labeled on **all** radiographs.)
4. Set the x-ray tube, mode of operation and focal spot size as indicated on **Worksheet** .
5. **Determine mAs for the first exposure (1) that would generate DI of less than 0.2.**
6. Make all the exposures using the settings indicated on **Worksheet** .
7. Write TEI, EI, DI, numbers in the **Worksheet**.



The wireless digital (DR) image receptor can only be handled by an instructor!

Worksheet

Direct Radiography Image Receptor

	kVp	Focal Spot	SID	mAs	factor	TEI, EI, DI
1	85	Large	40"	?	X1	
2	85	Large	40"		X2	
3	85	Large	40"		X4	
4	85	Large	40"		X8	
5	85	Large	40"		X1/2	
6	85	Large	40"		X1/4	
7	85	Large	40"		X1/8	

Worksheet

TEI, EI, DI	Briefly describe the overall brightness, contrast and noise level of each image.
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1		
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2		
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4		
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5	
6	
7	