Image Critique Questions

Module 4

1. Use the 5 evaluation criteria categories when critiquing the following images to determine if they are diagnostic:

Lateral wrist @ 65 kVp



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Bontrager 9th Ed. pg. 175 Fig. C4.161

1. Is all the required anatomy included in the radiograph?

   Yes No

   **If no, explain what is required*

2. Does the anatomical appearance in the radiograph correlate to what is expected from a lateral projection?

   Yes **No**

   **If no, explain how the appearance of this radiograph is different compared to the ideal radiograph*

   - **Ulnar head is not superimposed by the distal radius**
   - **1st metacarpal superimposing the proximal half of the 2nd-5th metacarpals**

3. Identify if the appropriate amount of radiation was used to form the image.

   Acceptable, Overexposed, Underexposed

- Is motion present in the image?

  Yes **No**

4. Identify if the collimated light field was:

   Acceptable, Too Small, **Too Large**

   If CR was centered correctly, more than just the proximal half of the metacarpals would have been included in the radiograph; included more than 2 inches of distal forearm

- Was the CR close to the middle of the required anatomy?

  Yes **No**

5. Does the marker placement follow Edenbrook's Marker Rules? Yes **No – move to anterior side**

- Are there artifacts in the image?

  Yes **No**

  **If yes, could they have been removed?*

Is this image diagnostic? Yes No

****Following 204 criteria: anatomy was not clipped; positioning (although not perfect) still reflects a lateral projection; was not underexposed***

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2. Use the 5 evaluation criteria categories when critiquing the following images to determine if they are diagnostic:

1. Is all the required anatomy included in the radiograph?

Yes No

**If no, explain what is required*

PA Wrist @ 65kVp



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McQuillen Martensen 5th Ed. pg. 192 Fig. 4.69

2. Does the anatomical appearance in the radiograph correlate to what is expected from a PA projection?

Yes **No**

**If no, explain how the appearance of this radiograph is different compared to the ideal radiograph*

- **Unequal distances between the metacarpal bodies**
- **Uneven concavity of metacarpal bodies**
- **Partial superimposition of ulnar head over distal radius**

3. Identify if the appropriate amount of radiation was used to form the image.
Acceptable, Overexposed, Underexposed

- Is motion present in the image?

Yes **No**

4. Identify if the collimated light field was:
Acceptable, Too Small, Too Large

- Was the CR close to the middle of the required anatomy?

Yes No

5. Does the marker placement follow Edenbrook's Marker Rules? **Yes** No

- Are there artifacts in the image?

Yes **No**

**If yes, could they have been removed?*

Is this image diagnostic? Yes **No**

****Radiograph (carpal bones) appear more similar to a PA oblique projection***

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3. Use the 5 evaluation criteria categories when critiquing the following images to determine if they are diagnostic:

Oblique wrist @ 60kVp



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McQuillen Martensen 5th Ed. pg. 199 Fig. 4.89

1. Is all the required anatomy included in the radiograph?

   Yes No

   **If no, explain what is required*

2. Does the anatomical appearance in the radiograph correlate to what is expected from an oblique projection?

   Yes **No**

   **If no, explain how the appearance of this radiograph is different compared to the ideal radiograph*

   - **Proximal 3rd-5th metacarpal based almost completely superimposed**
   - **No interosseous space between the metacarpal bodies**

3. Identify if the appropriate amount of radiation was used to form the image.

   Acceptable, Overexposed, Underexposed

- Is motion present in the image?

  Yes **No**

4. Identify if the collimated light field was:

   Acceptable, Too Small, Too Large

- Was the CR close to the middle of the required anatomy?

  Yes No

Is this image diagnostic? Yes No

****Although over-rotated laterally, image still resembles an oblique projection***

5. Does the marker placement follow Edenbrook's Marker Rules?

Yes **No – move to lateral side**

- Are there artifacts in the image?

  Yes **No**

  **If yes, could they have been removed?*

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4. Use the image below to answer the next five questions:

59kVp



McQuillen Martensen 5th Ed. pg. 206 Fig. 4.105

a. Which routine projection of the wrist is displayed?

Lateral projection

b. What positioning error(s) occurred?

- **Under-rotation**

c. If the image was repeated, how would you correct the positioning error(s)?

- **Rotate the wrist more laterally (aka. externally) until the styloid processes are completely superimposed (aka. perpendicular) to the IR**

d. How did you identify the positioning error(s)?

- **Head of ulna not entirely superimposed by the distal radius**

e. If the image had to be repeated, would you make any other adjustment(s)? Explain your rationale.

- **Center the CR more distally, over the mid-carpal region.**
- **Collimation must be increased (proximally-distally) because the light-field is too large. Required anatomy should include ½ of the metacarpals and approximately 2 inches of the distal radius and ulna; this image includes excessive amounts of the radius and ulna.**

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5. Use the image below to answer the next five questions:

69 kVp



McQuillen Martensen 5th Ed. pg. 211 Fig. 4.112

a. Which routine projection of the scaphoid is displayed?

PA Axial projection

b. What positioning error(s) occurred?

- **Rotation**
- **No ulnar deviation**

c. If the image was repeated, how would you correct the positioning error(s)?

- **Ensure the palmar surface of the hand is touching the IR (i.e. roll the hand down) and fully extend the phalanges**
- **Evert the hand towards the medial side**

d. How did you identify the positioning error(s)?

- **Superimposition of the 3rd-5th metacarpal bases**
- **Thumb not aligned to distal radius**

e. If the image had to be repeated, would you make any other adjustment(s)? Explain your rationale.

- **Increase collimation side to side – entire wrist (aka. all carpals) not required to be included in the light-field**
- **Decrease technique – kV too high, created an overexposure**

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6. Use the 5 evaluation criteria categories when critiquing the following images to determine if they are diagnostic:

1. Is all the required anatomy included in the radiograph?

Yes No

**If no, explain what is required*

PA 15^0 Axial Scaphoid @ 66kVp



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McQuillen Martensen 5th Ed. pg. 212 Fig. 4.114

2. Does the anatomical appearance in the radiograph correlate to what is expected from a 15^0 PA Axial projection?

Yes **No**

**If no, explain how the appearance of this radiograph is different compared to the ideal radiograph*

- **Proximal scaphoid superimposed with distal radius**
- **Distal scaphoid superimposed with trapezium**

3. Identify if the appropriate amount of radiation was used to form the image.

Acceptable, **Overexposed**, Underexposed

- Is motion present in the image?

Yes **No**

Is this image diagnostic? Yes **No**

****appears more similar to a PA scaphoid projection (with ulnar deviation)***

4. Identify if the collimated light field was:

Acceptable, Too Small, Too Large

- Was the CR close to the middle of the required anatomy?

Yes No

5. Does the marker placement follow Edenbrook's Marker Rules?

Yes ****note electronic marker used not lead marker*** No

- Are there artifacts in the image?

Yes **No**

**If yes, could they have been removed?*

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7. Use the 5 evaluation criteria categories when critiquing the following images to determine if they are diagnostic:

AP Forearm @ 66kVp



1. Is all the required anatomy included in the radiograph?

   Yes No

   **If no, explain what is required*

2. Does the anatomical appearance in the radiograph correlate to what is expected from an AP projection?

   Yes **No**

   **If no, explain how the appearance of this radiograph is different compared to the ideal radiograph*

- **Superimposition of the proximal radius and ulna (hand was pronated)**

3. Identify if the appropriate amount of radiation was used to form the image.

   Acceptable, Overexposed, Underexposed

- Is motion present in the image?

  Yes **No**

4. Identify if the collimated light field was:

   Acceptable, Too Small, **Too Large**

   ****only need to include proximal row of carpals***

- Was the CR close to the middle of the required anatomy?

  Yes No

5. Does the marker placement follow Edenbrook's Marker Rules?

Yes **No – marker should be on the lateral side (thumb is not on lateral side due to pronation of hand)**

- Are there artifacts in the image?

  Yes **No**

  **If yes, could they have been removed?*

Is this image diagnostic? Yes No

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8. Use the image below to answer the next five questions:

60 kVp



a. Which routine projection of the forearm is displayed?

Lateral projection

b. What positioning error(s) occurred?

- **Shoulder is elevated higher than the elbow**

c. If the image was repeated, how would you correct the positioning error(s)?

- **Ensure the entire arm is on the same level (aka. at the same height)**

d. How did you identify the positioning error(s)?

- **Capitulum is projected inferior to the trochlea**

e. If the image had to be repeated, would you make any other adjustment(s)? Explain your rationale.

- **Increase technique – kVp is too low, creating an underexposure**
- **Marker orientation should be corrected – on correct anatomical side, however it is upside-down**
- **Move CR slightly more proximally (only need to include proximal row of carpals) but appears to be clipping small amount of soft-tissue posterior to the olecranon process**

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