RADIOGRAPHY OF THE WRIST
WRIST PA Projection

- Patient Position:
  - _____, elbow ____________
  - ______________________ in same plane

- Part Position:
  - Hand ________; fingers ____________
  - ______________________ centered to IR
- Central Ray:

- Structures Shown:
NOTE: Optional AP projection best demonstrates the________________.
• PA Wrist Criteria for Evaluation
  – The long axis of the hand and wrist are aligned with the _________________.
  – The radius and ulna are ____________, the distal radioulnar joint is _____
  – The __________________ is demonstrated
  – There is equal _______________ on each side of the ____________________ ________________
  – The navicular is ________________
  – The trapezoid is ________________
Fat Stripe

Scaphoid fat stripe
- PA Wrist Error: the hand and wrist are not ________________, the distal radioulnar joint__________, the metacarpals are _________________. Correction:

__________________________________
• PA Wrist Error: fingers__________, centered__________. Correction: _______ phalanges, don’t__________ ______________________, center to ________ ____________.
WRIST
PA Oblique Projection

• Patient Position:
  – ________, elbow _____________
  – Hand and forearm resting __________
    Shoulder, elbow and wrist are_________________

• Part Position:
  – From pronated position, rotate wrist __________
    to form _____° angle with IR
  – Wrist in ________________
• Central Ray:
  - ________________ to ________________

• Structures Shown:

![Diagram of wrist bones with labels]

- Trapezium
- Trapezoid
- Scaphoid
- Capitate
- Lunate
- Ulnar styloid
- 1st metacarpal bone
- Carpo-metacarpal bone
- Trapezium
- Trapezoid
- Scaphoid
- Radial styloid
- Radius
- Ulna
• PA Oblique Wrist Criteria for Evaluation
  – The trapezium and ______ should be demonstrated ____________
    ____________
  – The ______ of the scaphoid should be demonstrated.
  – The medial carpals are ________________.
  – The ulnar styloid should be in ______

• The long axes of the 3rd metacarpal and midforearm should be aligned with the long axis of the collimated field.
• Oblique wrist – Error: Wrist is ____________  
To correct: oblique wrist ____ by rotating it ___________ until it forms a ___ degree angle with IR.
• Oblique wrist – Error: Wrist is __________ ________. To correct: oblique wrist ____ by rotating it ______________ until it forms a ___ degree angle with IR.
• Oblique wrist – Error: The long axes of the ____________________ are not aligned. To correct: The forearm and metacarpals and carpals need to be__________________.
WRIST
AP Oblique Projection

• Patient Position:
  – __________
  – Forearm in ________ position

• Part Position:
  – From supine position, rotate wrist __________
    to form a ___° angle with IR
  – Wrist in____________________
• Central Ray:
  - ________________ to midcarpal area

• Structures Shown:
WRIST
Lateral Projection

• Patient Position:
  – _________, elbow ______________
  – Entire ____________________ plane

• Part Position:
  – The _______ aspect of arm is adjacent to the IR
  – Wrist ___________ (distal radius and ulna ____________)
  – ___________ centered to IR
• Central Ray:
  – ___________ to midcarpal area
• Structures Shown:
Lateral Wrist Criteria for Evaluation

- The distal end of the scaphoid and the ________ should be ________________.

- The radius and ulna should be superimposed.

- The anterior (pronator) fat stripe should be seen.
Fat Stripe
- There ______________ of the wrist.

- The long axis of the first metacarpal should be ________________________
  ________________

- The ulnar styloid should be demonstrated in ________________.

- The joint space between the trapezium and the base of the 1st metacapral should be ____________
  _____________________
• Lateral wrist – Error: if the wrist is rotated internally, the distal scaphoid is visible _________ to the __________ and the radius is ______ to the ulna. Correction – need to __________ rotate wrist.

Good image
• Lateral wrist Error— the ____________ of the first metacarpal is not ________________ with the _________________.

To correct: Align the long axis of the 1\textsuperscript{st} metacarpal parallel with the midforearm
• Lateral wrist Error– The joint space between the ____________________________ is ____________________________. To correct place the _____ on the same level as the _____
WRIST – PA and PA Axial Projections for Scaphoid in Ulnar Deviation/Ulnar Flexion

• Patient Position:
  – ________
  – ____________________in same plane

• Part Position:
  – Hand ________
  – ______ hand (turn ______), flexed toward _____

• Note: With severe pain,________________.
• Central Ray:
  – Centered to ________________
  – PA: ______________________
  – PA Axial: Proximally ____° - ____°, (__________ to scaphoid)
• Structures Shown:
  – Scaphoid __________________; ______ carpal interspaces on ______ (_______) side of wrist. ________ of scaphoid demonstrated.
PA Axial for Scaphoid
Modified Stecher Methods

• Wrist positioned as for a____________

• Variations:
  – 1. Hand _________ in _____ flexion; elevated ___° on sponge; CR ___° (_________) to IR
2. Wrist ______(____); CR angled *proximally* ___° (toward the ______) – ___________ projection
3. “Power Grip”; hand _________ and _______ in a ____; CR is __° (____________) to IR
WRIST – PA Projection in Radial Flexion/Radial Deviation

• Patient Position:
  – ________, elbow ________
  – _______________ in same plane

• Part Position:
  – Hand _____________
  – ______ hand (turn ________), flexed toward _______
• Central Ray:
  - ___________________________ area

• Structures Shown:
CARPAL CANAL (TUNNEL) 
________________________ Method
Tangential Projection

• Inferosuperior Projection:
  – Wrist is ________ (_______) with long axis of hand as__________; rotate hand __°
    _______; forearm ___________; central ray angled ___°-___° to long axis of hand
• Superoinferior Projection:
  – Wrist is dorsiflexed with_________ ;
    patient leans forward to place ____________ in
    ______ ; CR is _____° to IR
• Structures Shown:
CARPAL BRIDGE
Tangential Projection

• Original Method:
  – Hand lies palm ______on IR; hand forms _____
  ________________________________

• Central Ray:
  – CR angled ____° to long axis of forearm ;
    ____ proximal to wrist joint
• Modified Method:
  – Forearm _______ on support device; wrist _____ to right angle; IR placed ______ against __________

• Central Ray:
  – CR angled ____° to long axis of forearm; ____________ proximal to wrist joint
• Structures Shown:
FOREARM AP Projection

• Patient Position:
  – ____________
  – ____________________ in same plane

• Part Position:
  – Hand in ________; patient ___________
  – Centered to __________________________
  – Humeral epicondyles ________________
• Central Ray:
  – ______ to midpoint of forearm
• Structures Shown:
• AP Forearm Criteria for Evaluation
  – The radial head should be superimposed over the
    __________________________.
  – Epicondyles of the __________ should be seen in _____.
  – The radius and ulna __________
    __________________________.
  – The radial styloid process should be____________________.
• AP forearm – Error; ________ rotation. To correct: Place ________ in ______ position. ________ hand so humeral epicondyles and ________________ to IR
- AP forearm – Error: Distal forearm is __ – the bones are _______ and the humeral epicondyles are __________ ________. To correct: ______________
FOREARM
Lateral Projection

• Patient
  – __________
  – _________________ in same plane

• Part Position:
  – Elbow _______ °; __________ centered to IR
  – Hand and wrist in __________ position
  – Distal radius and ulna __________
  – Humeral epicondyles __________
• Central Ray:

• Structures Shown:
• Lateral Forearm Criteria for Evaluation
  – The ________radius and ulna should be ________________.

  – The elbow joint space should be _____, and the head of the radius should be ___________ over the ________________.

  – Humeral epicondyles should be ____________and _______to the IR.

  – Distal humerus is in a ______________
• Lateral forearm – Error: Incorrect alignment of _____.
To correct: __________ rotate the ____ ______ until they are in the true lateral position.
• Lateral forearm – Error: incorrect alignment of_________. To correct; ________ the proximal humerus until epicondyles are of the humerus are ________ with the IR. Flex the elbow ______ degrees.
• **Situation:** A radiograph of a tangential, inferosuperior projection of the carpal canal reveal that the hamate is superimposed over the pisiform. **Solution:** Repeat the exposure rotating the ____.
• Situation: A patient enters the ER with a possible scaphoid fracture. The patient is unable to assume the ulnar flexion position.

Solution: A ______________ position with the CR angled 20° toward the elbow could be performed to confirm a scaphoid fracture.
Situation: A patient with a history of carpal tunnel syndrome comes to radiology. The physician wants to rule out abnormal calcifications in the carpal canal. Solution: The _______________ method would best demonstrate this region.
• **Situation:** A radiograph of the PA scaphoid projection in ulnar flexion reveals extensive superimposition of the scaphoid and adjacent carpals. **Solution:** Insufficient ulnar ______ can lead to this problem.