



# MONTANA STATE HOSPITAL POLICY AND PROCEDURE

## Radiology

**Effective Date:** March 15, 2017

**Policy:** RD-06  
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- I. PURPOSE:** To ensure Montana State Hospital (MSH) patients receive the highest level of radiologic services.
- II. POLICY:** It is the policy of the MSH Radiology Department to follow the outline protocols for ordered radiologic exams.
- III. DEFINITIONS:** None.
  - A. Registered Radiology Technologist (RT): current American Registry of Radiologic Technologists (ARRT) and State of Montana license holder under contract to provide services to MSH.
  - B. Limited Permit Technologist (LPT): current State of Montana limited permit radiology technologist license.
- IV. RESPONSIBILITIES:**
  - A. LPT and/or RT – responsible to obtain ordered radiologic images in accordance with the guidelines outlined in this policy.
  - B. Radiology Staff – will follow the exam protocol.
- V. PROCEDURE:**
  - A. Protocols for available x-rays:
    - Abdominal series (w/ PA chest) 3 views
      - PA CXR
      - Upright ABD
      - Supine ABD (to include bladder)
    - KUB
      - Supine ABD to include kidneys, ureters, and bladder.
    - Abdominal series 2 views
      - Supine ABD (to include bladder)
      - Upright ABD (to include diaphragm)
    - Acromioclavicular Joints (AC Joints) 2 views
      - Erect AP to include both joints w/o weights
      - Erect AP to include both joints w/ 8-10 weights tied to wrist, shoulders and arms relaxed
    - Ankle (limited) 2 views
      - AP
      - Lateral
    - Ankle (complete) 3 views
      - AP
      - Medial oblique (Modified Broden Method) may also be requested as Mortise View
        - Patient supine

- Ankle flexed 90 degrees with leg
    - Leg and foot rotated 45 degrees medially, ( if needed resting on sponge with knee flexed over sponge)
  - Lateral
- Cervical spine (Limited) 2-3 view
  - AP
  - Lateral
  - Odontoid
- Cervical Spine (Complete) 5 view
  - AP
  - Bilateral obliques
  - Lateral
  - Odontoid
- Chest 1 view
  - AP if done portable
  - PA if done in department
- Chest 2 view
  - PA
  - Lateral
- Foreign body chest and abdomen 1 view
  - AP use film large enough to include chest and abdomen
- Clavicle
  - AP
  - AP axial- 15 to 30 degree cephalic
- Elbow (limited) 2 view
  - AP
  - Lateral
- Elbow (Complete) 3 view
  - AP
  - Lateral
  - Oblique internal or external rotation dependent on patient symptoms.
- Eye (foreign body) 1v
  - Waters view
- Facial bones (Limited) 2 view
  - PA (Caldwell Skull)
    - OML perpendicular to IR
  - Lateral
- Facial bones (Complete) 3 view
  - PA (Caldwell Skull)
    - OML perpendicular to IR
  - Waters
  - Lateral
- Femur 2 view
  - AP
  - Lateral
- Fingers
  - AP

- Oblique
- Lateral
- Foot (Limited) 2 view
  - AP - Lateral
- Foot (Complete) 3 view
  - AP
  - Oblique
  - Lateral
- Forearm
  - AP
  - Lateral
- Hand (Limited) 2 view
  - AP
  - Lateral
- Hand (Complete) 3 view
  - AP
  - Oblique
  - Lateral
- Hip (Limited) 1 view
  - AP
- Hip (Complete) 2 view
  - AP
  - Lateral (Modified Lauenstein Method)
    - Supine
    - Rotated 15-20 degrees toward affected side
    - Hip flexed 30 degrees
- Humerus (Complete) 2 view
  - AP supinate hand
  - Rotational lateral
    - AP
    - Elbow slightly flexed
    - Arm and wrist rotated for lateral position (palm back)
  - Transthoracic lateral if patient unable to do rotational lateral
- Knee (Limited) 2 views- only if patient unable to weight bear.
  - AP (table)
  - Lateral
- Knee (Complete) 3 view
  - Bilateral PA Weight Bearing
    - Flex knees 30-45 degrees, knees to touch bucky
    - Patient slightly in the squatted position
    - 10 degree caudal tube angle
  - Merchant
    - Patient supine
    - Knees at edge of table lower leg resting on Merchant board
      - Have patient squeeze legs together
    - Place cassette on patients shins
    - Beam: caudal 65 degree

- CR: between the patellofemoral joints
- Lumbar spine (Limited) 2 views
  - AP
  - Lateral
- Lumbar Spine (Complete) 5 views
  - AP
  - Bilateral obliques
  - Lateral
  - L-5 S1 spot
- Mandible (Limited) 1 view
  - PA
- Mandible (Complete) 2 view
  - PA
  - Axiolateral obliques
- Nasal Bones 2 view
  - Superoinferior Axial (Tangential) Projection
    - Refer to your pocket atlas for description of this projection
  - Lateral
- Neck Soft Tissue 2 view
  - AP
  - Lateral
- Orbits
  - Waters
- Oscalcis/Calcaneus- (heel)
  - Axial (Harris Method)
    - Affected leg extended, toes straight up in a dorsiflexion position
    - 40 degree cephalic beam
    - CR to talocalcaneal joint
  - Lateral
- Pelvis 1 view
  - AP
- Ribs unilateral 3 view
  - PA chest
  - AP ribs
  - Appropriate oblique
- Ribs bilateral 4 view
  - PA chest
  - AP ribs
  - Appropriate bilateral obliques
- Sacroiliac Joint (SI joints) 2 view
  - AP- 20 degree cephalic tube angle
  - Obliques- Bilateral patient rotated 25-30 degrees
- Sacrum-Coccyx 2 view
  - AP
  - Lateral
- Scapula 2 view
  - AP- affected hand raised on head

- Lateral
- Shoulder (Limited) 1-2 view
  - AP (Modified Grashey)
    - Anteroposterior Oblique (APO)
    - Patient rotated posteriorly 35-45 degrees toward affected shoulder (until joint open with palpation)
    - Arm relaxed with hand on waist
  - “Y” view
    - Patient AP with 30-45 degree angle until scapula is lateral
    - 10-15 degree cephalic beam into humeral head
- Shoulder (Complete) 3 view
  - AP (Modified Grashey) –
    - Anteroposterior Oblique (APO)
    - Patient rotated posteriorly 35-45 degrees toward affected shoulder (until joint open with palpation)
    - Arm relaxed with hand on waist
  - “Y” view
    - Patient AP with 30-45 degree angle until scapula is lateral
    - 10-15 degree cephalic beam into humeral head
  - Axillary
    - Patient should be leaning over cassette on table with shoulder joint in center of cassette.
    - Compensate tube angle to go through joint if needed.
- Sinus (limited) 1 view
  - Waters
- Sinus (Complete) 3 view
  - PA (Caldwell Method)
  - Waters
  - Lateral
- Skull (Limited) 1-2 view
  - PA (Caldwell Method)
  - Lateral
- Skull (Complete) 3 view
  - PA (Caldwell Method)
  - Waters
  - Lateral
- Thoracic Spine 1-3 view
  - AP
  - Swimmers
  - Lateral
- Sternum 2 view
  - Oblique- Patient turned 15-20 degree RAO
  - Lateral- Shoulder and arms pulled back
- Tibia/Fibula 2 views
  - AP
  - Lateral
- Toes 3 view

- AP
- Oblique
- Lateral
- Wrist (Limited) 2 view
  - AP
  - Lateral
- Wrist (Complete) 3 view
  - AP
  - Oblique
  - Lateral
- Wrist (navicular/scaphoid view)
  - Stetcher's Method
    - AP- Wrist and elbow in same plane, elbow flex 90 degree, angle tube 20 degrees toward elbow, wrist prone in ulnar flexion.

B. General Rules:

1. When a patient is lifted, carried, or moved stand as close as possible to the patient.
2. Keep the arms as close to the vertical axis as possible.
3. Stand with a fairly broad base, feet shoulder width apart, one leg slightly ahead of the other, knees slightly bent to aide in balance.
4. Face the direction of the patient.
5. Bend from the hips/knees not the waist, back, or shoulders.
6. When reaching down to the floor don't bend, but squat ensuring your back is straight.

C. Transferring Patients from wheelchair to table vise-versa:

1. Explain to the patient what you are going to do and have them help as much as possible.
2. Always have enough people to help.
3. Lock the wheels of the chair
4. Raise the footrests, and leg supports.
5. Have the patient grab your upper arms. Place your hands under the patient's arms or on their waist, and assist them in standing.
6. Assist the patient to the step stool and have them turn around before stepping onto it.
7. Help the patient to step up onto the step stool by guiding a leg if necessary.
8. Help the patient to sit on table.
9. Place one hand under patient knees and the other behind their shoulders and help patient lay on table.
10. To help patient off table and back in chair reverse process.

D. Transferring patients from stretcher to table:

1. Explain to the patient what you are about to do then have them help as much as possible.
2. Always have enough people to help.
3. Push stretcher up against table and lock stretcher in place.

4. If patient is unable to help use the slide board. Place the board under the patient and move them to the table.
5. To return patient to stretcher reverse process.

E. Verification:

1. All patient information on the order needs to be accurate and legible.
2. Every order needs to have a diagnosis.
3. Order needs to be signed.
4. Time and date need to be on the order.

F. Documentation: The following should be noted on the patient's chart:

1. Areas on which x-ray were performed.
2. Patient's response to the procedure.

**VI. REFERENCES:** None.

**VII. COLLABORATED WITH:** Limited Permit Radiology Technologist; Associate Director of Nursing; Medical Director; Registered Radiology Technologist; and Radiologist.

**VIII. RESCISSIONS:** None, new policy

**IX. DISTRIBUTION:** All hospital policy manuals.

**X. ANNUAL REVIEW AND AUTHORIZATION:** This policy is subject to annual review and authorization for use by either the Administrator or the Medical Director with written documentation of the review per ARM § 37-106-330.

**XI. FOLLOW-UP RESPONSIBILITY:** Medical Director

**XII. ATTACHMENTS:** None

Signatures:

Jay Pottenger  
Hospital Administrator

Thomas Gray, M.D.  
Medical Director