



Parkland

Health & Hospital System

Radiology Procedures Manual

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ABDOMEN

Routine: KUB supine unless others indicated. 2V: Supine KUB and Upright Abd. unless otherwise indicated. Abd. Acute Series: PA, Supine KUB, and Upright Abd. unless otherwise indicated.

AP KUB

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Supine.

PART POSITION: Center median sagittal plane to grid. Shoulders in same transverse plane. Support under knees. Center cassette at level of crests of ilia.

RESPIRATION: Suspended expiration.

CENTRAL RAY: Perpendicular to midline at level of crests of ilia.

SHIELDING: Apply gonad shielding as appropriate.

Note: If history is NGT or DHT placement center higher to include tube.

Reference: 3rd edition Pocket Guide to Radiography page 224.

AP UPRIGHT ABDOMEN

PATIENT POSITION: Erect

PART POSITION: Center median sagittal plane to grid device. Shoulders in same transverse plane. Center cassette 2 to 3 inches (5 to 8 cm) above crest of ilia to include diaphragm.

RESPIRATION: Suspend expiration.

CENTRAL RAY: Horizontal entering median sagittal plane 2 to 3 inches (5 to 7.5 cm) superior to crests of ilia.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 226.

PA UPRIGHT ABDOMEN

PATIENT POSITION: Erect

PART POSITION: Center median sagittal plane to grid. Shoulders in same transverse plane. Center cassette 2 to 3 inches (5 to 7.5 cm) above crests of ilia to include diaphragm.

RESPIRATION: Suspended expiration.

CENTRAL RAY: Horizontal entering median sagittal plane 2 to 3 inches (5 to 7.5 cm) superior to level of crests of ilia.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 228.

AP ABDOMEN LATERAL DECUBITUS POSITION

PATIENT POSITION: Lateral recumbent (usually side of interest up) lying on pad. Arms above level of diaphragm. Knees slightly flexed.

PART POSITION: Median sagittal plane perpendicular to and centered to grid device. Center cassette at level of crests of ilia.

RESPIRATION: Suspend expiration.

CENTRAL RAY: Horizontal and parallel with the median sagittal plane at level of crests of ilia.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 230.

ACROMIOCLAVICULAR JOINTS

Routine: AP Bilateral A-C Joints w/o weights unless otherwise indicated.

AP UNILATERAL/ BILATERAL

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Upright if condition permits.

PART POSITION: Adjust mid point of cassette to level of acromioclavicular (A-C) joints. Center median sagittal plane of body to midline of cassette if both A-C joints can be demonstrated on one radiograph. (Otherwise, center to each individual A-C joint for two separate exposures). To demonstrate A-C separation, sandbags of equal weight should be attached to each wrist and a second radiograph obtained without weights.

RESPIRATION: Suspend exhalation.

CENTRAL RAY: Perpendicular to cassette midway between A-C joints.
(Or perpendicular to each A-C joint for two exposures).

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 54.

ANKLE

Routine: AP, Oblique and Lateral unless otherwise indicated.

AP

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Supine or seated on table with affected leg extended.
(A small support may be placed under knee for comfort).

PART POSITION: Center ankle to cassette, flex foot and adjust ankle with toes pointing vertically.

CENTRAL RAY: Perpendicular to ankle joint entering midway between malleoli.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 84.

LATERAL ANKLE (Mediolateral)

PATIENT POSITION: Supine, roll onto affected side.

PART POSITION: Flex ankle to 90 degree angle and adjust foot in lateral position.
Center ankle to cassette.

CENTRAL RAY: Perpendicular to ankle joint entering medial malleolus.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 86.

AP OBLIQUE ANKLE (medial rotation)

PATIENT POSITION: Supine or seated on table.

PART POSITION: Rotate leg and foot medially. Dorsiflex foot placing ankle at near right-angle flexion. Adjust degree of medial rotation for:

- (1) Ankle mortise until malleoli are parallel with film (15 to 20 degrees), or
- (2) Bony Structure: to 45 degrees rotation.

CENTRAL RAY: Perpendicular to ankle joint entering midway between malleoli.

Note: Lateral oblique may be obtained by rotating leg and foot 45 degrees laterally.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 88.

AP ANKLE INVERSION OR EVERSION (STRESS STUDIES)

PATIENT POSITION: Supine or seated on table with small support under knee.

PART POSITION: Ankle is positioned for AP projection. Joint is stressed by placing it in position of extreme inversion or eversion and is then immobilized.

CENTRAL RAY: Perpendicular to ankle joint entering midway between malleoli.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 90.

CALCANEUS (HEEL), OS-CALCIS

Routine: AP Axial and Lateral unless otherwise indicated.

AP AXIAL (plantodorsal)

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Supine or seated with leg fully extended.

RESPIRATION: None

PART POSITION: Center cassette to ankle. Have the patient draw the plantar surface of foot perpendicular to cassette.

CENTRAL RAY: 40 degrees cephalic to long axis of foot entering midline at level of base of fifth metatarsal.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 80.

LATERAL CALCANEUS

PATIENT POSITION: Lying on affected side, adjust leg and foot in lateral position with patella perpendicular to table.

PART POSITION: Center calcaneus to cassette, about 1 to 1.5 inches (2.5 to 4 cm) distal to medial malleolus.

RESPIRATION: None

CENTRAL RAY: Perpendicular to midportion of calcaneus.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 82.

CERVICAL SPINE

Routine: AP, Lateral, and Odontoid unless otherwise indicated.

Davis Series: Lateral Hyperflexion and Hyperextension unless otherwise indicated.

Trauma: AP, Lateral, and Odontoid unless otherwise indicated.

AP AXIAL CERVICAL VERTEBRAE

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Erect or supine.

PART POSITION: Median sagittal plane centered to cassette. Arms by sides.
Center cassette at level of C4 and adjust a line between upper occlusal plane and mastoid tip perpendicular to cassette.

RESPIRATION: Suspended.

CENTRAL RAY: Angle 15 to 20 degrees cephalic entering fourth cervical vertebra slightly inferior to thyroid cartilage.

SHIELDING: Apply gonad shielding as appropriate.

Note: When performing a soft tissue neck exam. Follow these same guidelines for positioning the patient. Adjust the technique to show soft tissue.

Reference: 3rd edition Pocket Guide To Radiography page 138.

LATERAL CERVICAL VERTEBRAE

PATIENT POSITION: Seated or standing in lateral position.

PART POSITION: Center coronal plane through mastoid processes to cassette. Adjust shoulders to same horizontal level and body to true lateral position. Elevate chin slightly and relax shoulders. Weights may be attached to wrists to help lower shoulders.

RESPIRATION: Suspended expiration.

CENTRAL RAY: Perpendicular to cassette entering C4. 72 inches (180 cm) SID recommended.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 140.

AP AXIAL OBLIQUE (RPO AND LPO) CERVICAL VERTEBRAE

PATIENT POSITION: Seated or standing.

PART POSITION: Rotate body to 45 degrees with side of interest farthest from cassette. Slightly extend chin while looking forward. Center spine to cassette. Take both side obliques.

RESPIRATION: Suspended.

CENTRAL RAY: 15 to 20 degrees cephalic entering C4. 60 to 72 inches (150 to 180 cm) SID recommended.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 144.

AP ATLAS AND AXIS CERVICAL VERTEBRAE (ODONTOID)

PATIENT POSITION: Erect or supine.

PART POSITION: Median sagittal plane centered to cassette at level of C2.

Arms by sides, shoulders in same plane. Open mouth wide, adjust head so line from lower edge of upper incisors to mastoid process is perpendicular to cassette.

RESPIRATION: Phonate "ah" during exposure.

CENTRAL RAY: Perpendicular to cassette centered to open mouth.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 134.

AP DENS (FUCHS) CERVICAL VERTEBRAE

PATIENT POSITION: Supine.

PART POSITION: Extend chin until a line between chin and tip of mastoid process is perpendicular to cassette. Adjust head so median sagittal plane is perpendicular to cassette.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular entering median sagittal plane just distal to tip of chin.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 134.

CERVICOTHORACIC LATERAL (SWIMMERS)

PATIENT POSITION: Erect, seated, or standing.

PART POSITION: Center median coronal plane to cassette. Elevate arm adjacent to vertical cassette holder, and rest it on head. According to patient condition, rotate this shoulder forward or backward. Opposite shoulder is rotated in opposite direction. Adjust head and body so median sagittal plane is parallel with cassette.

RESPIRATION: Suspended or shallow breathing.

CENTRAL RAY: Perpendicular to T2. 5 – degree caudal angulation may be used if shoulders cannot be adequately depressed.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 154.

CERVICAL VERTEBRAE HYPERFLEXION AND HYPEREXTENSION

PATIENT POSITION: Seated or standing in lateral position.

PART POSITION: While keeping median sagittal plane of head and neck parallel with plane of film, ask patient to: (1) drop head forward and draw chin as close as possible to chest to place cervical vertebrae in hyperflexion. Expose film. (2) Elevate chin as much as possible to place cervical vertebrae in hyperextension. Expose second cassette.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular to cassette entering C4. 72 inches (180 cm)
SID recommended.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 142.

TRAUMA CERVICAL VERTEBRAE LATERAL

PATIENT POSITION: Supine. Do not move patient or remove cervical collar without consulting physician.

PART POSITION: Place cassette next to patient's shoulder and center at level of C4. Do not rotate or extend neck. Depress shoulders as much as possible. A bandage may be looped around patient's feet while affixing the ends to wrists so extending knees will depress shoulders.

RESPIRATION: Suspended expiration.

CENTRAL RAY: Horizontal and perpendicular entering C4. 60 to 72 inches (150 to 180 cm) SID recommended.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 148.

TRAUMA CERVICAL VERTEBRAE AP AXIAL

PATIENT POSITION: Supine. Do not move patient or remove cervical collar without consulting physician.

PART POSITION: Brace head and neck and lift only enough to slide cassette under neck. If patient is on backboard, cassette may be placed under backboard. Center cassette at level of C4. Do not rotate or extend neck.

RESPIRATION: Suspended expiration.

CENTRAL RAY: (1) 15 to 20 degrees cephalic entering C4 for vertebral body and interspaces, or (2) 20 to 30 degrees caudal for posterior vertebral structures.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 150.

TRAUMA CERVICAL VERTEBRAE AP AXIAL OBLIQUE

PATIENT POSITION: Supine. Do not move patient or remove cervical collar without consulting physician.

PART POSITION: Brace head and neck and lift only enough to slide cassette under neck. If patient is on backboard, cassette may be placed under backboard. Center cassette to mastoid on side opposite x-ray tube. (This will allow angled central ray to project image of side of interest in center of film).

RESPIRATION: Suspended expiration.

CENTRAL RAY: 45 degrees medial and 15 to 20 degrees cephalic entering level of C4.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 152.

CHEST

Routine: PA and Lateral unless otherwise indicated.

PA CHEST/ PA With Nipple Markers

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None.

Note: If Nipple Markers are required, place markers on area of interest and take one exposure with the patient's arms up. Then, another exposure with the patient's arms down.

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Standing or seated erect with back of hands on hips.

PART POSITION: Median sagittal plane centered with chin extended and looking straight ahead. Roll shoulders forward. Top of cassette 1.5 to 2 inches (3 to 5 cm) above shoulders (acromion processes).

RESPIRATION: Suspended full inspiration.

CENTRAL RAY: Perpendicular to median sagittal plane at level of T7. SID of 72 inches (180 cm) recommended.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 188.

AP CHEST

PATIENT POSITION: Supine or erect, arms at sides.

PART POSITION: Center cassette to median sagittal plane and adjust upper border to be 2 to 3 inches (5 to 7.5 cm) above shoulders. If possible, flex elbows, pronate hands, and place hands on hips.

RESPIRATION: Suspended full inspiration.

CENTRAL RAY: Perpendicular to median sagittal plane at the level of T7. SID of 72 inches (180 cm) recommended.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 196.

LATERAL CHEST

PATIENT POSITION: Standing or seated erect with left side against cassette unless otherwise specified.

PART POSITION: Median sagittal plane parallel with cassette. Adjacent shoulder resting against cassette holder with arms raised and crossed over head. Top of cassette 1 to 2 inches (3 to 5 cm) above shoulder (acromion processes). Center thorax to cassette.

RESPIRATION: Suspended full inspiration.

CENTRAL RAY: Perpendicular to cassette entering patient approximately 2 inches (5 cm) anterior to median coronal plane at level of T7. SID of 72 inches (180 cm) recommended.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 190.

CHEST AP (DECUBITUS POSITION)

PATIENT POSITION: Lateral recumbent.

PART POSITION: Patient lying on affected or unaffected side depending on existing condition. Elevate dependent side on firm pad. (Generally "fluid down" or "free-air up"). Extend arms above head and adjust thorax in true lateral position. Place top of cassette approximately 2 inches (5 cm) above shoulders.

RESPIRATION: Suspend full inspiration.

CENTRAL RAY: Horizontal and perpendicular to median sagittal plane at level of T7.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 200.

CHEST LATERAL (DECUBITUS POSITION)

PATIENT POSITION: Prone or supine.

PART POSITION: Elevate thorax on firm pad and center with affected side closest to cassette. Extend arms above head. Place top of cassette at level of laryngeal prominence. Center median coronal plane to center of grid.

RESPIRATION: Suspended full inspiration.

CENTRAL RAY: Horizontal and perpendicular to median coronal plane at the level of T7.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 192.

CHEST PA OBLIQUE (LAO AND RAO)

PATIENT POSITION: Standing or seated erect. Side farthest from cassette is usually side of primary interest.

PART POSITION: Adjust coronal plane 45 degrees from plane of cassette. Top of cassette 2 inches (5 cm) above shoulders (acromion processes). Shoulder nearest cassette rolled posterior and hand placed on hip. Arm farthest from cassette placed on top of cassette holder. Center thorax to cassette. Both 45 degree obliques may be taken.

RESPIRATION: Suspended full inspiration.

CENTRAL RAY: Perpendicular entering midway between MSP and lateral border of elevated side at level of T7. SID of 72 inches (180 cm) recommended.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 202.

CHEST AP OBLIQUE (Picc Lines) (RPO AND LPO)

PATIENT POSITION: Erect or supine. Side closest to cassette is usually side of primary interest.

PATIENT POSITION: Adjust coronal plane 45 degrees from plane of cassette.
Top of cassette 2 inches (5 cm) above shoulders (acromion processes). Shoulder nearest cassette is rolled anterior and hand placed on head. Arm farthest from cassette is placed on hip. Center thorax to cassette. Both 45 degree obliques may be taken.

RESPIRATION: Suspend full inspiration.

CENTRAL RAY: Perpendicular entering midway between median sagittal plane and lateral border of elevated side at level of T7. All of dependent side must be included. SID of 72 inches (180 cm) recommended.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 188.

PA CHEST WITH INSPIRATION OR EXPIRATION

PATIENT POSITION: Standing or seated erect with back of hands on hips.

PART POSITION: Median sagittal plane centered with chin extended and looking straight ahead. Roll shoulders forward. Top of cassette 1.5 to 2 inches (3 to 5 cm) above shoulders (acromion processes).

RESPIRATION: Suspended full inspiration or expiration.

CENTRAL RAY: Perpendicular to median sagittal plane at level of T7. SID of 72 inches (180 cm) recommended.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 194.

CHEST AP AXIAL LORDOTIC

PATIENT POSITION: Standing approximately one foot (30 cm) in front of cassette. When patient is properly positioned, top of cassette should be approximately 3 inches (7.5 cm) above shoulders.

PART POSITION: Median sagittal plane centered with no rotation. Flex elbows, hands with palms out on hips. Patient leans backward in extreme lordotic position.

RESPIRATION: Suspended full inspiration.

CENTRAL RAY: Perpendicular to cassette entering mid-sternum. SID of 72 inches (180 cm) recommended.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 198.

COCCYX

Routine: AP 10 Degrees caudal angle and Lateral view unless otherwise indicated.

LATERAL COCCYX

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Lateral with hips and knees flexed.

PART POSITION: Support body to place long axis of spine horizontal. Align coronal plane passing approximately 5 inches (13 cm) posterior to median coronal plane and center to midline of grid.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular to cassette entering palpated coccyx located approximately 5 inches (13 cm) posterior to median coronal plane.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 180.

AP AXIAL COCCYX

PATIENT POSITION: Supine.

PART POSITION: Center median sagittal plane to center of grid.

RESPIRATION: Suspended.

CENTRAL RAY: 10 degrees caudal entering median sagittal plane 2 inches (5 cm) superior to symphysis pubis.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 178.

CLAVICLE

Routine: AP and AP with 15 Degrees cephalic angle unless otherwise indicated.

AP CLAVICLE

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Erect or supine.

PART POSITION: Center clavicle to center of cassette midway between midline of body and lateral border of shoulder at coracoid process. Head may be turned away from affected side.

RESPIRATION: Suspended expiration.

CENTRAL RAY: Perpendicular to midshaft of clavicle.

SHIELDING: Apply gonad shielding as appropriate.

Note: May obtain PA clavicle to decrease part-film distance and improve recorded detail. Place patient facing grid using perpendicular central ray and position using above landmarks.

Reference: 3rd edition Pocket Guide To Radiography page 56.

AP AXIAL CLAVICLE

PATIENT POSITION: Erect or supine.

PART POSITION: Center clavicle to lower one-third of cassette midway between median sagittal plane and lateral border of shoulder at coracoid process. Head may be turned away from affected side.

RESPIRATION: Suspended inspiration.

CENTRAL RAY: Angle 15 to 45 degrees cephalic centered to the midshaft of the clavicle.

SHIELDING: Apply gonad shielding as appropriate.

Note: May obtain PA axial clavicle to decrease part-film distance for improved recorded detail. Place patient facing grid using 25 to 30 degrees caudal CR angulation.

Reference: 3rd edition Pocket Guide to Radiography page 58.

ELBOW

Routine: AP and Lateral unless otherwise indicated.

AP ELBOW

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Seated at end of table with arm extended and entire limb in same plane.

PART POSITION: Extend elbow, supinate hand, and center elbow joint to cassette. Adjust humeral epicondyles to be equidistant from film. Patient may have to lean slightly laterally to assure AP alignment.

RESPIRATION: None

CENTRAL RAY: Perpendicular to elbow joint.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 32.

LATERAL ELBOW

PATIENT POSITION: Seated at end of table with elbow flexed 90 degrees; humerus and forearm resting on table and entire limb in same plane.

PART POSITION: Center 90 degree flexed elbow joint to cassette and adjust wrist and hand in lateral position. Adjust humeral epicondyles perpendicular to the cassette.

RESPIRATION: None

CENTRAL RAY: Perpendicular to elbow joint.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 34.

AP ELBOW OBLIQUE (MEDIAL ROTATION)

PATIENT POSITION: Seated at end of table with arm extended and entire limb in same plane.

PART POSITION: Pronate hand. Medially rotate arm and adjust anterior surface of elbow (epicondyles) to 40 to 45 degrees.

RESPIRATION: None

CENTRAL RAY: Perpendicular to cassette entering elbow joint.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 36.

FACIAL BONES

Routine: PA Caldwell, Waters, Lateral, and SMV unless otherwise indicated.
Note: PA Caldwell and SMV views are listed under Skull exam collimate to anatomy of interest.

FACIAL BONES LATERAL

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Seated erect or semiprone.

PART POSITION: Center zygoma and adjust median sagittal plane parallel to cassette.
IOML parallel with transverse axis of cassette. IPL perpendicular to cassette.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular entering superior portion (lateral surface) of zygomatic bone.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 314.

FACIAL BONES PARIETOACANTHIAL (WATERS)

PATIENT POSITION: Seated erect or prone.

PART POSITION: Center and adjust median sagittal plane perpendicular to cassette and rest patient's head on extended chin. Adjust OML to form 37 degrees to film plane. MML is approximately perpendicular to cassette.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular exiting acanthion.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 316.

FACIAL BONES ACANTHOPARIETAL (REVERSE WATERS)

PATIENT POSITION: Supine.

PART POSITION: Center and adjust median sagittal plane perpendicular to cassette. Adjust flexion of neck so IOML is perpendicular to cassette. Center cassette approximately 3 inches (7.5 cm) above external occipital protuberance (inion).

RESPIRATION: Suspended.

CENTRAL RAY: 30 degrees cephalic entering at or slightly below acanthion. Central ray will be nearly parallel with mentomeatal line.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 318.

FEMUR

Routine: AP Proximal and Distal, Lateral Proximal and Distal unless otherwise indicated.

AP FEMUR

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Supine with toes up. Adjust pelvis to place anterior superior iliac spines equidistant from table.

PART POSITION: Center affected thigh to midline of grid. Internally rotate lower limb approximately 15 degrees. Both joints should be included.

RESPIRATION: None

CENTRAL RAY: Perpendicular to mid-femur.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 318.

LATERAL FEMUR

PATIENT POSITION: Lying on affected side with knee slightly flexed.

PART POSITION: To include hip joint, rotate unaffected hip posterior to prevent superimposition of unaffected hip. Center femur to midline of grid. Both joints should be included.

RESPIRATION: None

CENTRAL RAY: Perpendicular to mid femur.

SHIELDING: Apply gonad shielding as appropriate.

NOTE: Cross-table lateral –elevate injured femur and use horizontal central ray.

Reference: 3rd edition Pocket Guide to Radiography page 118.

FINGER (DIGITS)

Routine: PA, Oblique, and Lateral unless otherwise indicated.

PA FINGER (2-5 DIGITS)

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Seated at end of radiographic table.

PART POSITION: Separate and center extended digit of interest with palmar surface of hand firmly against cassette.

RESPIRATION: None

CENTRAL RAY: Perpendicular entering proximal interphalangeal joint of digit being examined. Collimate to digit being examined.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 2.

LATERAL FINGER (2-5 DIGITS)

PATIENT POSITION: Seated at end of radiographic table.

PART POSITION: Demonstrate position for patient. Ask patient to extend digit of interest, close rest of digits into a fist. Adjust digit of interest parallel to film plane. Rest on lateral or medial surface as needed to obtain smallest possible OID. Immobilize extended digit.

RESPIRATION: None

CENTRAL RAY: Perpendicular entering proximal interphalangeal joint. Collimate to digit being examined.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 4.

PA OBLIQUE FINGER (2-5 DIGITS)

PATIENT POSITION: Seated at end of radiographic table.

PART POSITION: Place patient's hand in lateral position, ulnar side down, centered to cassette area. Rotate palm 45 degrees toward cassette until digits are resting on support. Immobilize separated digits.

RESPIRATION: None

CENTRAL RAY: Perpendicular entering proximal interphalangeal joint.
Collimate to digit being examined.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 6.

AP FIRST DIGIT (THUMB)

PATIENT POSITION: Seated at end of radiographic table.

PART POSITION: Place affected hand in extreme internal rotation, with first digit centered to the cassette area. Adjust position of hand to secure true AP projection of first digit. Extend and secure digits two through five to eliminate superimposition over first digit.

RESPIRATION: None

CENTRAL RAY: Perpendicular entering metacarpophalangeal joint of first digit.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 8.

LATERAL FIRST DIGIT (THUMB)

PATIENT POSITION: Seated at end of radiographic table.

PART POSITION: Rest palmar surface of hand on cassette. Adjust arching of hand until true lateral position of first digit is achieved.

RESPIRATION: None

CENTRAL RAY: Perpendicular entering metacarpophalangeal joint of first digit.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 10.

PA OBLIQUE FIRST DIGIT (THUMB)

PATIENT POSITION: Seated at end of radiographic table.

PART POSITION: Abduct first digit. Place palmar surface of hand firmly against cassette and adjust first digit to oblique position.

RESPIRATION: None

CENTRAL RAY: Perpendicular entering metacarpophalangeal joint of first digit.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 12.

FOOT

Routine: AP, Oblique, and Lateral unless otherwise indicated.

AP AXIAL FOOT

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Supine or seated on table, knees flexed with feet separated.

PART POSITION: With foot plantar surface firmly resting on cassette, center foot and adjust midline of foot parallel to long axis of cassette.

RESPIRATION: None

CENTRAL RAY: 10 degrees posterior entering base of third metatarsal for reduced elongation or directed perpendicular.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 74.

AP OBLIQUE FOOT (MEDIAL ROTATION)

PATIENT POSITION: Supine or seated on table, knees flexed with feet separated.

PART POSITION: Center foot to cassette. Rotate leg medially until foot plantar surface forms angle of 30 degrees to cassette.

RESPIRATION: None

CENTRAL RAY: Perpendicular to base of third metatarsal.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 76.

LATERAL FOOT (MEDIOLATERAL)

PATIENT POSITION: Lying on affected side, adjust leg and foot in lateral position with patella perpendicular to table.

PART POSITION: Center foot and adjust plantar surface perpendicular to cassette.

RESPIRATION: None

CENTRAL RAY: Perpendicular to midpoint of cassette entering level of base of third metatarsal.

SHIELDING: Apply gonad shielding as appropriate.

Note: Lateromedial may be obtained with patient lying on unaffected side and positioned as described above.

Reference: 3rd edition Pocket Guide to Radiography page 78.

FOREARM

Routine: AP and Lateral unless otherwise indicated.

AP FOREARM

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Seated at end of table with arm extended and entire limb in same plane.

PART POSITION: Supinate hand and center forearm to cassette to include joint(s) of interest. Adjust rotation to place humeral epicondyles equidistant from film.

RESPIRATION: None

CENTRAL RAY: Perpendicular to midpoint of forearm.

Reference: 3rd edition Pocket Guide to Radiography page 28.

LATERAL FOREARM

PATIENT POSITION: Seated at end of table with humerus and forearm in contact with table. Elbow flexed and entire limb in same plane.

PART POSITION: Flex elbow 90 degrees and adjust hand to lateral position (thumb up). Center forearm to cassette to include joint(s) of interest.

RESPIRATION: None

CENTRAL RAY: Perpendicular to midpoint of forearm.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 30.

HAND

Routine: PA, Oblique, and Lateral unless otherwise indicated.

PA HAND

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Seated at end of radiographic table.

PART POSITION: Forearm resting on table with palmar surface firmly against cassette. Spread digits slightly.

RESPIRATION: None

CENTRAL RAY: Perpendicular to third metacarpophalangeal joint.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 14.

PA OBLIQUE HAND

PATIENT POSITION: Rest forearm on table with hand on cassette in prone position, palm down.

PART POSITION: Rotate hand laterally (externally) and place digits on 45 degrees radiolucent support to demonstrate interphalangeal joints. Adjust digits parallel with cassette. When metacarpals are area of primary interest, hand may be rotated laterally so fingertips touch cassette.

RESPIRATION: None

CENTRAL RAY: Perpendicular to third metacarpophalangeal joint.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 16.

LATERAL HAND (R/O Fx of Metacarpals or foreign objects)

PATIENT POSITION: Rest ulnar surface of forearm on table with hand in true lateral position.

PART POSITION: Extend digits with first digit (thumb) placed at right angles to palm of hand. As an option, patient may “fan” fingers and place on positioning sponge to reduce superimposition of phalanges as illustrated. Center metacarpophalangeal joints to cassette and adjust palmar surface of hand perpendicular to cassette.

RESPIRATION: None

CENTRAL RAY: Perpendicular to the second metacarpophalangeal joint.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 18.

HIP

Routine: AP Pelvis and Lateral Hip unless otherwise indicated.
Bilateral Hips: AP Pelvis and Frog leg Pelvis unless otherwise indicated.

AP HIP

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Supine. Adjust anterior superior iliac spines equidistant from table.

Note: For bilateral hips to include pelvis. Center for a pelvis view.

PART POSITION: Rotate affected foot 15 degrees medially, center hip to cassette.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular to a point 2 inches (5 cm) medial to anterior superior iliac spine (ASIS) and at level of superior margin of greater trochanter.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 120.

LATERAL HIP (Unilateral/ Bilateral)

PATIENT POSITION: From supine position, turn toward affected side to posterior oblique body position.

PART POSITION: Flex affected knee and hip and center affected hip to midline of grid.
Extend unaffected knee.

NOTE: Bilateral Hips (“Frog-Leg”) flex both knees and center both hips to midline of the table, pelvis not rotated. Place both feet together and abduct both thighs as far as possible (40 degrees from vertical) symmetrically.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular to the hip at a point midway between ASIS and symphysis pubis.

NOTE: Bilateral Hips perpendicular to film directed to level of Greater Trochanters.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 124.

AP OBLIQUE HIP (MODIFIED CLEAVES METHOD)

PATIENT POSITION: Supine.

PART POSITION: Adjust pelvis so there is no rotation. Flex hips and knees. Abduct thighs, brace soles of feet together. Thighs should be equally abducted to approximately 40 degrees from vertical.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular entering midline approximately 1 inch (2.5 cm) superior to symphysis pubis. For unilateral CR enters affected joint.

SHIELDING: Apply gonad shielding as appropriate.

Note: May be adapted for unilateral examination by flexion and abduction of affected limb.

Reference: 3rd edition Pocket Guide to Radiography page 122.

AXIOLATERAL OR CROSS-TABLE LATERAL (ALSO USED IN TRAUMA) DANELIUS – MILLER METHOD

PATIENT POSITION: Supine with level of greater trochanter elevated to center of cassette.

PART POSITION: Flex knee and hip of unaffected side. Elevate and rest on suitable support. Adjust pelvis to supine position. Unless contraindicated, rotate affected leg 15 to 20 degrees internally.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular to long axis of femoral neck and cassette.

SHIELDING: Apply gonad shielding as appropriate.

POST – OPERATIVE HIP = AP AND LATERAL (DANELIUS MILLER METHOD)

Reference: 3rd edition Pocket Guide to Radiography page 126.

HUMERUS

Routine: AP and Lateral unless otherwise indicated.

AP HUMERUS

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Erect or supine.

PART POSITION: Unless contraindicated, supinate hand and adjust humerus with epicondyles parallel with cassette. (If recumbent, elevate and support opposite shoulder). Center humerus to cassette.

RESPIRATION: None

CENTRAL RAY: Perpendicular to midpoint of humerus.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 42.

LATERAL HUMERUS

PATIENT POSITION: Erect or supine.

PART POSITION: Unless contraindicated, slightly abduct the arm and center arm to cassette. Medially rotate shoulder until epicondyles are perpendicular to cassette.

RESPIRATION: None

CENTRAL RAY: Perpendicular to midpoint of humerus.

SHIELDING: Apply gonad shielding as appropriate.

Note: Radiography may also be obtained by placing a cassette against the lateral recumbent patient's thorax using a perpendicular central ray.

Reference: 3rd edition Pocket Guide to Radiography page 44.

TRANSTHORACIC LATERAL (PROXIMAL HUMERUS)

PATIENT POSITION: Erect or supine.

PART POSITION: Raise uninjured arm and rest on or beside head. Elevate uninjured shoulder as much as possible. Adjust patient to project humerus between vertebral column and sternum. Unless contraindicated, adjust humeral epicondyles perpendicular to cassette.

RESPIRATION: Full inspiration or during slow breathing.

CENTRAL RAY: Perpendicular to median coronal plane exiting surgical neck of affected humerus. If patient can not elevate unaffected shoulder, the central ray may be angled 10 to 15 degrees cephalic.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 46.

KNEE

Routine: AP and Lateral unless otherwise indicated.

AP KNEE

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Supine and with leg extended, adjust patient's body so pelvis is not rotated.

PART POSITION: Center knee to cassette. Adjust leg so femoral condyles are parallel with film.

RESPIRATION: None

CENTRAL RAY: Enters a point .5 inch (1 cm) inferior to patellar apex. Depending on ASIS to table top measurement, direct the central ray: (1) Perpendicular for asthenic patient when measurement is between 19 and 24 cm; (2) 5 degrees cephalic for hypersthenic patient when measurement is greater than 24 cm; (3) 5 degrees caudal for asthenic patient when measurement is less than 19cm.

SHIELDING: Apply gonad shielding as appropriate.

Note: PA may be obtained with patient prone, knee centered and CR perpendicular exiting .5 inch below patellar apex.

Reference: 3rd edition Pocket Guide to Radiography page 96.

LATERAL KNEE

PATIENT POSITION: Turn onto affected side with knee flexed (usually 20 to 30 degrees).

PART POSITION: Flex and center knee by placing cassette approximately 1 inch (2.5 cm) distal to medial femoral condyles. Patella is perpendicular to film.

RESPIRATION: None

CENTRAL RAY: Perpendicular to joint space.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 100.

AP KNEE OBLIQUE (LATERAL ROTATION)

PATIENT POSITION: Supine with hip of unaffected side elevated. Extend affected knee.

PART POSITION: Externally rotate affected knee until 45 degree rotation is achieved. Center knee to cassette.

RESPIRATION: None

CENTRAL RAY: 5 degrees cephalic through knee joint entering at level just below patellar apex.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 102.

(MEDIAL ROTATION)

PATIENT POSITION: Supine with affected knee internally rotated and extended.

PART POSITION: Medially rotate knee until 45 degree rotation is achieved. Center knee to cassette.

RESPIRATION: None

CENTRAL RAY: 5 degrees cephalic through knee joint entering just below patellar apex.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 104.

PA AXIAL (TUNNEL) "NOTCH" also known as the HOLMBLAD METHOD

PATIENT POSITION: Kneeling on radiographic table with affected knee flexed 70 degrees from full extension.

PART POSITION: Center knee to cassette by placing at level of patellar. Knee flexed 70 degrees from full extension.

RESPIRATION: None

CENTRAL RAY: Perpendicular to long axis of lower leg entering midpopliteal area.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 106.

PA AXIAL (TUNNEL) also known as the CAMP-COVENTRY METHOD

PATIENT POSITION: Prone with hips equidistant from table.

PART POSITION: Flex affected knee 40 to 50 degrees and rest on suitable support. Adjust leg so there is no medial or lateral rotation.

RESPIRATION: None

CENTRAL RAY: Perpendicular to long axis of leg entering knee joint at popliteal depression. (CR angled 40 to 50 degrees from vertical).

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 108.

AP WEIGHT-BEARING KNEE

PATIENT POSITION: Upright facing x-ray tube with weight equally distributed on feet.

PART POSITION: Adjust center of film at level of patellar apices. Point toes straight ahead and slightly separate knees.

RESPIRATION: None

CENTRAL RAY: Horizontal and perpendicular to cassette entering midway between knees at level of patellar apices.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 98.

LEG (LOWER) TIBIA AND FIBULA

Routine: AP and Lateral unless otherwise indicated.

AP LEG

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Supine with leg extended.

PART POSITION: Center leg to cassette and adjust leg so femoral condyles are parallel to cassette and foot is vertical; ankle flexed to 90 degrees. Both joints should be included.

RESPIRATION: None

CENTRAL RAY: Perpendicular to midpoint of leg.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 92.

LATERAL LEG

PATIENT POSITION: Supine and lying on affected side.

PART POSITION: Center leg to cassette. Adjust leg to lateral position (patella perpendicular). Both joints should be included.

RESPIRATION: None

CENTRAL RAY: Perpendicular to midpoint of leg.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 94.

LUMBAR VERTEBRAE

Routine: AP, Lateral, and L5-S1 Spot unless otherwise indicated.

AP LUMBAR VERTEBRAE

PATIENT POSITION: Supine. Flex hips and knees for patient comfort and to reduce lumbar lordosis.

PART POSITION: Median sagittal plane centered to grid. Flex knees and hips enough to place back in firm contact with table. Center cassette at level of crests of ilia (L4).

Note: This view can also be performed while standing.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular to midline entering level of crests of ilia.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 162.

LATERAL LUMBAR VERTEBRAE

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Lateral with hips and knees flexed.

Note: This view can also be performed while standing.

PART POSITION: Center median coronal plane of body and L4 to grid. Extend arms forward. Place radiolucent support under lower thorax and adjust spine parallel to table. Check for true lateral position.

RESPIRATION: Suspended expiration.

CENTRAL RAY: Perpendicular to cassette entering median coronal plane at level of crest of ilia.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 164.

LATERAL L5-S1 (SPOT) LUMBAR VERTEBRAE

PATIENT POSITION: Lateral with hips and knees extended or slightly flexed.

PART POSITION: Center 1.5 inches (4 cm) posterior to median coronal plane and 1.5 inches (4 cm) below crest of ilium. Extend arms forward. Place radiolucent support under lower thorax and adjust spine parallel to table. Check for true lateral position.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular to L5 at a point 1.5 inches (4 cm) anterior to palpated spinous process of L5 (or 1.5 inches [4 cm] posterior to median coronal plane) and 1.5 inches (4 cm) inferior to crest of ilium. Central ray should parallel interiliac line; caudal or cephalic angulation of 5 to 7 degrees may be required. Collimate tightly.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 166.

AP OBLIQUE LUMBAR VERTEBRAE (RPO AND LPO)

PATIENT POSITION: Posterior oblique; side closest to cassette is side of interest.

PART POSITION: Adjust and support body obliquity to 45 degrees. Adjust arms to a comfortable position and center spine to midline of grid. Center cassette at level of L3. Take both side obliques.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular to L3 (1 to 1.5 inches [2.5 to 4 cm] above level of crests of ilia) entering the elevated side approximately 2 inches (5 cm) lateral to the midline.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 168.

LUMBAR VERTEBRAE FLEXION AND EXTENSION

PATIENT POSITION: Standing in lateral position.

PART POSITION: While keeping median sagittal plane centered to grid, ask patient to:

- (1) Bend as far forward as possible to place lumbar vertebrae in flexion position. Expose film.
- (2) Bend backward as much as possible to place lumbar vertebrae in the extension position. Expose second cassette.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular to cassette entering L3-4 space. 40 inches SID recommended.

SHIELDING: Apply gonad shielding as appropriate.

MANDIBLE

Routine: PA, Townes, Oblique Rt. and Lt., and SMV unless otherwise indicated.

PA MANDIBLE FOR RAMI

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Seated erect or prone.

PART POSITION: Rest forehead and nose on grid device. Adjust head so median sagittal plane is perpendicular to cassette. Center cassette at tip of nose to demonstrate mandibular rami.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular exiting the acanthion.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 328.

AXIOLATERAL OBLIQUE MANDIBLE

PATIENT POSITION: Seated erect or semiprone.

PART POSITION: Adjust cassette under affected cheek with mouth closed and teeth together. Extend neck to place long axis of mandibular body parallel with cassette. Center to first molar region. Adjust broad surface of mandibular body parallel with cassette.

RESPIRATION: Suspended.

CENTRAL RAY: Enters slightly posterior to mandibular angle farthest from film exiting first molar at 25 degrees cephalic angle.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 332.

NASAL BONES

Routine: Waters, Lateral Rt. And Lt. unless otherwise indicated.

LATERAL NASAL BONES

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Seated erect or semiprone.

PART POSITION: Center nasion to cassette. Adjust median sagittal plane parallel to cassette. IOML parallel with transverse axis of cassette. IPL perpendicular to cassette.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular entering $\frac{3}{4}$ inch (2 cm) distal to nasion. Use close collimation.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 32.

ORBITS

Routine: PA 30 Degrees caudal, Rt. and Lt. Lateral unless otherwise indicated.

PA ORBITS (30 DEGREE CAUDAL)

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Seated erect or prone.

PART POSITION: Place patient's nose and forehead on cassette. Tuck chin – OML perpendicular to film and midsagittal plane perpendicular to midline of cassette. No head rotation and/ or tilt. Center cassette to orbital rims.

RESPIRATION: Suspended.

CENTRAL RAY: Angle 30 degrees caudal exiting at the level of orbital rims.
SID 36 inches and 35 inches if table top.

SHIELDING: Apply gonad shielding as appropriate.

LATERAL ORBITS (BILATERAL)

PATIENT POSITION: Seated erect or prone.

PART POSITION: Place patient's lateral side of face against cassette. Midsagittal plane parallel to film. IPL perpendicular to film IOML parallel to cassette.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular to table and centered to cassette. Center central ray to outer canthus of eye.

SHIELDING: Apply gonad shielding as appropriate.

OPTIC CANAL (FORAMEN) PARIETO-ORBITAL OBLIQUE

PATIENT POSITION: Seated erect or semiprone.

PART POSITION: Center affected orbit to cassette. Rest head on zygoma, nose, and chin. Adjust AML perpendicular to cassette. Rotate median sagittal plane 53 degrees from cassette.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular entering approximately 1 inch (2.5 cm) superior and 1 inch (2.5 cm) posterior to elevated top of the ear attachment exiting affected orbit. Use close collimation.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 310.

OPTIC CANAL (FORAMEN) ORBITOPARIETAL OBLIQUE

PATIENT POSITION: Seated erect or supine.

PART POSITION: Rotate head so median sagittal plane forms angle of 53 degrees to cassette. Center elevated orbit. Adjust flexion of neck so AML is perpendicular to cassette.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular entering inferior lateral quadrant of elevated orbit. Use close collimation.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 312.

PANOREX

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Seated erect or standing.

PART POSITION: Adjust height of chin rest until IOML is parallel with floor. Align midsagittal plane with vertical center line of chin rest. Position bite block between patient's front teeth. Instruct patient to place lips together and position tongue on roof of mouth (upper and lower teeth are slightly apart).

RESPIRATION: Suspended.

CENTRAL RAY: Fixed SID as per Panorex.

SHIELDING: Apply gonad shielding as appropriate.

PARANASAL SINUSES

Routine: PA Caldwell, Waters, SMV, and Lateral (collimate to sinuses) unless otherwise indicated.

PA PARANASAL SINUSES

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Seated erect. (Use horizontal central ray to demonstrate fluid level).

PART POSITION: Rest head on forehead and nose. Median sagittal plane perpendicular to midline of cassette. OML perpendicular to cassette.

RESPIRATION: Suspended.

CENTRAL RAY: Direct horizontal and perpendicular to cassette exiting nasion.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 348.

LATERAL PARANASAL SINUSES

PATIENT POSITION: Seated erect. (Use horizontal central ray to demonstrate fluid level).

PART POSITION: Center cassette $\frac{1}{2}$ to 1 inch (1 to 2.5 cm) posterior to outer canthus. Adjust head to true lateral position; median sagittal plane parallel and interpupillary line perpendicular to cassette. IOML adjusted parallel with transverse axis of cassette.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular entering $\frac{1}{2}$ to 1 inch (1.2 to 2.5 cm) posterior to outer canthus.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 340.

SUBMENTOVERTEX (SMV) PARANASAL SINUSES

PATIENT POSITION: Seated erect at head unit.

PART POSITION: Extend patient's head and rest on vertex. Center and adjust median sagittal plane perpendicular to cassette. Adjust IOML parallel with cassette.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular to IOML traversing sella turcica (entering the level approximately $\frac{3}{4}$ inch [2 cm] anterior to EAM).

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 346.

PA AXIAL PARANASAL SINUSES (CALDWELL METHOD)

PATIENT POSITION: Seated erect. (Use horizontal CR to demonstrate fluid level).

PART POSITION: Tilt vertical grid device 15 degrees with the top moving toward patient's head. Rest head on forehead and nose. Median sagittal plane perpendicular to midline of cassette. OML perpendicular to cassette.

RESPIRATION: Suspended.

CENTRAL RAY: Direct horizontal, forming a 15 degree angle with the OML and cassette. CR exits nasion.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 342.

PARIETOACANTHIAL (WATERS) PARANASAL SINUSES

PATIENT POSITION: Seated erect. (Use horizontal central ray to demonstrate fluid level).

PART POSITION: Center and adjust median sagittal plane perpendicular to cassette and rest patient's head on extended chin. Adjust OML to form 37 degree angle to cassette. Mentomeatal line is approximately perpendicular to cassette. Open Mouth Option: have patient fully open mouth.

RESPIRATION: Suspended.

CENTRAL RAY: Horizontal and perpendicular to cassette exiting acanthion.
Open Mouth Option: passes through sphenoid sinus and exits open mouth.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 344.

PATELLA

Routine: PA, Lateral, and Sunrise unless otherwise indicated.

PA PATELLA

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Prone with knee extended.

PART POSITION: Center patella and adjust leg to be parallel with cassette plane (heel generally rotated 5 to 10 degrees laterally).

RESPIRATION: None

CENTRAL RAY: Perpendicular entering midpopliteal area.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 110.

LATERAL PATELLA

PATIENT POSITION: Lying on affected side.

PART POSITION: Adjust affected knee to be flexed 5 to 10 degrees. Center cassette at anterior margin of medial femoral epicondyles. Adjust body rotation so patella is perpendicular to cassette.

RESPIRATION: None

CENTRAL RAY: Perpendicular entering anterior margin of medial femoral epicondyles. Collimate to patella.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 112.

SUNRISE (AXIAL PROJECTION) PATELLA

PATIENT POSITION: Supine with knee flexed 60-70 degrees.

PART POSITION: Place cassette above knee on distal femur; patient can hold cassette.

RESPIRATION: None

CENTRAL RAY: Angle central ray cephalic perpendicular to joint space between patella and femoral condyles. The degree of angulation will depend on the degree of flexion of the knee. 46" SID.

SHIELDING: Apply gonad shielding as appropriate.

TANGENTIAL (SETTEGAST) PATELLA

PATIENT POSITION: Prone with foot resting on table.

PART POSITION: Slowly flex affected knee until patella is perpendicular to cassette. Adjust leg so there is no medial or lateral rotation and immobilize.

RESPIRATION: None

CENTRAL RAY: Perpendicular to joint space between patella and femur. Degree of central ray angulation depends on degree of knee flexion.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 114.

PELVIS

Routine: AP unless otherwise indicated.

AP PELVIS

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Supine.

PART POSITION: Center median sagittal plane to grid, adjust so anterior superior iliac spines are equidistant from table. Internally rotate feet 15 degrees unless contraindicated. Center cassette approximately 2 inches (5 cm) superior to level of greater trochanter. Use gonad shielding as appropriate.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular to a point approximately 2 inches (5 cm) superior to symphysis pubis.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 128.

VIEWS (OBLIQUE VIEWS OF PELVIS)

PATIENT POSITION: Supine.

PART POSITION: Rotate body 45 degrees posterior oblique (RPO and LPO). Flex knee, the side elevated for support.

RESPIRATION: Suspended.

CENTRAL RAY: Central ray perpendicular to and directed to level of T7. 72 inch (180 cm) SID.

SHIELDING: Apply gonad shielding as appropriate.

INLET – OUTLET OF PELVIS

PATIENT POSITION: Supine.

PART POSITION: Align patient midsagittal plane to center of table (do not rotate pelvis). Rotate patient lower extremity 15-20 degrees if possible.

RESPIRATION: Suspended.

CENTRAL RAY: Angle central ray 30 degrees cephalic (Inlet) to the level of greater trochanters, align center of cassette to central ray (second exposure). Angle central ray 30 degrees caudal (Outlet) to the level of ASIS, align center of cassette to central ray (one exposure).

SHIELDING: Apply gonad shielding as appropriate.

RIBS

Routine: PA Chest, Rt. and Lt. Oblique, and below diaphragm chest unless otherwise indicated.

PA RIBS

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Erect or prone.

PART POSITION: Center median sagittal plane to grid with chin extended and looking straight ahead. Place top of cassette approximately 1 ½ inches (4 cm) above shoulders. Roll shoulders forward and rest posterior hands on hips.

RESPIRATION: Suspended full inspiration.

CENTRAL RAY: Perpendicular to median sagittal plane at level of T7.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 204.

AP RIBS

PATIENT POSITION: Erect or recumbent.

PART POSITION: Center median sagittal plane to midline of grid. **Above diaphragm:** center thorax to T7; with top of cassette 1 ½ inches (4 cm) above shoulder. Shoulders rotated anteriorly.

Below diaphragm: center thorax with bottom of cassette at level of crests of ilia.

RESPIRATION: Suspended full expiration.

CENTRAL RAY: Perpendicular to median sagittal plane at level of T7 for upper ribs; T12 for lower ribs.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 206.

AP OBLIQUE RIBS (RPO OR LPO)

PATIENT POSITION: Erect or recumbent.

PART POSITION: Rotate body 45 degrees with the affected side toward cassette. Center a plane midway between median sagittal plane and lateral surface of body to center of grid. Abduct arm nearest cassette and place hand on head. Abduct opposite limb and place hand on hip.

RESPIRATION: Above diaphragm: suspended full inspiration. Below diaphragm: suspended full expiration.

CENTRAL RAY: Perpendicular to cassette midway between median sagittal plane and lateral border of affected ribs at the level of (1) T7 for upper ribs and (2) T10 for lower ribs.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 208.

SACROILIAC JOINTS

Routine: AP Pelvis and Both Obliques unless otherwise indicated.

AP OBLIQUE (RPO AND LPO) SACROILIAC JOINTS

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Supine and lying on unaffected side.

PART POSITION: Elevate and support side of interest 10 degrees from table. Align sagittal plane passing 1 inch (2.5 cm) medial to elevated ASIS and center to grid. Take both side obliques.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular to cassette 1 inch (2.5 cm) medial to elevated ASIS.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 172.

SACRUM

Routine: AP 15 Degrees cephalic angle and Lateral view unless otherwise indicated.

AP SACRUM

PATIENT POSITION: Supine.

PART POSITION: Center median sagittal plane to center of grid.

RESPIRATION: Suspended.

CENTRAL RAY: 15 degrees cephalic entering median sagittal plane midway between levels of symphysis pubis and ASIS.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 174.

LATERAL SACRUM

PATIENT POSITION: Lateral with hips and knees flexed.

PART POSITION: Support body to place long axis of spine horizontal. Align coronal plane passing 3 inches (8 cm) posterior to median coronal plane and center of midline of grid.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular to cassette entering 3 inches (8 cm) posterior to median coronal plane at level of ASIS.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 176.

SACRUM AND COCCYX

LATERAL SACRUM

Refer to lateral sacrum view

AP AXIAL COCCYX

Refer to AP Axial Coccyx view

SCAPULA

Routine: AP and Lateral unless otherwise indicated.

AP SCAPULA

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Supine or upright. (Upright preferred when shoulder is tender).

PART POSITION: Abduct arm to a right angle to body, flex elbow, and support hand. Center palpated scapular area to cassette; approximately 2 inches (5 cm) inferior to coracoid process.

RESPIRATION: Expose during quiet breathing.

CENTRAL RAY: Perpendicular to cassette at midscapular area approximately 2 inches (5 cm) inferior to coracoid process.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 60.

LATERAL SCAPULA

PATIENT POSITION: Prone oblique or upright. (Upright preferred when shoulder is tender).

PART POSITION: Oblique patient with affected scapula centered to cassette. Extend affected arm across anterior or posterior thorax to demonstrate body of scapula. Palpate medial and lateral borders of scapula and adjust body rotation so scapula is lateral and will be projected free of rib cage.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular to cassette and directed to medial border of protruding scapula.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 62.

SELLA TURCICA

Routine: Lateral, Townes, and PA 10 Degrees cephalic unless otherwise indicated.

Note: Refer to Skull view for Townes and PA (collimate).

LATERAL SELLA TURCICA

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Seated erect or semiprone.

PART POSITION: Center a point $\frac{3}{4}$ inch (1.8 cm) superior and $\frac{3}{4}$ inch (1.8 cm) anterior to EAM to cassette. Median sagittal plane parallel to cassette. IOML parallel with transverse axis of cassette. IPL perpendicular to cassette.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular entering $\frac{3}{4}$ inch (1.8 cm) superior and $\frac{3}{4}$ inch (1.8 cm) anterior to EAM.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 308.

SHOULDER

Routine: AP, (Int. & Ext.) Lateral, and Axillary unless otherwise indicated.

Note: Transthoracic view if unable to see proximal humeral head.

AP SHOULDER (EXTERNAL ROTATION)

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Erect or supine.

PART POSITION: Center a point 1 inch (2.5 cm) inferior and 1 inch (2.5 cm) medial to coracoid process to cassette. Rotate patient slightly to place affected scapula parallel with cassette. Adjust hand in: (1) external rotation to obtain AP projection of humerus, (2) neutral rotation, or (3) internal rotation for lateral image of humerus.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular to a point 1 inch (2.5 cm) inferior and 1 inch (2.5 cm) medial to coracoid process.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 48.

AP SHOULDER (INTERNAL ROTATION)

PATIENT POSITION: Supine or erect.

PART POSITION: Shoulder aligned to midline of table top or cassette. Rotate patient slightly toward side to interest. Rotate arm internally (pronate hand) placing epicondyles of humerus perpendicular to table top or cassette.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular to cassette or table top, centered to coracoid process.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 48.

PA OBLIQUE (SCAPULAR Y) SHOULDER

PATIENT POSITION: Erect or prone oblique. Erect preferred when shoulder is tender.

PART POSITION: Center anterior surface of affected shoulder to cassette and rotate patient so median coronal plane forms 60 degree angle from cassette.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular to shoulder joint at level of scapulohumeral joint.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 52.

INFEROSUPERIOR AXIAL (AXILLARY) SHOULDER

PATIENT POSITION: Supine with head, affected shoulder and elbow elevated 3 to 4 inches (7.5 to 10 cm).

PART POSITION: Abduct affected arm 90 degrees from body. Keep arm in external rotation and support on pillow or sandbags. Place cassette above shoulder as close to neck as possible. Turn head away from side being examined.

RESPIRATION: Suspended.

CENTRAL RAY: Horizontal through axilla to exit region of acromioclavicular joint. Direct 15 to 30 degrees medially if patient is unable to abduct arm 90 degrees.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 50.

SKULL

Routine: PA Caldwell, Townes, and Rt. & Lt. Lateral unless otherwise indicated.

AP SKULL

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Supine.

PART POSITION: Median sagittal plane and OML perpendicular to cassette. Arms by sides or across chest.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular entering median sagittal plane at nasion.

Reference: 3rd edition Pocket Guide to Radiography page 296.

AP AXIAL (TOWNE METHOD) SKULL

PATIENT POSITION: Seated erect or supine.

PART POSITION: Center median sagittal plane to midline of grid device and adjust to be perpendicular. Flex neck and adjust OML perpendicular to cassette. Place top of film at level of cranial vertex.

RESPIRATION: Suspended.

CENTRAL RAY: Direct through foramen magnum with caudal angle of (1) 30 degrees to OML, or (2) 37 degrees to IOML. Central ray enters approximately 2 to 2 ½ inches (5 to 7 cm) superior to glabella.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 302.

SUBMENTOVERTEX (BASAL) SKULL

PATIENT POSITION: Seated erect at head unit or supine on elevated table support.

PART POSITION: Extended patient's neck and rest head on vertex. Center and adjust median sagittal plane perpendicular to cassette. Adjust IOML parallel with plane of cassette.

RESPIRATION: Suspended.

CENTRAL RAY: Direct through sella turcica perpendicular to IOML entering between angles of mandible.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 306.

LATERAL SKULL

PATIENT POSITION: Seated erect or semiprone.

PART POSITION: Center a point 2 inches (5 cm) superior to EAM to cassette. Median sagittal plane parallel to cassette. IOML parallel with transverse axis of cassette. IPL perpendicular to cassette.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular entering 2 inches (5 cm) superior to EAM for survey exam. When sella turcica is of primary interest, cassette is centered and central ray enters $\frac{3}{4}$ inch (2 cm) superior and $\frac{3}{4}$ inch (2 cm) anterior to EAM.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 298.

TRAUMA (CROSS-TABLE) LATERAL SKULL

PATIENT POSITION: Supine.

PART POSITION: Head supported on sponge with side of interest closest to cassette. Median sagittal plane parallel and IPL perpendicular to cassette.

RESPIRATION: Suspended.

CENTRAL RAY: Horizontal and perpendicular to cassette entering 2 inches (5 cm) superior to EAM.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 300.

PA OR PA AXIAL (CALDWELL METHOD) SKULL

PATIENT POSITION: Seated erect or prone.

PART POSITION: Head resting on forehead and nose. Median sagittal plane perpendicular to midline of grid device. OML perpendicular to cassette.

RESPIRATION: Suspended.

CENTRAL RAY: (1) PA: perpendicular to cassette exiting nasion to examine frontal bone, or (2) Caldwell method: direct 15 degrees caudal to OML exiting nasion for survey examination.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 294.

PA AXIAL (HAAS METHOD) SKULL

PATIENT POSITION: Seated erect or prone.

PART POSITION: Rest head on forehead and nose. Place arms in comfortable position. Adjust shoulders to lie in same transverse plane. Adjust head so median sagittal plane and OML are perpendicular to cassette.

RESPIRATION: Suspended.

CENTRAL RAY: 25 degrees cephalic entering 1 ½ inches (3.7 cm) inferior to external occipital protuberance (inion) and exiting 1 ½ inches (3.7 cm) superior to nasion.

SHIELDING : Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 304.

STERNOCLAVICULAR ARTICULATIONS (JOINT)

Routine: PA, RAO, and LAO unless otherwise indicated.

PA STERNOCLAVICULAR ARTICULATIONS

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Prone.

PART POSITION: Center cassette to spinous process of T3. Adjust median sagittal plane to midline of grid. Place arms along sides of body with palms facing upward. For bilateral examination, rest chin on table. For unilateral examination, turn head toward affected side and rest cheek on table.

RESPIRATION: Suspended expiration.

CENTRAL RAY: Perpendicular to T3.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 216.

PA OBLIQUE (RAO OR LAO) STERNOCLAVICULAR ARTICULATIONS

PATIENT POSITION: Prone or seated erect.

PART POSITION: Keeping the affected side adjacent to the film, rotate the body enough to project the vertebral shadow posterior to the dependent sternoclavicular joint. Center the joint to the grid.

RESPIRATION: Suspended.

CENTRAL RAY: Perpendicular to dependent sternoclavicular joint.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 218.

STERNUM

Routine: RAO and Lateral unless otherwise indicated.

RAO STERNUM

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Prone position for RAO (right PA oblique).

PART POSITION: Center sternum to grid. Rotate body 15 to 20 degrees to prevent superimposition of vertebral and sternal images.

RESPIRATION: Shallow breathing or suspended expiration.

CENTRAL RAY: Perpendicular exiting midsternum. Enters elevated side of posterior thorax approximately 1 inch (2.5 cm) lateral to the median sagittal plane (level of T7).

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 212.

LATERAL STERNUM

PATIENT POSITION: Seated or standing lateral position or recumbent lateral.

PART POSITION: Top of cassette 1.5 inches (4 cm) above jugular (manubrial) notch. Shoulders and arms rotated posterior for erect positioning, arms above head for recumbent positioning. Center sternum to grid. Adjust to true lateral position.

RESPIRATION: Suspended full inspiration.

CENTRAL RAY: Perpendicular to center of midsternum at the level of the seventh thoracic vertebra. 72 inches (180 cm) SID is recommended to reduce sternal magnification.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 214.

TEMPOROMANDIBULAR JOINTS (TMJs)

Routine: Bilateral Axialateral Oblique with open and closed mouth unless otherwise indicated.

AP AXIAL TMJs

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Seated erect or supine.

PART POSITION: Center cassette to median sagittal plane at a point directly inferior to TMJs. Adjust head so median sagittal plane is perpendicular to cassette. Flex neck to place OML perpendicular to cassette. After first exposure with mouth closed and not permitting patient to move, change cassette and make second exposure with mouth fully open.

RESPIRATION: Suspended.

CENTRAL RAY: 35 degrees caudal centered to TMJs, entering approximately 3 inches (7.5 cm) superior to nasion.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 336.

AXIOLATERAL OBLIQUE TMJs

PATIENT POSITION: Seated erect or semiprone.

PART POSITION: Center a point ½ inch (1.2 cm) anterior to EAM to cassette. Median sagittal plane angled 15 degrees (nose toward film). AML adjusted parallel with transverse axis of cassette. IPL perpendicular to cassette. After first exposure with mouth closed and not permitting patient to move, change cassette and make second exposure with mouth fully open.

RESPIRATION: Suspended.

CENTRAL RAY: Direct 15 degrees caudal exiting dependent TMJ.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 338.

THORACIC VERTEBRAE

Routine: AP and Lateral unless otherwise indicated.

AP THORACIC VERTEBRAE

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Erect, Recumbent or supine.

PART POSITION: Median sagittal plane centered to cassette. Top of film 1 ½ to 2 inches (4 to 5 cm) above shoulders. Arms by sides, shoulders in same plane. Flex hips and knees to reduce dorsal kyphosis.

RESPIRATION: Shallow, or suspended expiration.

CENTRAL RAY: Perpendicular to T7 (3 to 4 inches [7.5 to 10 cm] distal to jugular [manubrial] notch).

SHIELDING: Apply gonad shielding as appropriate.

NOTE: For weight-bearing view position the patient the same except the patient is standing.

Reference: 3rd edition Pocket Guide to Radiography page 158.

LATERAL THORACIC VERTEBRAE

PATIENT POSITION: Lateral recumbent or erect.

PART POSITION: Adjust median coronal plane perpendicular to grid. Elevate head to spine level. Extend arms forward. Place radiolucent support under lower thoracic region until spine is horizontal to table top.

RESPIRATION: Shallow, or suspended, expiration.

CENTRAL RAY: Perpendicular to median coronal plane at level of T7 (approximately 3 inches [7.5 cm] below sternal angle).

SHIELDING: Apply gonad shielding as appropriate.

NOTE: For weight-bearing view position the patient the same except the patient is standing.

Reference: 3rd edition Pocket Guide to Radiography page 160.

TOES

Routine: AP and Oblique unless otherwise indicated.

AP AXIAL TOES

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Supine or seated on table, knees flexed with feet separated.

PART POSITION: Center toes with plantar surface flat against cassette.

RESPIRATION: None

CENTRAL RAY: 15 degrees posterior to demonstrate joint spaces. Central ray enters second metatarsophalangeal joint. Perpendicular central ray may be used when joint spaces not critical.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 68.

LATERAL TOES

PATIENT POSITION: Lying on unaffected side. Use gauze, tape, or other positioning aid to separate toes.

PART POSITION: Adjust foot to place affected toe parallel with film and in true lateral position. (Occlusal film may be used by placing it, pebbled surface up, between toes).

RESPIRATION: None

CENTRAL RAY: Perpendicular to metatarsophalangeal joint of great toe or proximal interphalangeal joint of lesser toes.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 72.

AP OBLIQUE (MEDIAL ROTATION) TOES

PATIENT POSITION: Supine or seated on table, knees flexed with feet separated.

PART POSITION: Center toes over cassette area and medially rotate leg and foot until a 30 to 45 degree angle is formed from cassette to plantar surface of foot.

RESPIRATION: None

CENTRAL RAY: Perpendicular entering third metatarsophalangeal joint.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 70.

WRIST

**Routine: PA, Oblique, and Lateral unless otherwise indicated.
Navicular Series: PA, Oblique, and Lateral Ulnar Flexion view.**

PA WRIST

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Seated at end of table with axilla in contact with table. Forearm resting on table.

PART POSITION: Center wrist to cassette area. Flex digits slightly to place wrist in contact with cassette.

RESPIRATION: None

CENTRAL RAY: Perpendicular to metacarpal area.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 20.

LATERAL WRIST

PATIENT POSITION: Elbow flexed 90 degrees with forearm and arm in contact with table.

PART POSITION: Center carpals and adjust hand so wrist is in lateral position.

RESPIRATION: None

CENTRAL RAY: Perpendicular to wrist joint.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 22.

PA OBLIQUE WRIST

PATIENT POSITION: Seated at end of table with axilla in contact with table. Rest anterior surface of wrist on cassette.

PART POSITION: Center wrist to cassette area. From true PA, rotate wrist approximately 45 degrees laterally (externally) and support on sponge.

RESPIRATION: None

CENTRAL RAY: Perpendicular to cassette entering metacarpal area just distal to radius.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 24.

PA NAVICULAR SERIES (SCAPHOID) WRIST

PATIENT POSITION: Elbow flexed 90 degrees with forearm and arm in contact with table.

PART POSITION: Center wrist to cassette area. Have patient place wrist in extreme ulnar flexion.

RESPIRATION: None

CENTRAL RAY: Perpendicular to scaphoid. **Option** to delineate fracture may require angulations of 10 to 15 degrees proximally (toward elbow) or distally. Another approach is to elevate distal end of cassette approximately 20 degrees.

SHIELDING: Apply gonad shielding as appropriate.

Reference: 3rd edition Pocket Guide to Radiography page 26.

ARTHROGRAMS

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES:

Arthrogram Tray

Omnipaque 300

Sterile pen and labels

Alcohol prep

18G 1 ½ inch needle

20G 2 ½ inch needle

25G 1 ½ inch needle

20cc syringe

20 inch extension tubing

Sterile 4x4's

Hemostats

Sharpie

Sterile gloves (Ask Radiologist for size)

Lidocaine 1%

Sodium Bicarbonate

PREPARATIONS:

Properly dress patient for the exam.

No scout films.

Place mattress pad on table and cover with a sheet.

Set control panel to SIRESKOP DFR.

Set program to Arthro/ 2k.

Make sure fluoro. Time is zero.

Select patient name from work list and select Acquisitions Processing on control panel.

PROCEDURE:

Radiologist will take all images.

No post procedure films.

Assist Radiologist during procedure.

After the procedure is completed instruct the patient to get dressed.

NOTE: AFTER EXAM IS COMPLETE PLEASE DOCUMENT FLUORO. TIME.

BONE AGE ABOVE THE AGE OF 2 YEARS

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Seated at end of radiographic table.

PART POSITION: Left hand to include the wrist is positioned for PA projection. Forearm resting on the table with palmar surface firmly against cassette.

CENTRAL RAY: Perpendicular to mid point of hand.

SHIELDING: Apply gonad shielding as appropriate.

BONE AGE UNDER THE AGE OF 2 YEARS

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

2 VIEWS:

- (1) AP SHOULDER TO WRIST
- (2) AP HIP TO ANKLE

AP SHOULDER TO WRIST

PATIENT POSITION: Supine.

PART POSITION: Supinate hand and adjust humerus with epicondyles parallel with cassette. Adjust hand in external rotation to obtain AP projection. Make sure the shoulder to include the wrist is being radiographed.

RESPIRATION: Suspended if possible.

CENTRAL RAY: Perpendicular to elbow joint.

SHIELDING: Apply gonad shielding as appropriate.

AP HIP TO ANKLE

PATIENT POSITION: Supine.

PART POSITION: Supine.

PART POSITION: Center femur to midline of grid. Internally rotate lower limb Approximately 15 degrees. Make sure all three joints are included and that the hip to include the ankle is being radiographed.

RESPIRATION: None

CENTRAL RAY: Perpendicular to knee joint.

SHIELDING: Apply gonad shielding as appropriate.

EXTREMITY FOR INFANTS

Bilateral Upper Extremity for infants

Refer to the Bone Age exam for the upper extremity and include the lateral views.

Bilateral Lower Extremity for infants

Refer to the Bone Age exam for the lower extremity and include the lateral views.

FETALGRAM

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PREPARATIONS:

This exam is usually a portable image.

Use a 14x17 cassette.

PROCEDURE:

Place the infant's entire body supine centered to the cassette.

Take one x-ray of the infant to include the entire body.

LONG BONE SURVEY

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PREPARATIONS:
6 – 14X17 cassettes.

PROCEDURE:
An AP view of the long bones to include both joints.

Note: The long bones are the humerus, forearm, femur, and tibia/fibula.

SHIELDING: Apply gonad shielding as appropriate.

METASTATIC BONE SURVEY

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PREPARATIONS:

Properly dress the patient removing all artifact.

1 10x12 cassette.

5 14x17 cassettes.

PROCEDURE:

1 view Lateral Skull.

AP and Lateral view of Thoracic and Lumbar spine combined centering at approximately the level of T10.

AP Pelvis.

AP view of bilateral Humerus to include the shoulder and ribs.

SHIELDING: Apply gonad shielding as appropriate.

PEDI SKELETAL SURVEY

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PREPARATIONS:

Multiple x-ray cassettes needed depending on patient age and size.

PROCEDURE:

AP and Lateral view of the Skull.

AP and Lateral view of the Cervical Spine

AP and Lateral view of the Thoracic and Lumbar spine combined centering at approximately the level of T10.

AP Chest.

KUB to include the pelvis.

Upper Extremities – AP view to include the entire shoulder down to the hand (make sure all joints are included).

Lower Extremities – AP view to include the entire hip down to the ankle (make sure all joints are included).

SHIELDING: Apply gonad shielding as appropriate.

RADIAL HEAD SERIES

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Seated

PART POSITION: Flex elbow 90 degrees and center to cassette. Then image each position:

1. Hand supinated as much as possible.
2. Hand in lateral position with thumb up.
3. Hand pronated.
4. Hand in extreme internal rotation (resting on thumb surface).

RESPIRATION: Normal.

CENTRAL RAY: Perpendicular to elbow joint.

SHIELDING: Apply gonad shielding as appropriate.

SCOLIOSIS STUDY

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PROCEDURE: Make sure patient is arrived in the computer.

PATIENT POSITION: Seated or Erect.

PART POSITION: Align midsagittal plane to midline of table. Make sure the patient is not rotated. Position the lower margin of the cassette 1 inch below iliac crest.

RESPIRATION: Suspend breathing on expiration.

CENTRAL RAY: Perpendicular to mid point of film at the level of T12. 40 inch SID. Collimate 3 inches within each lateral margin of the film.

SHIELDING: Apply gonad shielding as appropriate.

SCOLIOSIS OR LONG BONE STUDY

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES: None

PREPARATIONS:

Place 300cm grid in the bucky.

Select patient study long leg or scoliosis.

Position tube at 300cm distance.

Set technique.

Dress patient properly for exam.

RESPIRATION: Suspended.

PROCEDURE:

Center patient to midline of cassette, collimate. If the exam is scoliosis collimate to spine. If the exam is long bone collimate to bone of interest.

During exposure hold the exposure button down until exposure is complete. For the positioning of scoliosis and long bone views refer to documentation under Departmental Studies/ Surveys in the Table of Contents.

SHIELDING: Apply gonad shielding as appropriate.

Stitching Images for Scoliosis or Long Bone

Go to Composing folder (far right).

Open Browser and highlight the patient's folder.

Hold "Control" and highlight the images you want to stitch together.

If they are not in anatomical order, choose the "sort" tab at top and choose "anatomical".

Move the highlighted images out of the browser by clicking on them with the mouse. Surveys in the Table of Contents.

A new window will appear. Choose the correct icon at the top (a picture of a spine for scoliosis, or a picture of legs for long bone).

Wait for the composition.

Save (button at bottom right, the icon will look like a small picture of a face).

SHUNT SERIES

The Shunt Series is a combination of three different views. AP and lateral skull, chest, and abdomen. Refer to the diagnostic procedures for procedural protocol.

SHIELDING: Apply gonad shielding as appropriate.

GASTROINTESTINAL (GI)

BARIUM ENEMA AIR CONTRAST

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES:

EZAC Barium

Air Contrast Barium Enema Bag

Cuff Inflator

Blue Air Bulb

Hemostats

Gloves

K-Y Jelly

4x4 Gauze

IV pole

Grid (14x17) – ready for cross-table decubitus films

PREPARATIONS:

Properly dress the patient for the exam removing all artifact.

KUB Scout Film and show Radiologist.

Pour 1000cc's of EZ AC Barium in Air Contrast BE Bag
Attach a cuff inflator and Blue Air Bulb and hang on IV pole
Patient on table.
Set control panel to SIRESKOP DFR.
Set program to BE/AIR.
Make sure fluoro. time is zero.
Select patient name from work list and select Acquisitions Processing on control panel.

PROCEDURE:

Radiologist will insert tip and give instruction when the contrast needs to be on and off.
Radiologist will take spot films.
Overhead films: Rt. & Lt. Decubitus Abd., cross-table lateral rectum, and PA Slant. Occasionally the Radiologist will request RPO and LPO films.
After the procedure is completed instruct the patient to get dressed.
After the procedure is complete the Radiologist will review the films and end the exam or ask for additional views. If the exam is complete remove the tip from the patient's rectum and assist the patient to the restroom.

NOTE: AFTER EXAM IS COMPLETE PLEASE DOCUMENT FLUORO. TIME.

BARIUM ENEMA-SOLID CONTRAST OR HYPAQUE CONTRAST

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES:

1 Barium Enema bag

Note: Ask Radiologist to specify which bag they prefer, balloon tip or straight tip.

4x4 Gauze

KY Jelly

Balloon cuff extender

Hemostats

EZ AC Barium or Hypaque sodium powder

IV pole (to hang bag)

IF THE EXAM IS A SOLID CONTRAST BARIUM ENEMA POUR 1000CC's OF EZAC INTO A BAG THEN FILL THE BAG WITH WATER. SHAKE THE BAG TO MIX THE SOLUTION.

IF THE EXAM IS A HYPAQUE ENEMA GET TWO LARGE CUPS. ADD WARM WATER AND HYPAQUE POWDER IN ONE CUP AND USE THE OTHER CUP TO POUR BACK AND FORTH MIXING THE BARIUM. MIX THE TWO (WATER AND POWDER) UNTIL ALL THE POWDER IS DISSOLVED THEN POUR THE MIXTURE INTO A BAG AND FILL THE BAG WITH WATER.

PREPARATIONS:

Properly dress the patient for the exam removing all artifact.

KUB Scout Film and show Radiologist.

Set control panel to SIRESKOP DFR.

Set program to BE/AIR.

Make sure fluoro. time is zero.

Select patient name from work list and select Acquisitions Processing on control panel.

PROCEDURE:

Radiologist will insert tip and give instruction when the contrast needs to be on and off.

Radiologist will take spot films.

Sometimes the Radiologist does not want overhead films. If this should occur the Radiologist will inform the Technologist.

If the Radiologist request overhead films take an AP, RAO, LAO, PA Slant or AP Slant (depending on patient condition), and a Left Lateral Rectum. Unless otherwise instructed.

After the procedure is complete the Radiologist will review the films and end the exam or ask for additional views. If the exam is complete remove the tip from the patient's rectum and assist the patient to the restroom.

NOTE: AFTER EXAM IS COMPLETE PLEASE DOCUMENT FLUORO. TIME.

BARIUM SWALLOW EXAM

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES:

2 Bottles of Baricon (Mix with 1 ½ tubes water)

2 Baros (Fizzes)

2 Medicine cups (one with water)

Cup

Straw

PREPARATIONS:

Properly dress the patient for the exam removing all artifact.

Stand table upright.

Patient prep and on table.

Apply gonad shielding as appropriate.

No scout films.

Set control panel to SIRESKOP DFR.

Set program to BA SW 3/sec.

Make sure fluoro. time is zero.

Select patient name from work list and select Acquisitions Processing on control panel.

PROCEDURE:

Radiologist will take all images.

No overhead films.

After the procedure is completed instruct the patient to get dressed.

NOTE: AFTER EXAM IS COMPLETE PLEASE DOCUMENT FLUORO. TIME.

CINE ESOPHAGRAM

Use Fluoro Room 1 or Room 4

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES:

2 Baricons

Cups

Straws

PREPARATIONS:

Properly dress the patient remove all artifact.

Apply gonad shielding as appropriate.

Thick Barium: Mix one Barium with 1 tube of water.

Thin Barium: Mix one Barium with 2 tubes of water.

Stand Table up and Remove Fluoro Drape.

Sit the patient on foot board or in "special chair" depending on patient condition.

Slide the bucky up to the top of the table.

Speech Pathology will bring the food to mix with the Barium.

Turn on VCR and small video monitor (Speech will bring the VCR tape).

Set control panel to SIRESKOP DFR.
Set program to DFRHYSTERO2K.
Make sure fluoro. Time is zero.

PROCEDURE:

Technologist will fluoro for Speech Pathologist.
No overhead films after procedure.
No Radiologist present for exam.
After the procedure is completed instruct the patient to get dressed.

NOTE: AFTER EXAM IS COMPLETE PLEASE DOCUMENT FLUORO. TIME.

COLOSTOMY STUDY

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES:

Barium or Hypaque (ask Radiologist).

Solid Colum BE bag

Cone Colostomy tip

4x4's

KY Jelly

Plenty of towels

PREPARATIONS:

Barium: Pour 1000cc's of EZAC Barium in bag making sure the bag is closes clamped, then fill the bag with water.

Hypaque: Mix two large cups of Hypaque powder with water. Then pour the mixture in a bag and add more water until bag is full.

Note: If the Doctor request the rectum as the accessing site use the straight enema tip. However, if the Doctor prefer to access through the Colostomy us the Cone Colostomy tip.

Dress patient properly for exam.

Set control panel to SIRESKOP DFR.

Set program to BE/ AIR.

Make sure fluoro. Time is zero.

Select patient name from work list and select Acquisitions Processing on control panel.

PROCEDURE:

Radiologist will tip patient, fluoro, and take spot films.

After Radiologist completes exam technologist will take overhead films:

RAO, LAO, and AP.

Make sure Radiologist review overhead to ensure the exam is complete.

When Radiologist states the exam is complete ask the patient to go to the restroom and get dressed.

NOTE: AFTER EXAM IS COMPLETE PLEASE DOCUMENT FLUORO. TIME.

HYSTEROSALPINGOGRAM (HSG)

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES:

Hysterosalpingogram Procedure Tray

Omnipaque 300

Sterile specimen cup

Sterile gloves (size depending on Radiologist)

PREPARATIONS:

Place mattress pad on table with sheet on pad.

Place stirrups in position with a pillow case over stirrup.

Dress patient properly for exam.

Set control panel to SIRESKOP DFR.

Set program to DFRHYSTERO2K.

Make sure fluoro. Time is zero.

Select patient name from work list and select Acquisitions Processing on control panel.

PROCEDURE:

Radiologist will take all images.

No overhead films after procedure.

Assist Radiologist during procedure.

After the procedure is completed instruct the patient to get dressed.

NOTE: AFTER EXAM IS COMPLETE PLEASE DOCUMENT FLUORO. TIME.

SINOGRAM/ FISTULAGRAM

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES:

1 Bottle Omnipaque 300
Pedi feeding tube
60cc syringe
KY Jelly
Gauze

PREPARATIONS:

Properly dress the patient for the exam._
Position patient on table and prep patient (table flat).
Apply gonad shielding as appropriate.
Take a scout film over the area of interest.
Set control panel to SIRESKOP DFR.
Set program to UGI/AIR.
Make sure fluoro. time is zero.
Select patient name from work list and select Acquisitions Processing on control panel.

PROCEDURE:

Radiologist will take all images.

No overhead films after procedure.

After the procedure is completed instruct the patient to get dressed.

NOTE: AFTER EXAM IS COMPLETE PLEASE DOCUMENT FLUORO. TIME.

SMALL BOWEL SERIES

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES:

- 1 Bottle of Entervu well shaken
- 1 Big Cup
- 1 Straw

PREPARATIONS:

Properly dress the patient for the exam.

Patient prep and on table.

KUB Scout Film and show Radiologist.

Make sure fluoro. time is zero.

Set control panel to SIRESKOP DFR.

Set program to UGI/AIR.

Select patient name from work list and select Acquisitions Processing on control panel.

PROCEDURE:

Have patient drink Entervu. (patient needs to drink as fast as possible).

Every 30 min. take a PA Abd. film until contrast reaches colon.

Once the contrast has reached the colon notify Radiologist.

Radiologist will take a spot film of the TI.

After the procedure is completed instruct the patient to get dressed.

NOTE: AFTER EXAM IS COMPLETE PLEASE DOCUMENT FLUORO. TIME.

T-TUBE CHOLANGIOGRAM OR C-TUBE

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES:

- 1 Bottle Omnipaque 300
- 1 Butterfly needle
- 1 60cc syringe
- 20 inch extension set
- Hemostats
- 1 Alcohol prep

PREPARATIONS:

- Properly dress the patient for the exam.
- Patient prep and on table (table flat).
- Apply gonad shielding as appropriate.
- AP Scout RUQ centered to right upper quadrant.
- Set control panel to SIRESKOP DFR.
- Set program to ERCP/T-Tube.
- Set fluoro. time to zero.
- Select patient name from work list and select Acquisitions Processing on control panel.

PROCEDURE:

Radiologist will take all images.

No overhead films after procedure.

After the procedure is completed instruct the patient to get dressed.

NOTE: AFTER EXAM IS COMPLETE PLEASE DOCUMENT FLUORO. TIME.

UPPER GI EXAM (UGI)

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES:

2 Bottles of Baricon (Mix with 1 ½ tubes water)

2 Baros (Fizzes)

2 Medicine cups (one with water)

Cup

Straw

PREPARATIONS:

Properly dress the patient for the exam.

Stand table upright.

Patient prep and on table.

Apply gonad shielding as appropriate.

No scout films.

Set control panel to SIRESKOP DFR.

Set program to UGI/AIR.

Make sure fluoro. time is zero.

Select patient name from work list and select Acquisitions Processing on control panel.

PROCEDURE:

Radiologist will take all images.

No overhead films.

After the procedure is completed instruct the patient to get dressed.

NOTE: AFTER EXAM IS COMPLETE PLEASE DOCUMENT FLUORO. TIME.

VOIDING CYSTOURETHROGRAM (VCUG)

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES:

Cystografin x's 2

Foley Catheter Tray

Fluid Administration Set

10cc syringe

Cysto-aid - female

Urinal - male

PREPARATIONS:

Properly dress the patient for the exam.

Ask nurse to place a Foley Catheter.

Set control panel to SIRESKOP DFR.

Set program to VCUG.

Make sure fluoro. time is zero.

Select patient name from work list and select Acquisitions Processing on control panel.

Stand table up.

Dress patient properly for exam.

PROCEDURE:

Radiologist will take all images.

No overhead films after procedure.

Assist Radiologist during procedure.

After the procedure is completed instruct the patient to get dressed.

NOTE: AFTER EXAM IS COMPLETE PLEASE DOCUMENT FLUORO. TIME.

GENITOURINARY

ALLENOGRAM

Patient must have Suprapubic Tube (SPT) in place and clamped/ closed.

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES:

Cystographin 50cc's
Vented infusion tubing
50cc's omnipaque 300
Catheter tip syringe

PREPARATIONS:

Dress patient for exam.
Select film mode for the exam setting on the control panel.

PROCEDURE:

No Doctor is present for the exam.
Position the patient in LPO or RPO (30-35 degrees oblique).

Take a coned down image of the bladder and urethra.
Fill the patient's bladder to capacity with Cystographin.
Clean the urethral meatus with betadine wipes.
SPT is clamped/ closed and patient is instructed to void.
When bladder neck opens and patient tries to void inject contrast (50cc's omnipaque 300)
into urethra through a catheter tip syringe.
After the procedure is completed instruct the patient to get dressed.

Note: Usually patients scheduled for an Allenogram study most of the time have a known or suspected urethral disruption and can not void due to a blockage in the urethra. The purpose for this study is to measure the length of the stricture/ blockage by filling the urethra with contrast from the top (Antegrade) and from below (Retrograde). The length of the stricture helps the surgeon to plan the right type of surgical procedure.

NOTE: AFTER EXAM IS COMPLETE PLEASE DOCUMENT FLUORO. TIME.

ANTEGRADE PYELOGRAM (AGPG)

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES:

50cc's omnipaque 300 diluted with 50cc's of sterile water
Infusion tubing set

PREPARATIONS:

Dress the patient for the exam.
Select film mode for the exam setting on the control panel.
AP KUB scout image.
Prime the infusion tubing by connecting the tubing to the bottle of contrast.

PROCEDURE:

Disconnect the urinary bag from the Percutaneous Nephrostomy tube (PCN).
Connect the primed tubing and bottle of contrast to the PCN tube.
Run approximately 50cc to 60cc's of contrast under gravity into the kidney and take an AP KUB.
Take delayed abdominal films until all the contrast in the kidneys reach the bladder.

Note: If there is an obstruction contrast will not reach the bladder. In this case drain the contrast out of the kidney by connecting the tubing to the urinary bag under gravity.

Then take a post void abdominal film.

After the procedure is completed instruct the patient to get dressed.

NOTE: AFTER EXAM IS COMPLETE PLEASE DOCUMENT FLUORO. TIME.

CYSTOGRAM STATIC

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES:

Foley Catheter Tray

Cystografin 250cc bottle – 1

Vented Tubing – 1

Sterile water/ irrigation water

Catheter tip syringe – 1

Christmas tree adapter

IV pole

PREPARATIONS:

Dress the patient for the procedure.

Select film mode for the exam setting on the control panel.

Nurse will insert the Foley catheter.

Take an AP scout of bladder.

Connect vented tubing to Cystografin bottle and prime the tubing with contrast. Then hang the bottle on the IV pole and after the patient has a catheter placed prepare to connect to Foley catheter to the vented tubing with a Christmas tree adapter.

PROCEDURE:

Technologist will fill the patient's bladder with contrast until bladder is full.

Make sure to annotate a full bladder, amount, and type of contrast used on the image.

Technologist will take an AP film showing a full bladder. Then drain the bladder by first clamping off the catheter. Next, connect a urinary bag to the Foley catheter and unclamp the Foley catheter so the bladder can drain in to the urinary bag. After the bladder is empty take an AP film to show that the bladder has been emptied.

Make sure to annotate an empty bladder on the image.

In some cases the Radiologist will want to R/O Extravasations/ leak. If so, an AP post void image will need to be taken of the bladder (after irrigation of the bladder with sterile water by catheter tip syringe). After the procedure is completed instruct the patient to get dressed.

Trauma Cystogram - AP Scout, Doctor may request obliques and Post Void film. Otherwise follow the AP KUB imaging procedure.

CYSTOGRAM WITH OBLIQUES

This procedure is the same as the Cystogram static except that the left and right posterior oblique views are added. Roll the patient 30 to 35 degrees for each view. In addition, if the Radiologist is interested in R/O Extravasations/ Leak take an AP and Lateral view of the bladder emptied after irrigation.

After the procedure is completed instruct the patient to get dressed.

NOTE: AFTER EXAM IS COMPLETE PLEASE DOCUMENT FLUORO. TIME.

INTRAVENOUS PYELOGRAM (IVP)

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

NPO after midnight.

Creatinine within one month required for all patients.

Bowel prep for out patients.

SUPPLIES:

100cc's Omnipaque 300

60cc syringe – 2

18G needle – 1

150cc normal saline bag – 1

Infusion tubing – 1

PREPARATIONS:

Dress patient for the exam.

Select film mode for the exam setting on the control panel.

Nurse will start IV.

Technologist takes KUB and coned down view of kidneys.

Radiologist will review the scouts.

PROCEDURE:

After Radiologist has reviewed scouts and instructed Technologist to begin procedure. Technologist will inject 100cc's of omnipaque 300. Then take a coned down view of kidneys immediately after injection.

After 5 minutes take a KUB, at 10 minutes take a KUB plus bilateral shallow obliques.

Then show the images to the Radiologist and he or she may order additional views such as a prone KUB or more delayed films of the KUB.

When the Radiologist states the exam is complete take a post void KUB.

After the procedure is completed instruct the patient to get dressed.

Trauma IVP – AP scout, Doctor may request oblique views. Otherwise follow the AP KUB imaging procedure.

NOTE: AFTER EXAM IS COMPLETE PLEASE DOCUMENT FLUORO. TIME.

LOOP-O-GRAM

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES:

Foley Catheter Tray

50cc Omnipaque diluted with 50cc's of sterile water

Infusion tubing set

PREPARATIONS:

Dress patient for the exam.

Select film mode for the exam setting on the control panel.

AP KUB scout image.

PROCEDURE:

The nurse will take the urostomy bag off and place a catheter through the urostoma.

Technologist will inject approximately 50 to 70cc's of diluted contrast under gravity and take an AP KUB.

If there is no reflux, inject more contrast and take another AP KUB.

Note: If there is still no reflux of contrast into the kidneys, position the table in the Trendelenberg position for 5 minutes and take a KUB. Connect the Foley (catheter) to a urinary bag under gravity.

After draining the contrast out, take a post drain KUB.

* Absence of reflux on one side or both sides is a sign of obstruction on one side or both sides. However, in normal cases with patients with a urostomy, there will be reflux on both sides.

NOTE: AFTER EXAM IS COMPLETE PLEASE DOCUMENT FLUORO. TIME.

RETROGRADE PYELOGRAM (RGPG)

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES:

Sterile Cystoscope

Sterile Cystoscope Drapes

Irrigation water

Irrigation tubing

Betadine

Lubricant

Benson wire

Angiographic catheter

30% Omnipaque 300 (50cc's)

20cc syringe

PREPARATIONS:

Dress the patient for the exam.

Select film mode for the exam setting on the control panel.

Enter patient information.

Position the patient on table.

Nurse will clean the patient and put sterile drapes over the patient.

Nurse will set up Cystoscope.

PROCEDURE:

The Radiologist will place the Cystoscope (camera) through the urethra into the bladder and place the angio catheter into the ureteral orifice and inject contrast into the ureter and kidney.

The Radiologist will take fluoroscopic images to see if there are any stones which could be causing a filling defect or obstruction.

The Technologist and Nurse will assist the doctor during the procedure.

Saved fluoroscopic images will be sent to PACS by the Technologist.

After the procedure is completed instruct the patient to get dressed.

NOTE: AFTER EXAM IS COMPLETE PLEASE DOCUMENT FLUORO. TIME.

RETROGRADE URETHROGRAM (RUG)

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES:

50cc's Omnipaque 300
50cc Catheter tip syringe

PREPARATIONS:

Dress patient for the exam.

Select film mode for the exam setting on the control panel.

A coned down scout film of the bladder to include the urethra with the patient in either an LPO or RPO 30-35 degrees oblique position.

Draw up 50cc's Omnipaque 300 in a 50cc catheter tip syringe.

PROCEDURE:

The Radiologist or Technologist will inject the 50cc syringe of omnipaque.

When approximately 45cc's of contrast has been injected take a coned down image of the urethra and bladder.

Note: If this is a normal urethra study some of the contrast will reach the bladder to demonstrate the entire urethra and bladder neck.

After the procedure is completed instruct the patient to get dressed.

NOTE: AFTER EXAM IS COMPLETE PLEASE DOCUMENT FLUORO. TIME.

VOIDING CYSTOURETHROGRAM (VCUG)

For Male Patients

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

SUPPLIES:

Cystographin
Vented infusion tubing
Foley Catheter Tray
Urinal

PREPARATIONS:

Dress patient for exam.
Select film mode for the exam setting on the control panel.
Nurse will place catheter.
Technologist will take two scout films of bladder in LPO and RPO (30 -35 degrees) position to include the entire urethra.

PROCEDURE:

Technologist will fill the patient's bladder with Cystographin. The patient's bladder should be filled to capacity.

At this point the Technologist (with the Radiologist's permission) will remove the Foley catheter and instruct the patient to start voiding.

The Technologist will take images of the bladder and urethra while the patient is voiding.

Voiding film for males should be obtained RPO, semi-upright, with urethra projected through right thigh.

When the patient has finished voiding and the exam is complete the Technologist will take a post void film of the bladder.

After the procedure is completed instruct the patient to get dressed.

NOTE: AFTER EXAM IS COMPLETE PLEASE DOCUMENT FLUORO. TIME.

MYELOGRAM REFERENCE GUIDE

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

STOP AND COMPLETE A TIME OUT FORM WITH PATIENT AND DR.

SUPPLIES:

Myelo Tray

18 Ga. x 1 ½ inch needle

10cc Luer Lok syringe

2 flat fluoro drapes

1 package sterile 4x4's

2% Lidocaine

Betadine

Alcohol Swabs

Large Mayo Stand

Contrast – Omni 300 for Cervical

Omni 240 for Thoracic

Omni 180 for Lumbar

Beckley Spot (Left)

Bicarbonate

Non-sterile long hemostats

Sharpie

Several pair of sterile gloves

Sterile pen and labels

(Dr. Chason wears size 7 ½

Tri-Flex Sterile gloves -

Other sizes/types depend on
the Resident on the service)

1 IV Extension set

Pad for tabletop

SUPPLIES TO HAVE ON HAND (JUST IN CASE)

- 1 22 Ga. Needle
- 1 25 Ga. 3 ½ inch Needle
- 1 25 Ga. 5 inch Needle
- 1 25 Ga. 7 inch Needle
- Extra Fluoro. Drapes
- Extra IV Extension Set
- 1 pair sterile hemostats
- Extra 18 Ga. 1 ½ inch Needle
- Extra 25 Ga. 1 ½ inch Needle

BASIC TRAY SET-UP

Take one of the flat fluoro drapes and open it, being sure to maintain sterile technique. Drape the mayo stand with sterile drape. Open the Myelo tray and set it out on the sterile field. Unfold the blue outer wrap and open the 4 x 4's, IV extension tubing, 10cc Luer Lok syringe, and an 18 Ga. X 1 ½ inch needle. Using sterile technique set the smaller blue tray on the sterile field and place the sponges in it. In the larger blue tray, place all the sharps inside. Place the small surgical drape, towels, and IV extension tubing beside the blue tray on top of the sterile field. The extension tubing that comes in the Myelo tray is seldom used because it does not have Luer Lok fittings, but do not discard because some doctors use it to see if they are getting CSF return prior to injecting contrast.

You can either discard the ampule of xylocaine that comes with the Myelo tray or set it aside for some other use. Dr. Chason prefers to draw up approximately 10cc's of lidocaine from the larger bottles.

NEVER DRAW UP EITHER THE LIDOCAINE OR CONTRAST. DOCTOR CHASON WANTS YOU TO SWAB THE TOP OF THE BOTTLES WITH AN ALCOHOL SWAB AND THEN SHOW THE DOCTORS THE LABEL WITH THE CONCENTRATION AND EXPIRATION DATE BEFORE THEY DRAW UP EACH SYRINGE, USING SEPARATE SYRINGES AND 18 GA. X 3 ½ INCH NEEDLES.

Set up the Mayo stand and bring the patient into the room before paging the doctor. Always page the Resident on the service first. If there is no response page the Fellow on the service. Then, if no response from either of the two page Dr. Chason. After one of the doctors have responded and on their way ask the patient to roll on to their stomach with their left knee bent slightly (RAO position). The doctor will mark the spot of interest. Then scrub and prepare to prep and drape the patient. Sometimes, if the doctors are busy with other exams the tech will have to operate the fluoro tower for either the Resident or Fellow. Be aware of the patient's IV so it does not become pinched.

CERVICAL MYELOGRAM

In addition to the other equipment have 3 to 4 pillowcases and some tape available to make a roll for the chin to rest on. Also, put the shoulder supports on the table and make sure that they are secure so the patient will not fall off the table.

SCOUTS

If scouts are requested, an AP, swimmer's, and a cross-table lateral should be taken of the cervical vertebrae.

POST INJECTION FILMS

If requested, an AP, PA, swimmer's, and cross-table lateral should be taken of the cervical vertebrae.

THORACIC MYELOGRAM

Place shoulder supports on the table and make sure they are secure. Sometime the doctor's decide to include a lower C-spine Myelo and have to tilt the table so the shoulder support are useful.

SCOUTS

If requested, an AP and cross-table lateral should be taken of the thoracic vertebrae.

POST INJECTION FILMS

If requested, an AP, cross-table lateral, and occasionally a PA should be taken of the thoracic vertebrae.

LUMBAR MYELOGRAM

No special equipment needed.

SCOUTS

If requested, an AP and cross-table lateral should be taken of the lumbar vertebrae.

POST INJECTION FILMS

If requested, an AP, cross-table lateral, and occasionally cross-table flexion/extension should be taken of the lumbar vertebrae.

IMPORTANT NOTE: THE ABOVE ARE GUIDELINES ONLY—ALWAYS ASK THE DOCTOR'S WHAT THEY WANT. THE INFORMATION THAT THEY OBTAIN WHILE THEY ARE INJECTING THE CONTRAST DETERMINES THE POST INJECTION FILMS (IF ANY) THEY WILL REQUEST. ALSO, THE DOCTOR'S MAY DECIDE TO INCLUDE ANOTHER PORTION OF THE SPINE IN THE PROCEDURE BASED ON THIS INFORMATION. IF THE DOCTOR'S DECIDE TO DO MULTIPLE LEVELS, THEY WILL USUALLY USE THE HIGHER

CONCENTRATED CONTRAST FOR THE EXAM. THE PATIENT'S HISTORY MAY ALSO BE A DECIDING FACTOR IN THE SCOUT FILMS REQUESTED.

After the contrast is in the proper position, and if CT is ready for the patient, take the patient to CT. If CT is not ready take the patient to the recovery room until a scanner is available. CT will require the original consultation request. Also send images to PACS (overheads and fluoro. spots).

Note: This is a revised version of the Myelogram Reference Guide produced by Martin Anderson on December 15, 1998.

LUMBAR PUNCTURE

CHECK: Physician's orders, allergies, two patient identifiers, and pertinent history.

STOP AND COMPLETE A TIME OUT FORM WITH PATIENT AND DR.

SUPPLIES:

Lumbar Puncture Tray

Sterile pen and labels

Betadine

Sterile 4x4's

20 inch Extension set

Eazy cover for fluoro. tower

Lidocaine 2%

Sodium Bicarbonate

Sterile gloves (size depends on Dr.)

Spinal needle 22x3 ½ inch or larger depending on patient size

18 Ga. 1 ½ inch needle

25 Ga. ½ inch needle

Sharpie

Hemostats
Specimen bag and labels with patient information
Towel (non-sterile)

PREPARATIONS:

No overhead scout films.
Position patient on table and prep patient (table flat).
Remove fluoro. drape from fluoro tower.
Place pad on table and cover with sheet.
Set control panel to SIRESKOP DFR.
Set program to myelo.
Make sure fluoro. time is zero.
Select patient name from work list and select Acquisitions Processing on control panel.

PROCEDURE:

Radiologist will take all images.
No overhead films after procedure.

NOTE: AFTER EXAM IS COMPLETE PLEASE DOCUMENT FLUORO. TIME.

Reference

Ballinger, P. W. (1995). Pocket Guide to Radiography (3rd ed.). Missouri: Mosby, Inc.

Notes: _____

