Reading Hospital Medical Imaging Program
MI 132 – Imaging Principles and Equipment
Unit 6 – Radiographic Exposure Technique Part 2 (Class Preparation Assignment #12)
2022-2023

Due: Thursday 11/10/2022
Textbook Chapter 11 (p. 130-152)
Objectives:

1. *Explain the relationship between milliamperage and exposure time with radiation production and image receptor exposure.*
2. *Explain kVp's effect on radiation production, image receptor exposure, patient dose and scatter production.*
3. *Apply conversion factors for changes in the following areas: distance, grid, image receptors, reciprocity law and the 15% rule.*
4. *Identify exposure factors that can affect patient radiation exposure.*

Questions:

1. Explain the relationship between:
    a. mAs and radiation quantity

    b. mAs and patient dose

    c. mAs and receptor exposure

    d. mA and exposure time in order to maintain same mAs

2. What formula is used to calculate mAs?

3. Explain the relationship between:
    a. kVp and radiation quantity

    b. kVp and radiation quality

    c. kVp and patient dose

    d. kVp and receptor exposure

4. Explain how a higher kVp affects:
    a. Penetrating power of the beam

    b. Absorption

    c. Transmission

    d. Differential absorption

    e. Subject contrast

5. How does kVp need to be adjusted in order to:
    a. double receptor exposure?

    b. halve receptor exposure?

6. To maintain receptor exposure, how does mAs need to be adjusted if kVp is increased from 70 kVp to 80 kVp?

7. To maintain receptor exposure, how does mAs need to be adjusted if kVp is decreased from 70 kVp to 60 kVp?

8. What is the consequence of too low of a technique (mAs/kVp) on image quality?

9. What is the consequence of too high of a technique (mAs/kVp) on image quality?

10. If an image needs repeated due to exposure errors, what is the typical change in mAs required to correct the error?

11. Complete the following chart.
    Use an 'X' within the chart to indicate if mAs/kVp influence receptor exposure, spatial resolution and/or distortion. Leave the space blank if there is no effect.

	Receptor Exposure	**Spatial Resolution**	**Distortion**
mAs			
kVp			

    a. For each 'X' placed in the chart above, explain the relationship that exists.