

Radiography Log Book

Radiography teaching occurs in constituent hospitals as part of working week. This unit of the log book deals with diagnostic radiography. Tuition in radiography will be carried out in the individual teaching hospitals by a senior radiographer. This will include aspects of patient care, special problems with infants, children and geriatric patients. You should also discuss radiographic technique modifications with incapacitated patients, e.g. if grid cassettes are used they can be placed to suit the patient's position, rather than positioning the patient to the x-ray table. Radiation protection should be covered in the general lecture course in physics, although specific practical areas of radiation protection should be discussed at the tutorials.

It is important that you become familiar with radiographic exposures, and if possible perform the various radiographic techniques listed in the log book. In conjunction with the individual hospital tutor, it would be worth performing a number of exposures on a phantom to examine the effect of altering the kV and the MAS. The effect of altering the field size and the focus film distance should also be examined, as well as the effect of various film screen combination along with grids and correct processing technique.

The following standard radiologic projections must be known in detail:

Basic skull views including facial bones,

A.P. and lateral projections of the spine

P.A. and lateral chest radiograph

Erect and supine abdomen

A.P. pelvis

Standard views of shoulder girdle,

Pelvic girdle

and extremities

Descriptions of skull and spine views are given as examples

EXAMINATION AREA:

SKULL – BASIC VIEWS

Occipito-frontal: The patient faces the skull table, with the forehead resting against it. The base line and median sagittal plane must be at right angles to the film.

Centre to the glabella, with the tube angled either 5 caudad to show the petrous bones within the orbits or 20 caudad to project the petrous bones below the level of the orbits.

Lateral: The head is placed in the lateral position with the median sagittal plane parallel with the table, the interpupillary line at right angles to it and the base line horizontal.

Centre 5cm (2in) above the external auditory meatus.

Townes: The patient faces the x-ray tube, with the chin tucked in so that the base line is at right angles to the table. To achieve this, it may sometimes be necessary to place a pad under the occiput or to angle the table slightly. The median sagittal plane must be at right angles to the table.

Centre: 5cm (2in) above the glabella with the tube angled 30 caudad. To ensure correct and easy centring, when using a skull unit, the patient or the table is adjusted initially so that the tube is centred to the tip of the nose. The tube is then angled 30.

SUPPLEMENTARY VIEWS

Submento-vertical: The patient faces the x-ray tube, with the chin and neck extended. If the patient is supine, the table is lowered gently and angled until the base line is parallel with the table. If the patient is sitting, the neck is extended as far as possible and the table is then angled until the base line is parallel with it.

Centre in the mid-line between the angles of the jaw, with the tube angled 5 towards the face.

A submento-vertical view may be obtained on a patient who must remain lying on an x-ray table or on a stretcher, by placing the cassette at an angle behind the patient's head and raising the chin as much as possible, and placing foam pads under the neck and shoulders.

Centre between the angles of the jaw, at right angles to the cassette.

Pituitary Fossa: The pituitary fossa is a mid-line structure and is situated in the middle cranial fossa. It is formed by the upper surface of the body of the sphenoid bone.

Lateral: The head is positioned as for the basic lateral view. A small aperture is used.

Centre: 2.5cm (1in) above and 2.5cm (1in) in front of the external auditory meatus.

Postero-anterior: The head is positioned as for the basic occipito-frontal view. A small aperture is used.

Centre: 5cm (2in) below the external occipital protuberance, with the tube angled 10 cephalad.

Tangential Views. From the lateral or occipito-frontal positions, the head is rotated so that the area in question, seen on the basic views, is in profile.

FACIAL BONES

Occipito-mental: The patient faces the skull table, with the chin (and usually also the nose) in contact with it so that the base line is at 45° to the vertical.

Centre to the lower orbital margin.

30 Occipito-mental: The patient is positioned as last mentioned and the kV is increased by 8.

Centre to the lower orbital margin with the tube angled 30 caudad.

Lateral: The head is placed in the lateral position, with the median sagittal plane parallel with the table and the interpupillary line at right angles to it. The kilovoltage required is 10 less than for a lateral skull view.

Centre to the zygomatic bone.

Supplementary Views

Fronto-occipital: The patient faces the X-ray tube, with the chin tucked in so that the base line is at right angles to the table. The median sagittal plane must also be at right angles to the table. The kilovoltage required is 10 less than for the basic Townes view.
Centre to the bridge of the nose, with the tube angled 30 caudad.

NASAL BONES

Lateral: A non-screen film and a small aperture are used.
Centre to the nasion.

Supero-inferior: The patient sits or lies with the chin raised and an occlusal film held gently between the teeth so that two-thirds of the film is outside the mouth. The frontal bone should be projected directly over the front teeth. The gonads must be protected, particularly if the patient is seated, when it may be impossible to avoid directing the primary beam towards the gonads.
Centre through the frontal bone at right angles to the film.

Occipito-mental: To show deviation of the nasal septum.

ORBITS

20 Occipito-frontal: The patient sits or lies with the head in the basic occipito-frontal position.
Centre to the nasion with the tube angled 20 caudad.

Occipito-mental: the patient is positioned in the basic position and the base line is then adjusted to 35 so that the floor of the orbits is at right angles to the film.
Centre to the lower border of the orbits.

Lateral: The patient is positioned as for the basic lateral view. A small aperture is used. The kilovoltage required is 10 less than for a lateral skull view.
Centre to the outer canthus of the eye.

OPTIC FORAMINA

Oblique: The patient faces the skull table with the eye under examination in the centre of the table. The head is then rotated 35° towards the side being examined so that the forehead, cheek, chin and nose are all touching the table. The base line should be at 35° to the horizontal i.e. 55° to the table.

TEMPORAL BONES

Basic Views for Mastoid Air Cells

Lateral Oblique: The head is placed in the lateral position. Views of both sides must always be taken and a small cone or aperture is used.

Centre to the external auditory meatus nearer the film, with the tube angled 20 caudad.

Fronto-occipital: The patient faces the x-ray tube, with the chin tucked in so that the base line is at right angles to the table. A narrow slit aperture is used.

Centre to the glabella, with the tube angled 35 caudad, so that, when viewed from the side, the central ray passes through the external auditory meatus.

Submento-vertical: The patient faces the x-ray tube, with the neck extended. The skull table is adjusted until it is parallel with the base line. A narrow slit aperture is used.

Supplementary View

Modified "Stenvers": The patient faces the skull table, with the forehead resting against it and the base line at right angles to it. The table is adjusted so that the central cross-lines are just above the centre of the eyebrow of the side under examination. The head is then rotated 45° so that the side being examined is against the table. A small aperture is used. A view of each side must be taken.
Centre as just described, with the tube angled 12 cephalad.

Stockholm "C": This view is similar to a modified "Stenvers" view but identical positioning of the two sides is more easily obtained. The head is placed in the lateral position. A small aperture is used. Centre 1cm (half inch) above, and 2.5cm (1cm) in front of, the external auditory meatus, with the tube angled 12 cephalad and 30 occipito-frontally. The grid must be turned so that it is parallel with the central ray.

TEMPORO MANDIBULAR JOINTS

Lateral Oblique: A view of each side must always be taken for comparison. To demonstrate movement of the joint, views are taken firstly with the mouth closed and then with it open. The head is placed in the lateral position, with the median sagittal plane parallel with the skull table and the interpupillary line at right angle to the table. A small aperture is used. By means of lead letters the films are marked "open" and "closed" respectively.

Centre in the mid line, with the tube angled 35 caudad so that, when viewed from the side, the central ray passes through the joint.

MANDIBLE

Occipito-frontal: The patient faces the x-ray table, with the forehead in contact with it. The base line and median sagittal plane must be at right angles to the table. The kilovoltage required is 10 less than for an occipito-frontal skull view.

Centre 5cm (2in) below the angle of the jaw remote from the cassette, with the tube angled 30 cephalad.

PARANASAL SINUSES

Occipito-mental: (to show antra and the frontal, anterior ethmoid and sphenoid sinuses). The patient sits facing the skull table, with the chin in contact with it so that the baseline is at 45° to the vertical. The table may be angled 25° for easier positioning and to bring the cassette parallel with the long axis of the face. The mouth is opened wide so that the sphenoid sinuses are demonstrated. (The petrous temporal bones must be projected below the antra; if they are superimposed on the lower part of the antra, the angle of the base line should be increased by raising the chin).

Lateral: (to show all the nasal sinuses, both sides superimposed). The head is placed in the lateral position, with the median sagittal plane parallel with the table and the interpupillary line at right angles to the table.

Centre 2.5 (1in) from the outer canthus of the eye along the base line.

Submento-vertical: (to show sphenoid and ethmoid sinuses). The patient sits facing the x-ray tube with the chin raised and neck extended. The skull table is adjusted until it is parallel with the base line.

Centre in the mid-line, 2.5cm (1in) behind the symphysis menti.

VERTEBRAL COLUMN

CERVICAL SPINE

Antero-posterior (CV1-3): The patient lies supine on the x-ray table or sits with his back to the skull table. The chin is tucked down so that the maxilla is superimposed on the lower border of the occiput. The mouth must be opened wide. Immobilisation of the head is important. A small aperture is used.

Centre to the middle of the open mouth.

Antero-posterior (CV3-7): The patient lies supine with the chin raised so that the mandible is superimposed on the occiput. The cassette is displaced cephalad in line with the central ray. Centre in the mid-line at the level of the angle of the mandible, with the tube angled 15 cephalad.

Lateral: The patient sits or stands in the lateral position, with one shoulder against the cassette and with the shoulders lowered as much as possible. The chin is raised so that the angle of the mandible does not obscure the upper cervical vertebrae. For immobilisation a foam pad of appropriate thickness is placed between the side of the head and the cassette, the head being maintained in the lateral position. A long focus-film distance, 150cm (60in) is used to reduce magnification. The upper border of the cassette is placed at the level of the top of the pinna.

Centre behind the angle of the mandible.

Posterior oblique: The patient sits or stands with the back against the grid cassette or erect Bucky, and is then rotated 45° to each side in turn. The head is placed in the lateral position. A radiograph is taken in each position.

Centre in the mid-cervical region, to the side of the neck further from the cassette, with the tube angled 15 cephalad.

Anterior oblique: The patient lies in the half-prone position, with the head lateral and the neck at an angle of 45° to the table. The arm of the lower side is placed by the patient's side and the other arm is raised over the head. A radiograph is taken in each position.

Centre in the mid-cervical region, to the side of the neck nearer the cassette, with the tube angled 15 caudad.

Flexion and Extension Views: The patient is positioned as for the basic lateral view and two radiographs are taken, one with the neck flexed as much as possible so that the chin rests on the chest and the other with the neck extended and the chin raised as much as possible. For the flexion view, the cassette should be placed transversely, so that all the cervical vertebrae are included.

Centre to the mid-cervical region.

Examination Area

SKULL

Basic Views

Occipitio-frontal

Lateral

Townes

Supplementary Views

S.M.V.

Pituitary Fossa

Tangential Views

FACIAL BONES

Basic Views

Occipitio-mental

30 Occipitio-mental

Lateral

Supplementary Views

Fronto-Occipital

NASAL BONES

Basic Views

Lateral

Superior / Inferior

Occipitio-mental

ORBITS

Basic Views

20 Occipitio-frontal

Occipitio-mental

Lateral

OPTIC FORAMINA

Basic Views

Oblique

TEMPORAL BONES

Basic Views for Mastoid Air Cells

Lateral

Oblique

Fronto-occipital

S.M.V

TEMPORAL BONES

Supplementary Views

Modified "Stenvers"

Stockholm "C"

TEMPORO MANDIBULAR JOINTS

Basic Views

Lateral
Oblique
Fronto-occipital

MANDIBLE

Occipitio-frontal

Lateral oblique

PARANASAL SINUSES

Occipitio-mental

Lateral
S.M.V.

Supplementary Views

VERTEBRAL COLUMN

CERVICAL SPINE

A.P.

Lateral
Posterior and Anterior obliques
Flexion and Extension views

Supplementary Views

Intervertebral Foramina
Posterior Obliques
Anterior Obliques

ATLANTO-OCCIPITAL JOINTS

Lateral

Oblique

POSTERIOR ARCH OF ATLAS

Lateral

Oblique I
Oblique II
Supine Oblique
Lateral views in flexion and extension

CERVICO-THORACIC VERTEBRAE

Basic Views

Lateral
Lateral (with one arm raised)
Antero-posterior

Supplementary Views

Lateral (to show the spinous process)
Lateral
Lateral oblique
Lateral (with one arm raised)
Antero-posterior
Supine oblique

THORACIC VERTEBRAE

Basic Views

Antero-posterior
Lateral

	<p>Supplementary Views Antero-posterior and lateral, Weight bearing Obliques</p>
THORACO-LUMBAR VERTEBRAE	<p>Basic Views Antero-posterior Lateral</p>
LUMBAR VERTEBRAE	<p>Basic Views Antero-posterior Lateral Lateral of the lumbo-sacral junction</p>
LUMBO-SACRAL JUNCTION	<p>Supplementary Views Antero-posterior Lateral</p>
PARS INTERARTICULARIS	<p>Basic Views Posterior Obliques</p>
SPONDYLOLISTHESIS	<p>Posterior Obliques</p>
POSTERIOR VERTEBRAL ARCHES	<p>Semi-axial view</p>
SACRUM	<p>Basic Views Antero-posterior or Postero-anterior Lateral</p> <p>Supplementary Views Stereoscopic antero-posterior</p>
COCCYX	<p>Basic Views Anteroposterior Lateral</p>
SACRO ILIAC JOINTS	<p>Basic Views Antero-posterior or Postero-anterior Obliques</p> <p>Supplementary Views Erect antero-posterior views</p>
SHOULDER GIRDLE	<p>Basic Views Antero-posterior Axial (supero-inferior)</p>

	<p>Supplementary Views Internal and External rotation</p> <p>“Stryker’s” View 25 degrees antero-posterior</p>
RECURRENT SUBLUXATION	
SUB-ACROMIAL CALCIFICATION	
SCAPULA	<p>Basic Views Antero-posterior Lateral</p> <p>Supplementary Views Antero-posterior</p>
CORACOID PROCESS	
ACROMIO-CLAVICULAR JOINT	<p>Basic Views Antero-posterior</p>
CLAVICAL	<p>Basic Views Postero-antero Infero-superior</p>
HUMERUS	<p>Basic Views Antero-posterior Lateral</p>
ELBOW	<p>Basic Views Lateral Antero-posterior</p> <p>Supplementary Views Antero-posterior with the forearm in mid-pronation Lateral Antero-posterior with the elbow flexed</p>
HEAD OF RADIUS	
FOREARM	<p>Basic Views Antero-posterior Lateral</p>
WRIST JOINT AND CARPUS	<p>Basic Views Antero-posterior Lateral</p>
CARPAL BONES	<p>Supplementary Views Oblique I Oblique II Antero-posterior</p>
SCAPHOID	Postero-anterior with ulnar deviation

	Obliques Lateral
HAND	Basic Views Dorsi-palmar Oblique
FOREIGN BODIES	Supplementary Views Dorsi-palmar Lateral
METACARPO-PHALANGEAL JOINT SPACES	Oblique
FINGERS	Postero-anterior Lateral
THUMB	Lateral Antero-posterior
PELVIS	Basic Views Antero-posterior
	Supplementary Views Lateral
ILIUM	Posterior oblique
SYMPHYSIS PUBIS	Antero-posterior Antero-posterior erect
HIP JOINTS	Basic Views Antero-posterior Lateral
	Supplementary Views
NECK OF FEMUR	Lateral (often known as "true lateral") Lateral (with the patient sitting)
HIP DYSPLASIA	"Von Rosen" Antero-posterior with hyperextended hips
EPIPHYSES	"Frog" views
FEMUR	Basic Views Antero-posterior Lateral
Supplementary Views	Localised Antero-posterior Lateral Oblique Views

KNEE

Basic Views

Antero-posterior
Lateral

Supplementary Views

Obliques
Intercondylar

PATELLA

Basic Views

Postero-anterior
Obliques
Infero-superior or "Skyline"

LIGAMENTS

Antero-posterior, weight bearing.

TIBIA AND FIBULA

Basic Views

Antero-posterior
Lateral

Supplementary Views

Antero-posterior
Lateral
Obliques

PROXIMAL TIBIO-FIBULAR JOINT

Oblique

ANKLE

Basic Views

Antero-posterior
Lateral

Supplementary Views

Antero-posterior in forced eversion or inversion

FOOT

Basic Views

Dorsi-plantar
Dorsi-plantar oblique

Supplementary Views

Dorsi-plantar, weight bearing
Lateral, weight bearing
Lateral

CALCANEUM

Lateral

Axial

TOES

Dorsi-plantar

Lateral
Oblique

OS TRIGONUM

Lateral

SUB-TALAR JOINT

Basic Views

Dorsi-plantar oblique
Medial axial oblique
Lateral axial oblique
“Anthonsen”

Supplementary Views

Axial view of the calcaneum

**MOUTH AND NECK
SALIVARY GLANDS
PAROTID**

Basic Views

Antero-posterior
Lateral
Lateral oblique

SUBMANDIBULAR

Basic Views

Lateral
Infero-superior

SUBLINGUAL

Basic Views

Lateral
Infero-superior

PHARYNX

Basic Views

Lateral (“Post-natal space”)
Submento-vertical
Occipitio-mental

LARYNX

Basic View

Lateral

THORACIC INLET

Basic Views

Antero-posterior
Lateral

Supplementary Views

Lateral
Lateral soft tissue views of neck

TRACHEA

Basic Views

Antero-posterior
Lateral

CHEST

Basic Views

Postero-anterior
Lateral

Supplementary Views

Supine antero-posterior

Penetrated postero-anterior and lateral
Antero-posterior
Postero-anterior view on expiration
Apical

Posterior oblique

Left posterior oblique
Lateral Decubitus
Anterior obliques with barium
Left lateral with barium

DIAPHRAGM

Basic Views
Postero-anterior
Lateral

UPPER RIBS

Basic Views
Postero-anterior
Oblique

LOWER RIBS

Basic Views
Antero-posterior
Oblique

Supplementary Views

Oblique
Lateral

STERNUM

Basic Views

Anterior oblique with patient rotated
Anterior oblique with tube angled
Lateral

STERNO-CLAVICULAR JOINTS

Basic Views

Postero-anterior obliques

Supplementary View

Lateral

ABDOMEN/G.I. TRACT

Basic Views

Antero-posterior (K.U.B.)

URINARY TRACT

Basic Views

Antero-posterior (K.U.B.)

LIVER

Antero-posterior

SPLEEN

Antero-posterior

SUPRA-RENAL GLANDS

Antero-posterior

