CURRICULUM GUIDE - RADIOLOGICAL TECHNOLOGY

This document is a curriculum guide for Radiological Technology education programs.

It provides guidelines for the development and redesign of curriculum that is necessary to achieve the competencies in the revised Radiological Technology Competency Profile that will be used for exam development effective with the September 2011 certification exams.

With the rapid changes in digital technology and the move towards a more inter-professional healthcare practice, educational programs have been requesting guidance in the development of curriculum and the provision of clinical experience required to ensure graduates of medical radiation technology education institutions have an educational experience reflective of the needs of the national healthcare environment.

The Curriculum Guide is designed using the format of the revised Radiological Technology Competency Profile and provides lists of knowledge, skills and judgments required to successfully achieve many of the essential competencies. Not all competencies are accompanied by lists and these lists are not inclusive. They are provided as a guide ONLY.

Based on the format of the Competency Profile, the Curriculum Guide is divided into 13 modules:

- Module A  Professional Practice
- Module B  Patient Management
- Module C  Radiation Health and Safety
- Module D  Quality Management
- Module E  Operate Imaging Equipment
- Module F  Skeletal System
- Module G  Digestive System
- Module H  Respiratory System
- Module I  Urinary System
- Module J  Reproductive System
- Module K  Computed Tomography
- Module L  Bone Mineral Densitometry
- Module M  Vascular / Interventional Studies
MODULE A PROFESSIONAL PRACTICE

Whenever both national and provincial regulations/code of ethics are in place, only the national standards will be tested on the CAMRT certification examination.

A 1 Demonstrate critical thinking

A 1.1 Apply critical thinking and problem solving strategies to ensure best practices
   Identify the problem
   Define objectives
   Formulate pre-decisions
   Generate alternatives
   Evaluate alternatives
   Make decision
   Implement decision
   Evaluate outcomes

A 2 Practice in accordance with legislation, regulations and ethical guidelines related to the profession

A 2.1 Practice patient care in a manner that protects the patient’s legal rights
   Informed consent
   Confidentiality
   Freedom of information
   Privacy
   Mandatory Reporting
      Suspected abuse
      Suspected malpractice
   Healthcare directives
      Do not resuscitate
      Living wills
   Restraints
      Physical
      Chemical

A 2.2 Demonstrate an understanding of the current and emerging issues in the Canadian Healthcare System
   Accountability to various stakeholders
   Privatization
   Access and choice
   Availability of services
   Management of resources
   Policies and procedures to manage risk
   Partnership opportunities
   Impact of technology on practice
A 2.3 Perform all duties in compliance with sexual abuse prevention guidelines

A 2.4 Practice in accordance with national association’s/provincial regulatory body’s code of ethics
   Dignity and respect
   Trust and confidence
   Accountability
   Safe environment
   Advocacy
   Confidentiality
   Collaborative care
   Continuing competence
   Contribute to the profession

A 2.5 Practice within scope of practice in accordance with national association and provincial regulatory body’s legislation requirements

A 2.6 Practice in accordance with the national association’s and provincial regulatory body’s standards of practice

A 2.7 Practice in accordance with legislation, regulations/by-laws regulating medical radiation technologists
   Assault
   Battery
   Libel
   Harassment
   Slander
   Negligence

A 2.8 Provide a diagnostic/therapeutic impression to healthcare professionals to assist in patient care management
   Provide impression regarding appearance of a procedure or exam
   Provide impression to appropriate professional regarding Assessment of patient’s condition
   Recognition of risk

A 3. Demonstrate professional behaviors

A 3.1 Demonstrate respect and sensitivity in both patient and professional interactions
A 3.2 Utilize stress management techniques
A 3.3 Utilize conflict management techniques
A 3.4 Manage change within the evolving healthcare system
A 3.5 Exchange knowledge/skills with other members of health care teams to promote collaborative practice
A 3.6 Provide clinical instruction guidance and evaluation for students
A 3.7 Assume a lead role during diagnostic/therapeutic procedures when working with the healthcare team
A 3.8 Present a professional appearance and manner
A 4  Participate in professional development

A 4.1 Engage in reflective practice, self-assessment to identify a learning plan that will promote best practices

A 4.2 Demonstrate a basic understanding of current and emerging imaging, planning and therapeutic technologies used by interdisciplinary practices
  - Source of energy
  - Image acquisition
  - Benefits
  - Risks
  - Application
  - Safety Issues

A 5  Participate in research for the purpose of evidence based decision-making

A 5.1 Demonstrate an understanding of: how to review current literature, research methodology, data collection and analysis of statistics in order to promote evidence based practice
  - Retrospective studies
  - Prospective studies
  - Meta-analysis
  - Survey research

A 5.2 Participate in a research-based project
  - Literature review
  - Research questions and testable hypotheses
  - Methods and design
    - Qualitative
    - Quantitative
  - Data collection, analysis, and interpretation
  - Data presentation

A 5.3 Discuss the ethical issues involved with research
  - Ethical foundations
  - Clinical practice

A 6  Understand the application of resource management principles

A 6.1 Differentiate between capital and operating budgets
A 6.2 Recognize implications of practice on budgets

A 7  Participate in resource management

A 7.1 Prioritize workflow to optimize patient outcomes
  - Patient status
  - Resources (human and material) available
  - Estimated time of procedure
  - Type of procedure

A 7.2 Monitor inventory of material and supplies
MODULE B  PATIENT MANAGEMENT

B 1  Provide a safe environment to minimize the risk of adverse events to patient and staff
   B 1.1  Provide a safe, clean and comfortable environment
   B 1.2  Transport the patient safely using equipment based on the patient’s physical and cognitive status and resources available
           Wheelchair
           Stretcher
   B 1.3  Transfer the patient safely using equipment and techniques based on the patient’s physical and cognitive status
           Patient transfer devices (sliding board, sheet, mechanical lift)
           Three person lift
           Two person lift
   B 1.4  Employ proper body mechanics to prevent harm to self and the patient
   B 1.5  Implement immobilization techniques based on age, physical and cognitive status of the patient and type of procedure
   B 1.6  Adjust the patient’s position to prevent harm and promote comfort and optimize procedure outcomes
   B 1.7  Verify the patient’s identity following a standardized protocol
   B 1.8  Assess documentation for compliance with legal requirements
           Verify imaging procedure has been ordered by authorized practitioner
   B 1.9  Complete documentation for compliance with legal requirements

B 2  Interact within the healthcare environment
   B 2.1  Establish patient rapport
           Greet the patient with the appropriate salutation and identify self
           Explain provider role
           Facilitate translation services
           Respect patient diversity
           Interact with the patient in a caring and compassionate manner
           Use appropriate non-verbal communication techniques
   B 2.2  Use various forms of communication to provide/obtain relevant, accurate and complete information
           Verbal
           Written
           Electronic
   B 2.3  Exchange information regarding details of procedure with patients and their support persons to enable them to make informed decisions
           Explain the procedure
           Counsel the patient with respect to pre, during and post procedural care
           Dietary
           Pharmacokinetics
           Activity Levels
           Verify understanding of information to give the patient an opportunity to ask questions

January 2 007
RTR Curriculum Guide
Respond to the patient’s and their support persons concerns

B. 2.4 Assess and respond to cultural, ethnic, linguistic, religious, and socio-economic variables affecting communication

B 3 Perform patient assessments and medical interventions within scope of practice in accordance with provincial regulatory body’s legislation requirements.

B 3.1 Perform patient assessment
- Interpret data systems
- Previous medical history
- Laboratory results
- Nutritional history
- Pharmacokinetics

B 3.2 Assess, monitor and respond to various levels of patient status
- Physical status
- Cognitive status
- Level of consciousness
- Emotional status
- Effects of pharmaceuticals administered to patient
- Vital signs
  - Blood pressure
  - Respiration
  - Oxygen saturation
  - Heart rate
  - Body temperature
- Medical disorders
  - Neurological disorders
  - Diabetic emergencies
  - Respiratory distress
  - Cardiac distress
  - Vasovagal reaction
  - Shock
  - Traumatic injuries
  - Post Surgical

B 3.3 Perform / Participate in medical interventions
- Ostomy pouches
- Sterile bandages / dressings
- Oxygen
- Suction
- CPR

B 3.4 Assess, monitor and respond to the patient’s therapeutic and supportive devices to ensure patient safety and comfort
- IV therapy
- Urinary drainage
- Diagnostic / therapeutic tubes and lines
- Casts and traction
**B 3.5** Ensure the patient’s needs are met prior to release from the technologist’s care
- Continuity of care
  - Collaboration with other health care providers
  - Referral
- Physical
- Psychological
- Physiological

**B 4** Implement infection control practices

**B 4.1** Understand transmission mode of nosocomial infections (host, agent and environment)

**B 4.2** Utilize established practices for preventing the transmission of infection in health care

**B 4.3** Apply principles of asepsis
- Hand hygiene
- Cleaning
- Disinfection
  - Low
  - Medium
  - High
- Sterilization
  - Dry
  - Steam
  - Mechanical
- Sterile tray preparation
  - Sterile fields
  - Gloving and gowning
  - Masks and goggles
  - I.V. preparation

**B 4.4** Follow established protocols when handling and disposing of contaminated and biohazardous materials such as sharps and body fluids

**B 4.5** Adhere to protective environmental protocols for patients with compromised immunity

**B 4.6** Adhere to protocols when caring for patients with antibiotic resistant organisms

**B 4.7** Adhere to transmission based precautions for airborne, droplet and contact modes of transmission
  - Airborne
  - Droplet
  - Contact

**B 5** Respond to patient hygiene needs

**B 5.1** Assist the patient with personal care
MODULE C  RADIATION HEALTH AND SAFETY

C1  Apply radiation safety practices to patients, technologists, staff, care givers and general public

C1.1  Utilize protective devices/apparel according to organ sensitivities
   - Lead aprons
   - Lead glasses
   - Lead gloves
   - Gonadal shielding
   - Thyroid shielding
   - Barriers and screens

C1.2  Utilize appropriate accessory devices to minimize dose
   - Grids
   - Filters
   - Beam limiting devices
   - Immobilization device

C1.3  Determine patient’s pregnancy status and take appropriate action
   - Consult with patient
   - Consult with radiologist/physician regarding patient management
   - Document relevant information

C1.4  Apply the ALARA principle in the practice of medical radiation technology
   - Inverse square law
   - Benefit versus risk
   - Patient orientation to primary beam
   - Digital imaging exposure indices
   - Exposure parameters to minimize dose and optimize image quality
   - Physical location of individuals in relation to primary beam and scatter pattern

C1.5  Utilize protective practices specific to fluoroscopy
   - Do not use as a positioning aid
   - Last Image Hold (LIH)
   - Use pulsed/continuous fluoroscopy
   - Minimize use of magnification
   - Monitor fluoroscopic exposure factors
     - Record fluoroscopy time
     - Report excessive use of fluoroscopy time
   - Monitor Automatic Brightness Control (ABC) / Automatic Gain Control (AGC)
   - Report operation of radiation emitting devices by unqualified personnel
   - Utilize optimum orientation of image intensifier

C1.6  Utilize protective practices specific to mobile/general radiography
   - Maintain proper distance
   - Announce use of ionizing radiation
C1.7 Utilize protective practices specific to Computed Tomography
C1.8 Utilize protective practices specific to mammography

C2 Monitor radiation exposure dose to patients, technologists, staff, care givers and general public
C2.1 Operate and monitor equipment in compliance with national and provincial radiation safety legislation
C2.2 Wear and maintain radiation monitoring device
C2.3 Adhere to radiation dose limit standards
C2.4 Interpret and respond to radiation exposure dose reports
   Archive exposure report
   Implement appropriate action should readings exceed recommended standards
C2.5 Recognize the significance of radiation safety surveys

C3 Advocate radiation safety
C3.1 Educate individuals regarding radiation risks
   X-ray production and properties
   Risk vs benefit
   Genetic effects
   Somatic effects
   Stochastic effects
   Deterministic effects
C3.2 Determine and discuss relative dose expectations of radiographic examinations
C3.3 Consult with medical radiation personnel as required
   Research current radiation safety literature
   Calculate estimated skin dose based on generator output and patient technique
   Consult with medical radiation personnel

MODULE D QUALITY MANAGEMENT
D 1  Participate in Quality Assurance Program

D1.1  Participate in activities that support a Quality Assurance Program

Ensure that technical protocols are updated as required
Ensure that examination protocols are updated as required
Optimize patient scheduling
Participate in the revision of departmental policies
Verify that accurate data is collected, securely stored, and shared only with appropriate persons
Analyze data to improve departmental outcomes, including
  Identify trends
  Monitor repeat/reject rate
  Monitor calibration of instrument
Maintain quality control records and charts
Participate in quality assurance surveys
Facilitate effective flow and exchange of information with all stakeholders
Participate in performance appraisal

D1.2  Utilize principles of risk management

Complete an incident report
Maintain accurate record keeping
Comply with infection control policies and procedures
Practice in a manner that will help prevent workplace injuries
Comply with policies to eliminate workplace harassment
Promote safe practices to prevent harm to patient and others
Direct patient with specific concerns to appropriate resource person
Be familiar with emergency disaster plans

D1.3  Adhere to Workplace Hazardous Materials Information System (WHMIS) regulations and Occupational Health and Safety (OH&S) regulations

D 2  Participate in Quality Control Program

D2.1  Evaluate routine procedures to assess the performance of radiographic imaging modalities and initiate corrective action as necessary

  x-ray tube
  x-ray generator

D2.2  Evaluate routine procedures to assess the performance of fluoroscopic imaging modalities and initiate corrective action as necessary

  x-ray tube
  x-ray generator
  fluoroscopic imaging chain
  display monitor
  SMPTE test monitor

D2.3  Evaluate routine procedures to assess the performance of the CT unit and
initiate corrective action as necessary
   Tube warm up
   Detector calibration

D2.4 Evaluate routine procedures to assess the performance of the BMD unit and initiate corrective action as necessary
   Precision testing
   Detector calibration

D2.5 Evaluate routine procedures to assess the performance of the mammographic unit and initiate corrective action as necessary
   Phantom detail and detectability test
   Film screen contact test

D2.6 Evaluate routine procedures to assess the performance of digital image receptors and initiate corrective action as necessary
   CR equipment
      Imaging plates
      Regular cleaning
      Regular erasure
      Visual inspection
   CR reader
      Visual inspection
      Regular cleaning
   DR Equipment

D2.7 Evaluate routine procedures to assess the performance of accessory equipment and initiate corrective action as necessary
   Collimator
   Grid alignment
   Filters

D2.8 Evaluate the integrity of protective apparel and devices and initiate corrective action as necessary

D2.9 Evaluate routine procedures to assess the performance of film processing equipment and initiate corrective action as necessary
   Perform regular maintenance
   Perform sensitometry and interpret results

MODULE E OPERATE IMAGING EQUIPMENT

E 1 Operate imaging modality for digital/analog image acquisition consistent with the
procedure and the patient’s condition

E1.1 Determine and select parameters for performing procedures on a radiographic unit

- Acquisition algorithm
- Anatomical programming
- Automatic exposure control (AEC)
- Collimator
- Filters
- Focal spot
- Grid
- Receptor speed
- Kilovoltage (kV)
- Milliamperage (mA)
- Milliamperage per second (mAs)
- Object image distance (OID)
- Source image distance (SID)
- Time
- Tube loading

E1.2 Determine and select parameters for performing procedures on a fluoroscopic equipment

- Acquisition algorithm
- Anatomical programming
- Automatic exposure control (AEC)
- Collimator
- Dose rate
- Filters
- Focal spot
- Fluoroscopic timer
- Frame rate
- Grids
- Kilovoltage (kV)
- Last image hold
- Milliamperage (mA)
- Magnification
- Object image distance (OID)
- Pulse rate
- Roadmapping
- Source image distance (SID)

E1.3 Determine and select parameters for performing procedures with a radiographic mobile unit

- Charge indicator on mobile units
- Collimator

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Focal spot
Grid
Receptor speed
kilovoltage (kV)
milliamperage per second (mAs)
Object image distance (OID)
Source image distance (SID)
Tube loading

E1.4 Determine and select parameters for performing procedures with a fluoroscopic mobile unit

Automatic exposure control (AEC)
Collimator
Dose rate
Filters
Focal spot
Fluoroscopic timer
Frame rate
Grids
kilovoltage (kV)
Last image hold
milliamperage (mA)
Magnification
Object image distance (OID)
Pulse rate
Roadmapping

E1.5 Determine and select parameters for performing procedures on a Computed Tomography (CT) unit

Algorithm for anatomical part
Delay time
Field of view
Filters
Gantry tilt
kV
mA
Matrix
Pitch / pitch width
Region of interest (ROI)
Scanning parameters
Slice increments
Slice thickness
Window level
Window width

E1.6 Determine and select parameters for performing procedures on a Bone Mineral Density (BMD) unit
E1.7 Determine and select parameters required when participating in the performance of procedures on a mammographic unit
   Acquisition algorithm
   Anatomical programming
   Automatic exposure control (AEC)
   Collimator
   Filters
   Focal spot
   Grid
   Receptor speed
   Kilovoltage (kV)
   Milliamperage (mA)
   Milliamperage per second (mAs)
   Object image distance (OID)
   Source image distance (SID)
   Time
   Tube loading

E1.8 Determine and select parameters required when participating in the performance of procedures in an interventional suite
   Frame rate
   Delay times
   Also see fluoroscopy

E1.9 Utilize a Computed Radiography (CR) image receptor

E1.10 Utilize a Direct Radiography (DR) image receptor

E1.11 Utilize a film/screen image receptor if available

E1.12 Adapt exposure factors based on evaluation of the patient and existing variables
   Part thickness
   Tissue density
   Subject contrast
   Contrast media
   Body habitus
   Pediatrics
   Geriatrics
   Pathological considerations
   Casts/bandages/appliances

E1.13 Activate, monitor, and manage exposure
   Anode rotation
   Control panel readouts
   Filament boost
   Heat monitoring devices

E1.14 Verify accuracy of patient demographics on the acquired image
   Hardcopy
   Hospital Information system (HIS)
E 2 Analyze image for quality and diagnostic purposes and adjust parameters for additional images

E2.1 Evaluate the diagnostic quality of the image and take appropriate action
- Collimation
- Contrast
- Density/brightness
- Distortion
- Exposure index
- Motion
- Signal to Noise ratio
- Contrast Resolution
- Spatial resolution

E2.2 Verify visibility and accuracy of radiographic markers and/or annotation

E2.3 Evaluate image for artifacts and take appropriate action
- Digital systems
  - Image receptor
  - Image reader
  - Workstation
- Handling and storage
- Monitor
- Patient related
- Processing
  - Chemical
  - Dry
- Technical parameters

E2.4 Perform post-processing to optimize the digital image
- Anatomical orientation
- Annotation
- Alter algorithm
- Cropping/Collimation
- Maximum intensity projection
- Multi-planar reconstruction
- Post processing filter
- Window width / Contrast
- Window level / Brightness
- Zooming

E 3 Utilize digital networking and archival systems

E3.1 Utilize Picture Archiving Communication System (PACS) for purposes of image display, networking, archival and retrieval
E3.2 Demonstrate an understanding of networking systems
Client Server
Local Area Network (LAN)
Wide Area Network (WAN)

E3.3 Demonstrate an understanding of standards and protocols
Digital Imaging and Communications in Medicine (DICOM)
Health Language 7 (HL7)

E3.4 Demonstrate an understanding of the methods used for storage of data
Image compression
Automated Library Storage-Jukebox(ALS)
CD / DVD
Digital tape
Redundant Array of Inexpensive Disks(RAID)
Server

MODULE F  IMAGING PROCEDURES of the SKELETAL SYSTEM

F1  Perform Skeletal System Imaging Procedures
F1.1 Understand the pathology and anomalies related to the skeletal system, with respect to patient signs and symptoms, clinical presentation and diagnostic image presentation

Avulsion, Bennett’s, Bimalleolar, Blow-out, Boxer’s, Closed Colle’s, Comminuted, Complete Compound Compression, Contrecoup, Depressed, Displaced, Greenstick Hangman’s Impacted, incomplete Intertrochanteric, Linear, Longitudinal, March, Monteggia, Oblique, Open Pathological, Salter-Harris, Simple Smith’s, Spiral, Supracondylar, Transverse, Trimalleolar, Undisplaced,

Other Pathological/Anomalous Conditions
Achondroplasia,
Acromegaly,
Ankylosis spondylitis,
Aseptic necrosis,
Bone Dystrophies,
Cystic bone lesion,
Developmental dysplasia of the hip,
Dislocation,
Gout,
Hyperparathyroidism,
Hyperpituitarism,
Hypopituitarism,
Kyphosis,
Legge-Calve-Perthe’s disease,
Lordosis,
Metastatic bone lesions,
Multiple myeloma,
Osgood Schlatter’s disease,
Osteitis deformans,
Osteoarthritis,
Osteochondritis dissecans,
Osteoma,
Osteomalacia,
Osteomyelitis,
Osteoporosis,
Osteosarcoma,
Pagets,
Rheumatoid arthritis,
Rickets,
Scoliosis,
Spina Bifida,
Spondylolithesis,
Spondyloytis,
Spondylosis,
Subluxation,
Torticollis,
Transitional Vertebrae,

F1.2 Interview patient to verify and complement clinical history
F1.3 Prioritize examination according to patient’s medical status and resources available
F1.4 Assess and monitor patient’s condition
            Wounds and hemorrhage
            Edema
F 2  Perform Imaging Procedure of Finger

F2.1 Understand the gross anatomy, relational anatomy and physiology of the finger

F2.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
  Radiological modalities
  Ultrasound
  Nuclear Medicine
  Magnetic Resonance
  Health records
  Medical Laboratory reports

F2.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
  Determine the reason for the examination, given an adequate clinical history
  Recognize contraindications of the examination
  Evaluate the patient’s cognitive, emotional and physical ability
  Evaluate existing pathology
  Ensure availability of patient support, equipment and resources

F2.4 Plan the radiographic imaging procedure
  Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

F2.5 Position the finger using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
  - Posteroanterior (PA)
  - Anteroposterior (AP)
  - Anterior Oblique
  - Lateral

F2.6 Adapt positioning requirements according to patient’s condition
  Age
  Mobility
  Cognitive status
  Pathology
  Level of consciousness
  Sensory impairment
  Pregnancy
  Trauma

F2.7 Evaluate quality of images for the purpose of diagnostic interpretation
  Patient position
  Demonstration of anatomical structures
Demonstration of pathology

F2.8  **Obtain additional images as required**
- Corrective measures
- Supplemental images

F3  **Perform Imaging Procedure of Thumb**

F3.1  **Understand the gross anatomy, relational anatomy and physiology of the thumb**

F3.2  **Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies**
- Radiological modalities
  - Ultrasound
  - Nuclear Medicine
  - Magnetic Resonance
- Health records
  - Medical Laboratory reports

F3.3  **Utilize the clinical information provided to adapt the requested examination to an individual patient**
- Determine the reason for the examination, given an adequate clinical history
- Recognize contraindications of the examination
- Evaluate the patient’s cognitive, emotional and physical ability
- Evaluate existing pathology
- Ensure availability of patient support, equipment and resources

F3.4  **Plan the radiographic imaging procedure**
- Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

F3.5  **Position the thumb using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies**
- Posteroanterior (PA)
- Anteroposterior (AP)
- Anterior Oblique
- Lateral

F3.6  **Adapt positioning requirements according to patient’s condition**
- Age
- Mobility
- Cognitive status
- Pathology
- Level of consciousness
- Sensory impairment
- Pregnancy
- Trauma

F3.7  **Evaluate quality of images for the purpose of diagnostic interpretation**
- Patient position
Demonstration of anatomical structures
Demonstration of pathology

F3.8 Obtain additional images as required
Corrective measures
Supplemental images

F 4 Perform Imaging Procedure of Hand

F4.1 Understand the gross anatomy, relational anatomy and physiology of the hand

F4.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
Radiological modalities
- Ultrasound
- Nuclear Medicine
- Magnetic Resonance
Health records
- Medical Laboratory reports

F4.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
Determine the reason for the examination, given an adequate clinical history
Recognize contraindications of the examination
Evaluate the patient’s cognitive, emotional and physical ability
Evaluate existing pathology
Ensure availability of patient support, equipment and resources

F4.4 Plan the radiographic imaging procedure
Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

F4.5 Position the hand using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
- Posteroanterior (PA)
- Anteroposterior (AP)
- Anterior Oblique
- Posterior Obliques – Bilateral
- Lateral (fan/extension)

F4.6 Adapt positioning requirements according to patient’s condition
Age
Mobility
Cognitive status
Pathology
Level of consciousness
Sensory impairment
Pregnancy
Trauma

F4.7 Evaluate quality of images for the purpose of diagnostic interpretation
Patient position
Demonstration of anatomical structures
Demonstration of pathology

F4.8 Obtain additional images as required
Corrective measures
Supplemental images

F 5 Perform Imaging Procedure of Wrist
F5.1 Understand the gross, relational anatomy and physiology of the wrist.
F5.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
   Radiological modalities
   Ultrasound
   Nuclear Medicine
   Magnetic Resonance
   Health records
   Medical Laboratory reports

F5.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
   Determine the reason for the examination, given an adequate clinical history
   Recognize contraindications of the examination
   Evaluate the patient’s cognitive, emotional and physical ability
   Evaluate existing pathology
   Ensure availability of patient support, equipment and resources

F5.4 Plan the radiographic imaging procedure
   Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

F5.5 Position the wrist using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
   - Posteroanterior (PA)
   - Anteroposterior (AP)
   - Anterior Oblique
   - Posterior Oblique
   - Lateral

F5.6 Adapt positioning requirements according to patient’s condition
   Age
   Mobility
   Cognitive status
   Pathology
   Level of consciousness
   Sensory impairment
   Pregnancy
   Trauma

F5.7 Evaluate quality of images for the purpose of diagnostic interpretation
Patient position
Demonstration of anatomical structures
Demonstration of pathology

F5.8 Obtain additional images as required
Corrective measures
Supplemental images

F 6 Perform Imaging Procedure of Scaphoid

F6.1 Understand the gross anatomy, relational anatomy and physiology of the scaphoid

F6.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
Radiological modalities
Ultrasound
Nuclear Medicine
Magnetic Resonance
Health records
Medical Laboratory reports

F6.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
Determine the reason for the examination, given an adequate clinical history
Recognize contraindications of the examination
Evaluate the patient’s cognitive, emotional and physical ability
Evaluate existing pathology
Ensure availability of patient support, equipment and resources

F6.4 Plan the radiographic imaging procedure
Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

F6.5 Position the scaphoid using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
- Posteroanterior (PA) with ulnar deviation
- Posteroanterior (PA) axial

F6.6 Adapt positioning requirements according to patient’s condition
Age
Mobility
Cognitive status
Pathology
Level of consciousness
Sensory impairment
Pregnancy
Trauma

F6.7 Evaluate quality of images for the purposes of diagnostic interpretation
Patient position
Demonstration of anatomical structures
Demonstration of pathology

F6.8 Obtain additional images as required
Corrective measures
Supplemental images

F 7 Perform Imaging Procedure of Forearm
F7.1 Understand the gross anatomy, relational anatomy and physiology of the forearm
F7.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
Radiological modalities
Ultrasound
Nuclear Medicine
Magnetic Resonance
Health records
Medical Laboratory reports
F7.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
Determine the reason for the examination, given an adequate clinical history
Recognize contraindications of the examination
Evaluate the patient’s cognitive, emotional and physical ability
Evaluate existing pathology
Ensure availability of patient support, equipment and resources
F7.4 Plan the radiographic imaging procedure
Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety
F7.5 Position the forearm using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
- Anteroposterior (AP)
- Lateral
F7.6 Adapt positioning requirements according to patient’s condition
Age
Mobility
Cognitive status
Pathology
Level of consciousness
Sensory impairment
Pregnancy
Trauma
F7.7 Evaluate quality of images for the purposes of diagnostic interpretation
Patient position

January 2 007
RTR Curriculum Guide
Demonstration of anatomical structures
Demonstration of pathology

F7.8 Obtain additional images as required
Corrective measures
Supplemental images

F 8 Perform Imaging Procedure of Elbow

F8.1 Understand the gross anatomy, relational anatomy and physiology of the elbow

F8.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
Radiological modalities
Ultrasound
Nuclear Medicine
Magnetic Resonance
Health records
Medical Laboratory reports

F8.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
Determine the reason for the examination, given an adequate clinical history
Recognize contraindications of the examination
Evaluate the patient’s cognitive, emotional and physical ability
Evaluate existing pathology
Ensure availability of patient support, equipment and resources

F8.4 Plan the radiographic imaging procedure
Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

F8.5 Position the elbow using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
- Anteroposterior (AP) (elbow in extension, partial flexion)
- Anteroposterior/posteroanterior (AP/PA) (elbow in acute flexion)
- Posterior oblique medial rotation
- Posterior oblique lateral rotation
- Lateral
- Lateral - Radial head (4 position series)
- Lateral - Radial head and capitulum view

F8.6 Adapt positioning requirements according to patient’s condition
Age
Mobility
Cognitive status
Pathology
Level of consciousness
Sensory impairment
F8.7 Evaluate quality of images for the purpose of diagnostic interpretation
- Patient position
- Demonstration of anatomical structures
- Demonstration of pathology

F8.8 Obtain additional images as required
- Corrective measures
- Supplemental images

F9 Perform Imaging Procedure of Humerus
F9.1 Understand the gross anatomy, relational anatomy and physiology of the humerus

F9.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
- Radiological modalities
- Ultrasound
- Nuclear Medicine
- Magnetic Resonance
- Health records
- Medical Laboratory reports

F9.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
- Determine the reason for the examination, given an adequate clinical history
- Recognize contraindications of the examination
- Evaluate the patient’s cognitive, emotional and physical ability
- Evaluate existing pathology
- Ensure availability of patient support, equipment and resources

F9.4 Plan the radiographic imaging procedure
- Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

F9.5 Position the humerus using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
- Anteroposterior (AP)
- Lateral

F9.6 Adapt positioning requirements according to patient’s condition
- Age
- Mobility
- Cognitive status
- Pathology
- Level of consciousness
- Sensory impairment
- Pregnancy
- Trauma

Pregnancy
Trauma
F9.7 Evaluate quality of images for the purpose of diagnostic interpretation
   Patient position
   Demonstration of anatomical structures
   Demonstration of pathology

F9.8 Obtain additional images as required
   Corrective measures
   Supplemental images

F 10 Perform Imaging Procedure of Shoulder

F10.1 Understand the gross anatomy, relational anatomy and physiology of the shoulder

F10.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
   Radiological modalities
   Ultrasound
   Nuclear Medicine
   Magnetic Resonance
   Health records
   Medical Laboratory reports

F10.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
   Determine the reason for the examination, given an adequate clinical history
   Recognize contraindications of the examination
   Evaluate the patient’s cognitive, emotional and physical ability
   Evaluate existing pathology
   Ensure availability of patient support, equipment and resources

F10.4 Plan the radiographic imaging procedure
   Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

F10.5 Position the shoulder using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
   - Anteroposterior (AP)
   - arm in neutral position
   - arm in internal rotation
   - arm in external rotation
   - Glenoid cavity posterior oblique
   - Scapular Y anterior oblique
   - Inferosuperior axial
   - Superoinferior axial

F10.6 Adapt positioning requirements according to patient’s condition
   Age
   Mobility
   Cognitive status
   Pathology
Level of consciousness
Sensory impairment
Pregnancy
Trauma

**F10.7 Evaluate quality of images for the purpose of diagnostic interpretation**
- Patient position
- Demonstration of anatomical structures
- Demonstration of pathology

**F10.8 Obtain additional images as required**
- Corrective measures
- Supplemental images

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**F11 Perform Imaging Procedure of Clavicle**

**F11.1 Understand the gross anatomy, relational anatomy and physiology of the clavicle**

**F11.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies**
- Radiological modalities
- Ultrasound
- Nuclear Medicine
- Magnetic Resonance
- Health records
- Medical Laboratory reports

**F11.3 Utilize the clinical information provided to adapt the requested examination to an individual patient**
- Determine the reason for the examination, given an adequate clinical history
- Recognize contraindications of the examination
- Evaluate the patient’s cognitive, emotional and physical ability
- Evaluate existing pathology
- Ensure availability of patient support, equipment and resources

**F11.4 Plan the radiographic imaging procedure**
- Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

**F11.5 Position the clavicle using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies**
- Anteroposterior (AP)
- Posteroanterior (PA)
- Anteroposterior (AP) axial
- Posteroanterior (PA) axial

**F11.6 Adapt positioning requirements according to patient’s condition**
- Age
- Mobility
Cognitive status
Pathology
Level of consciousness
Sensory impairment
Pregnancy
Trauma

F11.7 Evaluate quality of images for the purpose of diagnostic
   Patient position
   Demonstration of anatomical structures
   Demonstration of pathology

F11.8 Obtain additional images as required
   Corrective measures
   Supplemental images

F 12 Perform Imaging Procedure of Acromioclavicular Joints

F12.1 Understand the gross anatomy, relational anatomy and physiology of the
   acromioclavicular joints

F12.2 Demonstrate an understanding of related disciplines in order to review data
   available from reports and/or images of previous studies
   Radiological modalities
   Ultrasound
   Nuclear Medicine
   Magnetic Resonance
   Health records
   Medical Laboratory reports

F12.3 Utilize the clinical information provided to adapt the requested examination
   to an individual patient
   Determine the reason for the examination, given an adequate clinical history
   Recognize contraindications of the examination
   Evaluate the patient’s cognitive, emotional and physical ability
   Evaluate existing pathology
   Ensure availability of patient support, equipment and resources

F12.4 Plan the radiographic imaging procedure
   Ensure the sequence of the procedures enable optimum diagnosis
   while providing for the patient’s comfort and safety

F12.5 Position the acromioclavicular joints using anatomical landmarks, relational
   anatomy, central ray, collimation and image receptor for the demonstration
   of the required anatomical structures/pathologies
   - Anteroposterior (AP) with and without weights

F12.6 Adapt positioning requirements according to patient’s condition
   Age
   Mobility
   Cognitive status
   Pathology
   Level of consciousness
   Sensory impairment
F12.7 Evaluate quality of images for the purpose of diagnostic interpretation
- Patient position
- Demonstration of anatomical structures
- Demonstration of pathology

F12.8 Obtain additional images as required
- Corrective measures
- Supplemental images

F13 Perform Imaging Procedure of Scapula
F13.1 Understand the gross anatomy, relational anatomy and physiology of the scapula

F13.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
- Radiological modalities
- Ultrasound
- Nuclear Medicine
- Magnetic Resonance
- Health records
  - Medical Laboratory reports

F13.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
- Determine the reason for the examination, given an adequate clinical history
- Recognize contraindications of the examination
- Evaluate the patient’s cognitive, emotional and physical ability
- Evaluate existing pathology
- Ensure availability of patient support, equipment and resources

F13.4 Plan the radiographic imaging procedure
- Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

F13.5 Position the scapula using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
- Anteroposterior (AP)
- Lateral

F13.6 Adapt positioning requirements according to patient’s condition
- Age
- Mobility
- Cognitive status
- Pathology
- Level of consciousness
- Sensory impairment
- Pregnancy
- Trauma

F13.7 Evaluate quality of images for the purpose of diagnostic interpretation
Patient position
Demonstration of anatomical structures
Demonstration of pathology
Phase of respiration

F13.8 Obtain additional images as required
Corrective measures
Supplemental images

F 14 Perform Imaging Procedure of Toes

F14.1 Understand the gross anatomy, relational anatomy and physiology of the toes

F14.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
Radiological modalities
Ultrasound
Nuclear Medicine
Magnetic Resonance
Health records
Medical Laboratory reports

F14.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
Determine the reason for the examination, given an adequate clinical history
Recognize contraindications of the examination
Evaluate the patient’s cognitive, emotional and physical ability
Evaluate existing pathology
Ensure availability of patient support, equipment and resources

F14.4 Plan the radiographic imaging procedure
Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

F14.5 Position the toes using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
- Anteroposterior (AP)
- Anteroposterior (AP) axial
- Posterior Oblique
- Lateral

F14.6 Adapt positioning requirements according to patient’s conditions
Age
Mobility
Cognitive status
Pathology
Level of consciousness
Sensory impairment
Pregnancy
Trauma

F14.7 Evaluate quality of images for the purpose of diagnostic interpretation
    Patient position
    Demonstration of anatomical structures
    Demonstration of pathology

F14.8 Obtain additional images as required
    Corrective measures
    Supplemental images

F 15 Perform Imaging Procedure of Foot

F15.1 Understand the gross anatomy, relational anatomy and physiology of the foot.

F15.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
    Radiological modalities
    Ultrasound
    Nuclear Medicine
    Magnetic Resonance
    Health records
    Medical Laboratory reports

F15.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
    Determine the reason for the examination, given an adequate clinical history
    Recognize contraindications of the examination
    Evaluate the patient’s cognitive, emotional and physical ability
    Evaluate existing pathology
    Ensure availability of patient support, equipment and resources

F15.4 Plan the radiographic imaging procedure
    Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

F15.5 Position the foot using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
    - Anteroposterior (AP)
    - Anteroposterior axial (AP)
    - Posterior Oblique, medial rotation
    - Lateral
    - Anteroposterior (AP) Axial weight bearing
    - Lateral weight bearing

F15.6 Adapt positioning requirements according to patient’s condition
    Age
    Mobility
    Cognitive status
    Pathology
    Level of consciousness
Sensory impairment
Pregnancy
Trauma

F15.7 Evaluate quality of images for the purpose of diagnostic interpretation
- Patient position
- Demonstration of anatomical structures
- Demonstration of pathology

F15.8 Obtain additional images as required
- Corrective measures
- Supplemental images

F16 Perform Imaging Procedure of Ankle

F16.1 Understand the gross anatomy, relational anatomy and physiology of the ankle

F16.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
- Radiological modalities
- Ultrasound
- Nuclear Medicine
- Magnetic Resonance
- Health records
- Medical Laboratory reports

F16.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
- Determine the reason for the examination, given an adequate clinical history
- Recognize contraindications of the examination
- Evaluate the patient’s cognitive, emotional and physical ability
- Evaluate existing pathology
- Ensure availability of patient support, equipment and resources

F16.4 Plan the radiographic imaging procedure
- Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

F16.5 Position the ankle using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
- Anteroposterior (AP)
- Posterior Oblique with medial rotation (15°-20° mortise)
- Posterior Oblique with medial rotation (45°)
- Lateral

F16.6 Adapt positioning requirements according to patient’s condition
- Age
- Mobility
- Cognitive status
- Pathology
- Level of consciousness
F16.7  Evaluate quality of images for the purpose of diagnostic interpretation
   - Patient position
   - Demonstration of anatomical structures
   - Demonstration of pathology

F16.8  Obtain additional images as required
   - Corrective measures
   - Supplemental images

F17  Perform Imaging Procedure of Calcaneus

   F17.1  Understand the gross anatomy, relational anatomy and physiology of the calcaneus

   F17.2  Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
   - Radiological modalities
   - Ultrasound
   - Nuclear Medicine
   - Magnetic Resonance
   - Health records
   - Medical Laboratory reports

   F17.3  Utilize the clinical information provided to adapt the requested examination to an individual patient
   - Determine the reason for the examination, given an adequate clinical history
   - Recognize contraindications of the examination
   - Evaluate the patient’s cognitive, emotional and physical ability
   - Evaluate existing pathology
   - Ensure availability of patient support, equipment and resources

   F17.4  Plan the radiographic imaging procedure
   - Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

   F17.5  Position the calcaneus using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
   - Lateral
   - Plantodorsal (axial)

   F17.6  Adapt positioning requirements according to patient’s condition
   - Age
   - Mobility
   - Cognitive status
   - Pathology
   - Level of consciousness
   - Sensory impairment
   - Pregnancy
   - Trauma
F17.7 Evaluate quality of images for the purpose of diagnostic interpretation
   Patient position
   Demonstration of anatomical structures
   Demonstration of pathology

F17.8 Obtain additional images as required
   Corrective measures
   Supplemental images

F18 Perform Imaging Procedure of Tibia and Fibula

F18.1 Understand the gross anatomy, relational anatomy and physiology of the tibia and fibula

F18.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
   Radiological modalities
   Ultrasound
   Nuclear Medicine
   Magnetic Resonance
   Health records
   Medical Laboratory reports

F18.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
   Determine the reason for the examination, given an adequate clinical history
   Recognize contraindications of the examination
   Evaluate the patient’s cognitive, emotional and physical ability
   Evaluate existing pathology
   Ensure availability of patient support, equipment and resources

F18.4 Plan the radiographic imaging procedure
   Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

F18.5 Position the tibia and fibula using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
   - Anteroposterior (AP)
   - Lateral

F18.6 Adapt positioning requirements according to patient’s condition
   Age
   Mobility
   Cognitive status
   Pathology
   Level of consciousness
   Sensory impairment
   Pregnancy
   Trauma

F18.7 Evaluate quality of images for the purpose of diagnostic interpretation
Patient position  
Demonstration of anatomical structures  
Demonstration of pathology  

F18.8 Obtain additional images as required  
Corrective measures  
Supplemental images  

F 19 Perform Imaging Procedure of Knee  
F19.1 Understand the gross anatomy, relational anatomy and physiology of the knee  
F19.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies  
Radiological modalities  
Ultrasound  
Nuclear Medicine  
Magnetic Resonance  
Health records  
Medical Laboratory reports  
F19.3 Utilize the clinical information provided to adapt the requested examination to an individual patient  
Determine the reason for the examination, given an adequate clinical history  
Recognize contraindications of the examination  
Evaluate the patient’s cognitive, emotional and physical ability  
Evaluate existing pathology  
Ensure availability of patient support, equipment and resources  
F19.4 Plan the radiographic imaging procedure  
Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety  
F19.5 Position the knee using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies  
- Anteroposterior (AP)  
- Posterior Oblique with medial rotation  
- Posterior Oblique with lateral rotation  
- Anterior Oblique with medial rotation  
- Anterior Oblique with lateral rotation  
- Lateral  
- Anteroposterior (AP) weight bearing  
- Posterolateral (PA) Axial for intercondylar fossa  
F19.6 Adapt positioning requirements according to patient’s condition  
Age  
Mobility  
Cognitive status  
Pathology  
Level of consciousness
Sensory impairment
Pregnancy
Trauma

**F19.7** Evaluate quality of images for the purpose of diagnostic interpretation
- Patient position
- Demonstration of anatomical structures
- Demonstration of pathology

**F19.8** Obtain additional images as required
- Corrective measures
- Supplemental images

**F 20** Perform Imaging Procedure of Patella

**F20.1** Understand the gross anatomy, relational anatomy and physiology of the patella.

**F20.2** Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
- Radiological modalities
- Ultrasound
- Nuclear Medicine
- Magnetic Resonance
- Health records
- Medical Laboratory reports

**F20.3** Utilize the clinical information provided to adapt the requested examination to an individual patient
- Determine the reason for the examination, given an adequate clinical history
- Recognize contraindications of the examination
- Evaluate the patient’s cognitive, emotional and physical ability
- Evaluate existing pathology
- Ensure availability of patient support, equipment and resources

**F20.4** Plan the radiographic imaging procedure
- Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

**F20.5** Position the patella using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
- Anteroposterior (AP)
- Posteroanterior (PA)
- Lateral
- Tangential

**F20.6** Adapt positioning requirements according to patient’s condition
- Age
- Mobility
- Cognitive status
- Pathology
- Level of consciousness
Sensory impairment
Pregnancy
Trauma

F20.7 Evaluate quality of images for the purpose of diagnostic interpretation
   Patient position
   Demonstration of anatomical structures
   Demonstration of pathology

F20.8 Obtain additional images as required
   Corrective measures
   Supplemental images

F 21 Perform Imaging Procedure of Femur
F21.1 Understand the gross anatomy, relational anatomy and physiology of the femur
F21.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
   Radiological modalities
   Ultrasound
   Nuclear Medicine
   Magnetic Resonance
   Health records
   Medical Laboratory reports
F21.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
   Determine the reason for the examination, given an adequate clinical history
   Recognize contraindications of the examination
   Evaluate the patient’s cognitive, emotional and physical ability
   Evaluate existing pathology
   Ensure availability of patient support, equipment and resources
F21.4 Plan the radiographic imaging procedure
   Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety
F21.5 Position the femur using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
   - Anteroposterior (AP)
   - Lateral
F21.6 Adapt positioning requirements according to patient’s condition
   Age
   Mobility
   Cognitive status
   Pathology
   Level of consciousness
   Sensory impairment
   Pregnancy
   Trauma
F21.7 Evaluate quality of images for the purpose of diagnostic interpretation
   Patient position
   Demonstration of anatomical structures
   Demonstration of pathology

F21.8 Obtain additional images as required
   Corrective measures
   Supplemental images

F 22 Perform Imaging Procedure of Hip(s)

F22.1 Understand the gross anatomy, relational anatomy and physiology of the
   hip(s)

F22.2 Demonstrate an understanding of related disciplines in order to review data
   available from reports and/or images of previous studies
   Radiological modalities
   Ultrasound
   Nuclear Medicine
   Magnetic Resonance
   Health records
   Medical Laboratory reports

F22.3 Utilize the clinical information provided to adapt the requested examination
   to an individual patient
   Determine the reason for the examination, given an adequate
   clinical history
   Recognize contraindications of the examination
   Evaluate the patient’s cognitive, emotional and physical ability
   Evaluate existing pathology
   Ensure availability of patient support, equipment and resources

F22.4 Plan the radiographic imaging procedure
   Ensure the sequence of the procedures enable optimum diagnosis
   while providing for the patient’s comfort and safety

F22.5 Position the hip(s) using anatomical landmarks, relational anatomy, central
   ray, collimation and image receptor for the demonstration of the required
   anatomical structures/pathologies
   - Anteroposterior (AP) Unilateral
   - Anteroposterior (AP) Bilateral
   - Bilateral Posterior Oblique (Frog leg)
   - Lateral
   - Axiolateral

F22.6 Adapt positioning requirements according to patient’s condition
   Age
   Mobility
   Cognitive status
   Pathology
   Level of consciousness
   Sensory impairment
   Pregnancy
Trauma

**F22.7** Evaluate quality of images for the purpose of diagnostic interpretation
- Patient position
- Demonstration of anatomical structures
- Demonstration of pathology

**F22.8** Obtain additional images as required
- Corrective measures
- Supplemental images

**F 23** Perform Imaging Procedure of Pelvis

**F23.1** Understand the gross anatomy, relational anatomy and physiology of the pelvis

**F23.2** Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
- Radiological modalities
- Ultrasound
- Nuclear Medicine
- Magnetic Resonance
- Health records
  - Medical Laboratory reports

**F23.3** Utilize the clinical information provided to adapt the requested examination to an individual patient
- Determine the reason for the examination, given an adequate clinical history
- Recognize contraindications of the examination
- Evaluate the patient’s cognitive, emotional and physical ability
- Evaluate existing pathology
- Ensure availability of patient support, equipment and resources

**F23.4** Plan the radiographic imaging procedure
- Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

**F23.5** Position the pelvis using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
- Anteroposterior (AP)
- Anteroposterior (AP) Axial (Outlet)
- Acetabulum – posterior oblique (Judet)
- Ilium – Anterior Oblique
- Ilium – Posterior Oblique

**F23.6** Adapt positioning requirements according to patient’s condition
- Age
- Mobility
- Cognitive status
- Pathology
- Level of consciousness
- Sensory impairment
Pregnancy
Trauma

F23.7 Evaluate quality of images for the purpose of diagnostic interpretation
   Patient position
   Demonstration of anatomical structures
   Demonstration of pathology

F23.8 Obtain additional images as required
   Corrective measures
   Supplemental images

F 24 Perform Pediatric Bone Age Studies

F24.1 Understand skeletal development

F24.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous
   Radiological modalities
   Ultrasound
   Nuclear Medicine
   Magnetic Resonance
   Health records
   Medical Laboratory reports

F24.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
   Determine the reason for the examination, given an adequate clinical history
   Recognize contraindications of the examination
   Evaluate the patient’s cognitive, emotional and physical ability
   Evaluate existing pathology
   Ensure availability of patient support, equipment and resources

F24.4 Plan the radiographic imaging procedure
   Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

F24.5 Position the patient using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
   - Posteroanterior (PA) hands and wrist
   - Anteroposterior (AP) left knee

F24.6 Adapt positioning requirements according to patient’s condition
   Age
   Mobility
   Cognitive status
   Pathology
   Level of consciousness
   Sensory impairment
   Trauma

F24.7 Evaluate quality of images for the purpose of diagnostic interpretation
Patient position
Demonstration of anatomical structures
Demonstration of pathology

F24.8 Obtain additional images as required
Corrective measures
Supplemental images

F 25 Perform Imaging Procedure of Cervical Vertebrae

F25.1 Understand the gross anatomy, relational anatomy and physiology of the cervical vertebrae

F25.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
Radiological modalities
Ultrasound
Nuclear Medicine
Magnetic Resonance
Health records
Medical Laboratory reports

F25.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
Determine the reason for the examination, given an adequate clinical history
Recognize contraindications of the examination
Evaluate the patient’s cognitive, emotional and physical ability
Evaluate existing pathology
Ensure availability of patient support, equipment and resources

F25.4 Plan the radiographic imaging procedure
Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

F25.5 Position the cervical vertebrae using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
- Anteroposterior (AP) atlas and axis open mouth
- Anteroposterior (AP) axial lower cervical
- Lateral
- Anterior Obliques
- Posterior Obliques
- Lateral with hyperflexion
- Lateral with hyperextension

F25.6 Adapt positioning requirements according to patient’s condition
Age
Mobility
Cognitive status
Pathology
Level of consciousness
Sensory impairment
Pregnancy
Trauma
Body habitus

F25.7 Evaluate quality of images for the purpose of diagnostic interpretation
- Patient position
- Demonstration of anatomical structures
- Demonstration of pathology

F25.8 Obtain additional images as required
- Corrective measures
- Supplemental images

F 26 Perform Imaging Procedure of Thoracic Vertebrae

F26.1 Understand the gross, relational anatomy and physiology of the thoracic vertebrae

F26.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
- Radiological modalities
- Ultrasound
- Nuclear Medicine
- Magnetic Resonance
- Health records
  - Medical Laboratory reports

F26.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
- Determine the reason for the examination, given an adequate clinical history
- Recognize contraindications of the examination
- Evaluate the patient’s cognitive, emotional and physical ability
- Evaluate existing pathology
- Ensure availability of patient support, equipment and resources

F26.4 Plan the radiographic imaging procedure
- Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

F26.5 Position the thoracic vertebrae using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
- Anteroposterior (AP)
- Lateral (Twining)
- Lateral

F26.6 Adapt positioning requirements according to patient’s condition
- Age
- Mobility
- Cognitive status
- Pathology
Level of consciousness
Sensory impairment
Pregnancy
Trauma
Body habitus
Phase of respiration

**F26.7 Evaluate quality of images for the purpose of diagnostic interpretation**
- Patient position
- Demonstration of anatomical structures
- Demonstration of pathology
- Phase of respiration

**F26.8 Obtain additional images as required**
- Corrective measures
- Supplemental images

**F 27 Perform Imaging Procedure of Lumbar Vertebrae**

**F27.1 Understand the gross, relational anatomy and physiology of the lumbar vertebrae**

**F27.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies**
- Radiological modalities
- Ultrasound
- Nuclear Medicine
- Magnetic Resonance
- Health records
  - Medical Laboratory reports

**F27.3 Utilize the clinical information provided to adapt the requested examination to an individual patient**
- Determine the reason for the examination, given an adequate clinical history
- Recognize contraindications of the examination
- Evaluate the patient’s cognitive, emotional and physical ability
- Evaluate existing pathology
- Ensure availability of patient support, equipment and resources

**F27.4 Plan the radiographic imaging procedure**
- Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

**F27.5 Position the lumbar vertebrae using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies**
- Anteroposterior (AP)
- Lateral
- Anterior obliques
- Posterior obliques
- Lateral with hyperflexion
- Lateral with hyperextension
- Lateral L5/S1 lumbosacral junction

**F27.6 Adapt positioning requirements according to patient’s condition**
- Age
- Mobility
- Cognitive status
- Pathology
- Level of consciousness
- Sensory impairment
- Pregnancy
- Trauma
- Body habitus

**F27.7 Evaluate quality of images for the purpose of diagnostic interpretation**
- Patient position
- Demonstration of anatomical structures
- Demonstration of pathology

**F27.8 Obtain additional images as required**
- Corrective measures
- Supplemental images

**F 28 Perform Imaging Procedure of Sacroiliac Joints**

**F28.1 Understand the gross, relational anatomy and physiology of the sacroiliac joints**

**F28.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies**
- Radiological modalities
- Ultrasound
- Nuclear Medicine
- Magnetic Resonance
- Health records
  - Medical Laboratory reports

**F28.3 Utilize the clinical information provided to adapt the requested examination to an individual patient**
- Determine the reason for the examination, given an adequate clinical history
- Recognize contraindications of the examination
- Evaluate the patient’s cognitive, emotional and physical ability
- Evaluate existing pathology
- Ensure availability of patient support, equipment and resources

**F28.4 Plan the radiographic imaging procedure**
- Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

**F28.5 Position the sacroiliac joints using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required**
- Anatomical structures/pathologies
- Anteroposterior (AP) axial
- Posteroanterior (PA) axial
- Posterior obliques

F28.6 Adapt positioning requirements according to patient’s condition
   - Age
   - Mobility
   - Cognitive status
   - Pathology
   - Level of consciousness
   - Sensory impairment
   - Pregnancy
   - Trauma
   - Body habitus

F28.7 Evaluate quality of images for the purpose of diagnostic interpretation
   - Patient position
   - Demonstration of anatomical structures
   - Demonstration of pathology

F28.8 Obtain additional images as required
   - Corrective measures
   - Supplemental images

F29 Perform Imaging Procedure of Sacrum
F29.1 Understand the gross, relational anatomy and physiology of the sacrum
F29.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
   - Radiological modalities
   - Ultrasound
   - Nuclear Medicine
   - Magnetic Resonance
   - Health records
   - Medical Laboratory reports

F29.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
   - Determine the reason for the examination, given an adequate clinical history
   - Recognize contraindications of the examination
   - Evaluate the patient’s cognitive, emotional and physical ability
   - Evaluate existing pathology
   - Ensure availability of patient support, equipment and resources

F29.4 Plan the radiographic imaging procedure
   - Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

F29.5 Counsel patients with respect to pre-procedural care
F29.6 Position the sacrum using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
- Anteroposterior (AP) axial
- Lateral

F29.7 Adapt positioning requirements according to patient’s condition
Age
Mobility
Cognitive status
Pathology
Level of consciousness
Sensory impairment
Pregnancy
Trauma
Body habitus

F29.8 Evaluate quality of images for the purpose of diagnostic interpretation
Patient position
Demonstration of anatomical structures
Demonstration of pathology

F29.9 Obtain additional images as required
Corrective measures
Supplemental images

F30 Perform Imaging Procedure of Coccyx
F30.1 Understand the gross, relational anatomy and physiology of the coccyx
F30.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
Radiological modalities
Ultrasound
Nuclear Medicine
Magnetic Resonance
Health records
Medical Laboratory reports

F30.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
Determine the reason for the examination, given an adequate clinical history
Recognize contraindications of the examination
Evaluate the patient’s cognitive, emotional and physical ability
Evaluate existing pathology
Ensure availability of patient support, equipment and resources

F30.4 Plan the radiographic imaging procedure
Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

F30.5 Counsel patients with respect to pre-procedural care
F30.6  **Position the coccyx using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies**

- Anteroposterior (AP) axial
- Lateral

F30.7  **Adapt positioning requirements according to patient’s condition**

Age
Mobility
Cognitive status
Pathology
Level of consciousness
Sensory impairment
Pregnancy
Trauma
Body habitus

F30.8  **Evaluate quality of images for the purpose of diagnostic interpretation**

Patient position
Demonstration of anatomical structures
Demonstration of pathology

F30.9  **Obtain additional images as required**

Corrective measures
Supplemental images

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**F 31  Perform Imaging Procedure for Scoliosis Series**

**F31.1  Understand the gross, relational anatomy and physiology of the spine as related to a scoliosis series**

**F31.2  Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies**

Radiological modalities
Ultrasound
Nuclear Medicine
Magnetic Resonance
Health records
Medical Laboratory reports

**F31.3  Utilize the clinical information provided to adapt the requested examination to an individual patient**

Determine the reason for the examination, given an adequate clinical history
Recognize contraindications of the examination
Evaluate the patient’s cognitive, emotional and physical ability
Evaluate existing pathology
Ensure availability of patient support, equipment and resources

**F31.4  Plan the radiographic imaging procedure**

Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety
F31.5 Position the patient for the scoliosis series using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
- Posteroanterior (PA)
- Anteroposterior (AP)
- Lateral
- Anteroposterior (AP) with right bending
- Anteroposterior (AP) with left bending

F31.6 Adapt positioning requirements according to patient’s condition
Age
Mobility
Cognitive status
Pathology
Level of consciousness
Sensory impairment
Pregnancy
Trauma
Body habitus

F31.7 Evaluate quality of images for the purpose of diagnostic interpretation
Patient position
Demonstration of anatomical structures
Demonstration of pathology

F31.8 Obtain additional images as required
Corrective measures
Supplemental images

F32 Perform Imaging Procedure of Sternum
F32.1 Understand the gross, relational anatomy and physiology of the sternum
F32.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
Radiological modalities
Ultrasound
Nuclear Medicine
Magnetic Resonance
Health records
Medical Laboratory reports

F32.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
Determine the reason for the examination, given an adequate clinical history
Recognize contraindications of the examination
Evaluate the patient’s cognitive, emotional and physical ability
Evaluate existing pathology
Ensure availability of patient support, equipment and resources

F32.4 Plan the radiographic imaging procedure
Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

F32.5 Position the sternum using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
- Anterior oblique
- Lateral

F32.6 Adapt positioning requirements according to patient’s condition
- Age
- Mobility
- Cognitive status
- Pathology
- Level of consciousness
- Sensory impairment
- Pregnancy
- Trauma
- Body habitus

F32.7 Evaluate quality of images for the purpose of diagnostic interpretation
- Patient position
- Demonstration of anatomical structures
- Demonstration of pathology
- Phase of respiration

F32.8 Obtain additional images as required
- Corrective measures
- Supplemental images

F 33 Perform Imaging Procedure of Ribs

F33.1 Understand the gross, relational anatomy and physiology of the ribs

F33.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
- Radiological modalities
- Ultrasound
- Nuclear Medicine
- Magnetic Resonance
- Health records
- Medical Laboratory reports

F33.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
- Determine the reason for the examination, given an adequate clinical history
- Recognize contraindications of the examination
- Evaluate the patient’s cognitive, emotional and physical ability
- Evaluate existing pathology
- Ensure availability of patient support, equipment and resources

F33.4 Plan the radiographic imaging procedure
Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

F33.5 Position the ribs using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
- Upper Ribs
  - Anteroposterior (AP)
  - Posteroanterior (PA)
  - Anterior obliques
  - Posterior obliques
- Lower Ribs
  - Anteroposterior (AP)
  - Posteroanterior (PA)
  - Anterior obliques
  - Posterior obliques

F33.6 Adapt positioning requirements according to patient’s condition
  - Age
  - Mobility
  - Cognitive status
  - Pathology
  - Level of consciousness
  - Sensory impairment
  - Pregnancy
  - Trauma
  - Body habitus

F33.7 Evaluate quality of images for the purpose of diagnostic interpretation
  - Patient position
  - Demonstration of anatomical structures
  - Demonstration of pathology
  - Phase of respiration

F33.8 Obtain additional images as required
  - Corrective measures
  - Supplemental images

F 34 Perform Imaging Procedure of Skull
F34.1 Understand the gross, relational anatomy and physiology of the skull
F34.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
  - Radiological modalities
  - Ultrasound
  - Nuclear Medicine
  - Magnetic Resonance
  - Health records
  - Medical Laboratory reports
F34.3 Utilize the clinical information provided to adapt the requested examination to an individual patient

- Determine the reason for the examination, given an adequate clinical history
- Recognize contraindications of the examination
- Evaluate the patient’s cognitive, emotional and physical ability
- Evaluate existing pathology
- Ensure availability of patient support, equipment and resources

F34.4 Plan the radiographic imaging procedure

- Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

F34.5 Position the skull using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies

- Anteroposterior (AP) axial 30° (Towne)
- Posteroanterior (PA) axial 15° (Caldwell)
- Lateral

F34.6 Adapt positioning requirements according to patient’s condition

- Age
- Mobility
- Cognitive status
- Pathology
- Level of consciousness
- Sensory impairment
- Pregnancy
- Trauma
- Body habitus

F34.7 Evaluate quality of images for the purpose of diagnostic interpretation

- Patient position
- Demonstration of anatomical structures
- Demonstration of pathology

F34.8 Obtain additional images as required

- Corrective measures
- Supplemental images

F35 Perform Imaging Procedure of Sinuses

F35.1 Understand the gross, relational anatomy and physiology of the sinuses

F35.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies

- Radiological modalities
- Ultrasound
- Nuclear Medicine
- Magnetic Resonance
- Health records
- Medical Laboratory reports

January 2 007

RTR Curriculum Guide
F35.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
   Determine the reason for the examination, given an adequate clinical history
   Recognize contraindications of the examination
   Evaluate the patient’s cognitive, emotional and physical ability
   Evaluate existing pathology
   Ensure availability of patient support, equipment and resources

F35.4 Plan the radiographic imaging procedure
   Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

F35.5 Position the sinuses using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
   - Parietoacanthial (Waters)
   - Posteroanterior (PA) axial (Caldwell)
   - Lateral

F35.6 Adapt positioning requirements according to patient’s condition
   Age
   Mobility
   Cognitive status
   Pathology
   Level of consciousness
   Sensory impairment
   Pregnancy
   Trauma
   Body habitus

F35.7 Evaluate quality of images for the purpose of diagnostic interpretation
   Patient position
   Demonstration of anatomical structures
   Demonstration of pathology

F35.8 Obtain additional images as required
   Corrective measures
   Supplemental images

F36 Perform Imaging Procedure of Facial Bones
F36.1 Understand the gross, relational anatomy and physiology of facial bones
F36.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
   Radiological modalities
   Ultrasound
   Nuclear Medicine
   Magnetic Resonance
   Health records
   Medical Laboratory reports
F36.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
Determine the reason for the examination, given an adequate clinical history
Recognize contraindications of the examination
Evaluate the patient’s cognitive, emotional and physical ability
Evaluate existing pathology
Ensure availability of patient support, equipment and resources

F36.4 Plan the radiographic imaging procedure
Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

F36.5 Position the facial bones using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
- Posteroanterior (PA) 15° axial (Caldwell)
- Parietoacanthial (Waters)
- Lateral

F36.6 Adapt positioning requirements according to patient’s condition
Age
Mobility
Cognitive status
Pathology
Level of consciousness
Sensory impairment
Pregnancy
Trauma
Body habitus

F36.7 Evaluate quality of images for the purpose of diagnostic interpretation
Patient position
Demonstration of anatomical structures
Demonstration of pathology

F36.8 Obtain additional images as required
Corrective measures
Supplemental images

F 37 Perform Imaging Procedure of Orbits
F37.1 Understand the gross, relational anatomy and physiology of the orbits
F37.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
Radiological modalities
Ultrasound
Nuclear Medicine
Magnetic Resonance
Health records
Medical Laboratory reports
F37.3 Utilize the clinical information provided to adapt the requested examination to an individual patient

Determine the reason for the examination, given an adequate clinical history
Recognize contraindications of the examination
Evaluate the patient’s cognitive, emotional and physical ability
Evaluate existing pathology
Ensure availability of patient support, equipment and resources

F37.4 Plan the radiographic imaging procedure

Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

F37.5 Position the orbits using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies

- Posteroanterior (PA) 30° axial (Caldwell)
- Parietoacanthial (Waters)
- Lateral

F37.6 Adapt positioning requirements according to patient’s condition

Age
Mobility
Cognitive status
Pathology
Level of consciousness
Sensory impairment
Pregnancy
Trauma
Body habitus

F37.7 Evaluate quality of images for the purpose of diagnostic interpretation

Patient position
Demonstration of anatomical structures
Demonstration of pathology

F37.8 Obtain additional images as required

Corrective measures
Supplemental images

F38 Perform Imaging Procedure of Nasal Bones

F38.1 Understand the gross, relational anatomy and physiology of the nasal bones

F38.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies

Radiological modalities
Ultrasound
Nuclear Medicine
Magnetic Resonance
Health records
Medical Laboratory reports
F38.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
   Determine the reason for the examination, given an adequate clinical history
   Recognize contraindications of the examination
   Evaluate the patient’s cognitive, emotional and physical ability
   Evaluate existing pathology
   Ensure availability of patient support, equipment and resources

F38.4 Plan the radiographic imaging procedure
   Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

F38.5 Position the nasal bones using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
   - Parietoacanthial (Waters)
   - Lateral

F38.6 Adapt positioning requirements according to patient’s condition
   Age
   Mobility
   Cognitive status
   Pathology
   Level of consciousness
   Sensory impairment
   Pregnancy
   Trauma
   Body habitus

F38.7 Evaluate quality of images for the purpose of diagnostic interpretation
   Patient position
   Demonstration of anatomical structures
   Demonstration of pathology

F38.8 Obtain additional images as required
   Corrective measures
   Supplemental images

F39 Perform Imaging Procedure of Zygomatic Arches
F39.1 Understand the gross, relational anatomy and physiology of the zygomatic arches
F39.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
   Radiological modalities
   Ultrasound
   Nuclear Medicine
   Magnetic Resonance
   Health records
   Medical Laboratory reports
F39.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
   Determine the reason for the examination, given an adequate clinical history
   Recognize contraindications of the examination
   Evaluate the patient’s cognitive, emotional and physical ability
   Evaluate existing pathology
   Ensure availability of patient support, equipment and resources

F39.4 Plan the radiographic imaging procedure
   Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

F39.5 Position the zygomatic arch using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
   - Parietoacanthial (Waters)
   - Tangential
   - Anteroposterior axial (Towne)

F39.6 Adapt positioning requirements according to patient’s condition
   Age
   Mobility
   Cognitive status
   Pathology
   Level of consciousness
   Sensory impairment
   Pregnancy
   Trauma
   Body habitus

F39.7 Evaluate quality of images for the purpose of diagnostic interpretation
   Patient position
   Demonstration of anatomical structures
   Demonstration of pathology

F39.8 Obtain additional images as required
   Corrective measures
   Supplemental images

F 40 Perform Imaging Procedure of Mandible
F40.1 Understand the gross, relational anatomy and physiology of the mandible
F40.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
   Radiological modalities
   Ultrasound
   Nuclear Medicine
   Magnetic Resonance
   Health records
   Medical Laboratory reports
F40.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
   Determine the reason for the examination, given an adequate clinical history
   Recognize contraindications of the examination
   Evaluate the patient’s cognitive, emotional and physical ability
   Evaluate existing pathology
   Ensure availability of patient support, equipment and resources

F40.4 Plan the radiographic imaging procedure
   Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

F40.5 Position the mandible using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
   - Anteroposterior (AP) axial (Towne)
   - Posteroanterior (PA) axial
   - Anteroposterior (AP)
   - Posteroanterior (PA)
   - Axiolateral obliques

F40.6 Adapt positioning requirements according to patient’s condition
   Age
   Mobility
   Cognitive status
   Pathology
   Level of consciousness
   Sensory impairment
   Pregnancy
   Trauma
   Body habitus

F40.7 Evaluate quality of images for the purpose of diagnostic interpretation
   Patient position
   Demonstration of anatomical structures
   Demonstration of pathology

F40.8 Obtain additional images as required
   Corrective measures
   Supplemental images

F 41 Perform Imaging Procedure of Temporomandibular Joints
F41.1 Understand the gross, relational anatomy and physiology of the temporomandibular joints
F41.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
   Radiological modalities
   Ultrasound
   Nuclear Medicine
**Magnetic Resonance**
**Health records**
**Medical Laboratory reports**

**F41.3 Utilize the clinical information provided to adapt the requested examination to an individual patient**
- Determine the reason for the examination, given an adequate clinical history
- Recognize contraindications of the examination
- Evaluate the patient’s cognitive, emotional and physical ability
- Evaluate existing pathology
- Ensure availability of patient support, equipment and resources

**F41.4 Plan the radiographic imaging procedure**
- Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

**F41.5 Position the temporomandibular joints using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies**
- Anteroposterior (PA) axial (Towne)
- Axiolateral closed mouth
- Axiolateral open mouth
- Pantomogram

**F41.6 Adapt positioning requirements according to patient’s condition**
- Age
- Mobility
- Cognitive status
- Pathology
- Level of consciousness
- Sensory impairment
- Pregnancy
- Trauma
- Body habitus

**F41.7 Evaluate quality of images for the purpose of diagnostic interpretation**
- Patient position
- Demonstration of anatomical structures
- Demonstration of pathology

**F41.8 Obtain additional images as required**
- Corrective measures
- Supplemental images

**F 42 Perform Skeletal Radiography for Suspected Child Abuse**

**F42.1 Understand skeletal development**

**F42.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies**
- Radiological modalities
- Ultrasound
Nuclear Medicine
Magnetic Resonance
Health records
Medical Laboratory reports

F42.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
Determine the reason for the examination, given an adequate clinical history
Recognize contraindications of the examination
Evaluate the patient’s cognitive, emotional and physical ability
Evaluate existing pathology
Ensure availability of patient support, equipment and resources

F42.4 Plan the radiographic imaging procedure
Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

F42.5 Position the patient using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
- Anteroposterior (AP) skull
- Lateral skull
- Anteroposterior (AP) complete spine
- Lateral complete spine
- Anteroposterior (AP) both humeri
- Anteroposterior (AP) both radii and ulnae
- Anteroposterior (AP) both hands and wrists
- Anteroposterior (AP) pelvis
- Anteoposterior (AP) both femora
- Anteroposterior (AP) both tibiae and fibulae
- Anteroposterior (AP) both feet
- Anteroposterior (AP) chest for ribs
- Lateral chest for ribs

F42.6 Adapt positioning requirements according to patient’s condition
Age
Mobility
Cognitive status
Pathology
Level of consciousness
Sensory impairment
Pregnancy
Trauma

F42.7 Evaluate quality of images for the purpose of diagnostic interpretation
Patient position
Demonstration of anatomical structures
Demonstration of pathology

January 2 007
RTR Curriculum Guide
F42.8  Obtain additional images as required
      Corrective measures
      Supplemental images
MODULE G  IMAGING PROCEDURES of the Digestive System

G 1  Perform Imaging Procedures of the Digestive System

G1.1 Understand the pathology and anomalies related to the digestive system, with respect to: patient signs and symptoms, clinical presentation and diagnostic image presentation

Achalasia,
Ascites,
Bowel obstruction,
Carcinoma of stomach and Celiac disease,
Cholecystitis,
Cholelithiasis,
Cirrhosis,
Colorectal cancer,
Crohn’s disease,
Diabetes mellitus,
Diverticulitis,
Dysphasia,
Esophageal atresia,
Esophageal carcinoma,
Esophageal diverticula,
Esophageal varices,
Foreign Body
Gastroesophageal reflux,
Hemorrhoids,
Hepatitis,
Hiatal / diaphragmatic/ inguinal hernias,
Hypertrophic pyloric stenosis,
Hypoglycemia,
Ileus,
Imperforate anus,
Intussusception,
Irritable bowel syndrome,
Lactose insufficiency,
Liver cancer,
Meckel’s diverticulum,
Mega colon,
Pancreatic cancer
Pancreatitis,
Peptic/duodenal ulcers,
Pneumoperitoneum,
Situs inversus,
Tracheoesophageal fistula,
Ulcerative colitis,
Volvulus,
Vancomycin Resistant Enterococcus (VRE)
G1.2 Interview patient to verify and complement clinical history
G1.3 Prioritize examination according to patient’s medical status and resources available
G1.4 Assess and monitor the patient’s condition

G 2 Perform Non-Contrast Imaging Procedure of the Abdomen
G2.1 Understand the gross anatomy, relational anatomy and physiology of the abdomen
G2.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
   Radiological modalities
   Ultrasound
   Nuclear Medicine
   Magnetic Resonance
   Health records
   Medical Laboratory reports
G2.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
   Determine the reason for the examination, given an adequate clinical history
   Evaluate the patient’s cognitive, emotional and physical ability
   Evaluate existing pathology
   Ensure availability of patient support, equipment and resources
G2.4 Plan the radiographic imaging procedure
   Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety
G2.5 Position the abdomen using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
   - Anteroposterior (AP) (recumbent/erect position)
   - Left lateral decubitus
   - Dorsal decubitus
G2.6 Adapt positioning requirements according to patient’s condition
   Age
   Mobility
   Cognitive status
   Pathology
   Level of consciousness
   Sensory impairment
   Pregnancy
   Trauma
   Body habitus
G2.7 Evaluate quality of acquired images for the purpose of diagnostic interpretation
   Patient position
   Demonstration of anatomical structures
   Demonstration of pathology

G2.8 Obtain additional images as required
   Corrective measures
   Supplemental images

G 3 Perform Imaging Procedure of the Esophagus
G3.1 Understand the gross anatomy, relational anatomy and physiology of the esophagus
G3.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
   Radiological modalities
   Ultrasound
   Nuclear Medicine
   Magnetic Resonance
   Health records
   Medical Laboratory reports
G3.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
   Determine the reason for the examination, given an adequate clinical history
   Evaluate the patient’s cognitive, emotional and physical ability
   Evaluate existing pathology
   Ensure availability of patient support, equipment and resources
G3.4 Plan the radiographic imaging procedure
   Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety
G3.5 Assess patient for hypersensitivity/contra indications to the contrast media
G3.6 Select, prepare and administer contrast media
   Assess patient for contraindications
   Prepare contrast media
      Water soluble
      Barium sulphate
      Gas
G3.7 Monitor and respond to patient’s adverse reactions to contrast media
G3.8 Adapt positioning requirements according to patient’s condition
   Age
   Mobility
   Cognitive status
   Pathology
   Level of consciousness
   Sensory impairment
   Pregnancy
G3.9 **Evaluate quality of images for the purpose of diagnostic interpretation**
- Patient position
- Demonstration of anatomical structures
- Demonstration of pathology

G3.10 **Obtain additional images as required**
- Corrective measures
- Supplemental images

G3.11 **Counsel patient with respect to post procedural care**
- Dietary
- Bowel habits

G4 **Perform Imaging Procedure of the Stomach**

G4.1 **Understand the gross anatomy, relational anatomy and physiology of the stomach**

G4.2 **Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies**
- Radiological modalities
- Ultrasound
- Nuclear Medicine
- Magnetic Resonance
- Health records
  - Medical Laboratory reports

G4.3 **Utilize the clinical information provided to adapt the requested examination to an individual patient**
- Determine the reason for the examination, given an adequate clinical history
- Evaluate the patient’s cognitive, emotional and physical ability
- Evaluate existing pathology
- Ensure availability of patient support, equipment and resources

G4.4 **Plan the radiographic imaging procedure**
- Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

G4.5 **Determine dietary preparation for gastrointestinal tract**

G4.6 **Assess patient for hypersensitivity/contra indications to the contrast media**

G4.7 **Select, prepare and administer contrast media**
- Assess patient for contraindications
- Prepare contrast media
  - Water soluble
  - Barium sulphate
  - Gas
G4.8 Monitor and respond to patient's adverse reactions to contrast media
G4.9 Position the patient using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
  - Anteroposterior (AP)
  - Posteroanterior (PA)
  - Trendelenberg
  - Anterior Oblique
  - Posterior Oblique
  - Lateral
G4.10 Adapt positioning requirements according to patient's condition
  Age
  Mobility
  Cognitive status
  Pathology
  Level of consciousness
  Sensory impairment
  Pregnancy
  Trauma
  Body habitus
G4.11 Evaluate quality of images for the purpose of diagnostic interpretation
  Patient position
  Demonstration of anatomical structures
  Demonstration of pathology
G4.12 Obtain additional images as required
  Corrective measures
  Supplemental images
G4.13 Counsel patient with respect to post procedural care
  Dietary
  Bowel habits

G5 Perform Imaging Procedure of the Small Bowel
G5.1 Understand the gross anatomy, relational anatomy and physiology of the small bowel
G5.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
  Radiological modalities
  Ultrasound
  Nuclear Medicine
  Magnetic Resonance
  Health records
  Medical Laboratory reports
G5.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
  Determine the reason for the examination, given an adequate clinical
history
Evaluate the patient’s cognitive, emotional and physical ability
Evaluate existing pathology
Ensure availability of patient support, equipment and resources

G5.4 Plan the radiographic imaging procedure
Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

G5.5 Determine gastrointestinal tract preparation

G5.6 Assess patient for hypersensitivity/contraindications to the contrast media

G5.7 Select, prepare and administer contrast media

G5.8 Monitor and respond to patient’s adverse reactions to contrast media

G5.9 Position the patient using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for demonstration of the required anatomical structures/pathologies
- Anteroposterior (AP)
- Posteroanterior (PA)

G5.10 Adapt positioning requirements according to patient’s condition
Age
Mobility
Cognitive status
Pathology
Level of consciousness
Sensory impairment
Pregnancy
Trauma
Body habitus

G5.11 Evaluate quality of images for the purpose of diagnostic interpretation
Patient position
Demonstration of anatomical structures
Demonstration of pathology

G5.12 Obtain additional images as required
Corrective measures
Supplemental images

G5.13 Counsel patient with respect to post procedural care
Dietary
Bowel habits

G6 Perform Imaging Procedure of the Large Bowel

G6.1 Understand the gross anatomy, relational anatomy and physiology of the large bowel

G6.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
Radiological modalities
Ultrasound
Nuclear Medicine
Magnetic Resonance
Health records
Medical Laboratory reports

G6.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
- Determine the reason for the examination, given an adequate clinical history
- Evaluate the patient’s cognitive, emotional and physical ability
- Evaluate existing pathology
- Ensure availability of patient support, equipment and resources

G6.4 Plan the radiographic imaging procedure
- Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

G6.5 Determine gastrointestinal tract preparation

G6.6 Assess patient for hypersensitivity/contraindications to the contrast media

G6.7 Select, prepare and administer contrast media
- Assess patient for contraindications
- Prepare contrast media
  - Water soluble
  - Barium sulphate
  - Air
- Insert enema tip
  - Stoma
  - Rectum

G6.8 Monitor and respond to patient’s adverse reactions to contrast media

G6.9 Prepare and assist in the administration of antispasmodic agents

G6.10 Position the patient using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
- Anteroposterior (AP)
- Posteroanterior (PA)
- Trendelenberg
- Anteroposterior (AP) axial
- Posteroanterior (AP) axial
- Lateral
- Posterior oblique
- Anterior oblique
- Erect
- Lateral decubitus

G6.11 Adapt positioning requirements according to patient’s condition
- Age
- Mobility
- Cognitive status
- Pathology
- Level of consciousness
Sensory impairment
Pregnancy
Trauma
Body habitus

G6.12 Evaluate quality of images for the purpose of diagnostic interpretation
Patient position
Demonstration of anatomical structures
Demonstration of pathology

G6.13 Obtain additional images as required
Corrective measures
Supplemental images

G6.14 Counsel patient with respect to post procedural care
Dietary
Bowel habits
Hemorrhage

G 7 Perform Imaging Procedure of the ERCP

G7.1 Understand the gross anatomy, relational anatomy and physiology of the biliary system

G7.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
Radiological modalities
Ultrasound
Nuclear Medicine
Magnetic Resonance
Health records
Medical Laboratory reports

G7.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
Determine the reason for the examination, given an adequate clinical history
Evaluate the patient’s cognitive, emotional and physical ability
Evaluate existing pathology
Ensure availability of patient support, equipment and resources

G7.4 Plan the radiographic imaging procedure
Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

G7.5 Determine gastrointestinal tract preparation

G7.6 Select and prepare contrast media
Assess patient for contraindications
Prepare iodinated contrast media

G7.7 Monitor and respond to patient’s adverse reactions to contrast media

G7.8 Assist in positioning the patient using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
- Anteroposterior (AP)
- Anterior oblique
- Posterior oblique
- Lateral

**G7.9 Adapt positioning requirements according to patient’s condition**

- Age
- Mobility
- Cognitive status
- Pathology
- Level of consciousness
- Sensory impairment
- Pregnancy
- Trauma
- Body habitus

**G7.10 Evaluate quality of images for the purpose of diagnostic interpretation**

- Patient position
- Demonstration of anatomical structures
- Demonstration of pathology

**G7.11 Obtain additional images as required**

- Corrective measures
- Supplemental images

**G7.12 Counsel patient with respect to post procedural care**

- Dietary
MODULE H  IMAGING PROCEDURES of the Respiratory System

H 1  Perform Imaging Procedures of the Respiratory System

H1.1 Understand the pathology and anomalies related to the respiratory system, with respect to: patient signs and symptoms, clinical presentation and diagnostic image presentation
- Asthma
- Atelectasis
- Autoimmune deficiency Syndrome (AIDS)
- Bronchiectasis
- Bronchitis
- Carcinoma of lungs
- Chronic obstructive pulmonary disease (COPD)
- Cystic fibrosis
- Emphysema
- Epiglottitis, croup
- Foreign Body
- Hemothorax
- Hyaline membrane disease
- Lung abscess
- Methicillin resistant *Staphylococcus Aureus* MRSA
- Pleural effusion
- Pneumoconiosis
- Pneumonia
- Pneumothorax
- Pulmonary edema
- Pulmonary emboli
- Pulmonary infarct
- Respiratory distress syndrome – adult and child
- Scleroderma
- Severe Acute Respiratory Syndrome (SARS)
- Sinusitis
- Subcutaneous emphysema
- Tuberculosis

H1.2 Interview the patient to verify and complement clinical history

H1.3 Prioritize examination according to patient’s medical status and resources available

H1.4 Assess and monitor the patient’s condition

H 2  Perform Imaging Procedure of the Soft Tissue Neck (Pharynx/Larynx/Trachea)

H2.1 Understand the gross anatomy, relational anatomy and physiology of the pharynx, larynx and trachea

H2.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
- Radiological modalities
- Ultrasound
- Nuclear Medicine
Magnetic Resonance
Health records
Medical Laboratory reports

H2.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
- Determine the reason for the examination, given an adequate clinical history
- Evaluate the patient’s cognitive, emotional and physical ability
- Evaluate existing pathology
- Ensure availability of patient support, equipment and resources

H2.4 Plan the radiographic imaging procedure
- Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

H2.5 Position the patient using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
- Anteroposterior (AP)
- Lateral

H2.6 Adapt positioning requirements according to examination environment
- Mobile
- Operating room

H2.7 Evaluate quality of images for the purpose of diagnostic interpretation
- Patient position
- Demonstration of anatomical structures
- Demonstration of pathology

H2.8 Obtain additional images as required
- Corrective measures
- Supplemental images

H3 Perform Imaging Procedure of the Chest

H3.1 Understand the gross anatomy, relational anatomy and physiology of the thorax

H3.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
- Radiological modalities
- Ultrasound
- Nuclear Medicine
- Magnetic Resonance
- Health records
- Medical Laboratory reports

H3.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
- Determine the reason for the examination, given an adequate clinical history
- Evaluate the patient’s cognitive, emotional and physical ability
- Evaluate existing pathology
Ensure availability of patient support, equipment and resources

H3.4 Plan the radiographic imaging procedure
   Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

H3.5 Position the patient using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
   - Anteroposterior (AP) (recumbent/erect)
   - Posteroanterior (PA)
   - Lateral; Anteroposterior (AP) axial
   - Posteroanterior (AP) axial
   - Anteroposterior (AP) Lordotic
   - Lateral decubitus

H3.6 Adapt positioning requirements according to patient’s condition
   Age
   Mobility
   Cognitive status
   Pathology
   Level of consciousness
   Sensory impairment
   Pregnancy
   Trauma

H3.7 Adapt positioning requirements according to examination environment
   Mobile
   Operating room

H3.8 Evaluate quality of image for the purpose of diagnostic interpretation
   Patient position
   Demonstration of anatomical structures
   Demonstration of pathology

H3.9 Obtain additional images as required
   Corrective measures
   Supplemental images
MODULE I IMAGING PROCEDURES of the Urinary System

I 1 Perform Imaging Procedures of the Urinary System

I1.1 Understand the pathology and anomalies related to the urinary system and male reproductive system, with respect to: patient signs and symptoms, clinical presentation and diagnostic image presentation

Adenocarcinoma,
Agenesis,
Bladder carcinoma
Calculi,
Cystitis,
Cysts,
Diverticula,
Duplication,
Ectopic kidney,
Glomerulonephritis,
Horseshoe kidney,
Hydronephrosis,
Hydroureter,
Nephroblastoma,
Neurogenic bladder,
Polycystic kidney,
Posteriorurethral valve,
Prostatic hypertrophy,
Pyelonephritis,
Renal colic,
Renal failure,
Renal hypertension,
Ureterocele,
Vesicoureteral reflux,
Vesicovaginal fistula,

I1.2 Interview the patient to verify and complement the clinical history

I1.3 Prioritize examination according to patient’s medical status and resources available

I1.4 Assess and monitor the patient’s condition

I 2 Perform Imaging Procedure of the Non Contrast Imaging of Kidneys, Ureters, Bladder (KUB)

I2.1 Understand the gross anatomy, relational anatomy and physiology of the abdomen

I2.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies

Radiological modalities
Ultrasound
Nuclear Medicine
Magnetic Resonance
Health records
I2.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
   Determine the reason for the examination, given an adequate clinical history
   Evaluate the patient’s cognitive, emotional and physical ability
   Evaluate existing pathology
   Ensure availability of patient support, equipment and resources

I2.4 Plan the radiographic imaging procedure
   Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

I2.5 Position the abdomen using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
   - Anteroposterior (AP) (recumbent/erect position)
   - Anteroposterior (AP) axial

I2.6 Adapt positioning requirements according to patient’s condition
   Age
   Mobility
   Cognitive status
   Pathology
   Level of consciousness
   Sensory impairment
   Pregnancy
   Trauma
   Body habitus

I2.7 Evaluate quality of images for the purpose of diagnostic interpretation
   Patient position
   Demonstration of anatomical structures
   Demonstration of pathology

I2.8 Obtain additional images as required
   Corrective measures
   Supplemental images

I3 Perform Imaging Procedure for Intravenous Urography
I3.1 Understand the gross anatomy, relational anatomy and physiology of the urinary system

I3.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
   Radiological modalities
   Ultrasound
   Nuclear Medicine
   Magnetic Resonance
   Health records
   Medical Laboratory reports
I3.3  Utilize the clinical information provided to adapt the requested examination to an individual patient
Determine the reason for the examination, given an adequate clinical history
Evaluate the patient’s cognitive, emotional and physical ability
Evaluate existing pathology
Ensure availability of patient support, equipment and resources

I3.4  Plan the radiographic imaging procedure
Obtain history relating to urinary function
Verify medications taken
Assess history of hypersensitivities
Assess history of existing pathologies/conditions
Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

I3.5  Verify patient’s bowel preparation
I3.6  Assess patient for hypersensitivity/contraindications to the contrast media
I3.7  Select and prepare contrast media
Assess patient for contraindications
Contrast media
High osmolar water soluble
Low osmolar water soluble

I3.8  Perform venipuncture and administer contrast media
I3.9  Monitor and respond to patient's adverse reactions to contrast media
Consult with the Radiologist/Physician
Call for emergency assistance
Prepare for the administration of oxygen
Prepare for the administration for medications
Antihistamines
Bronchodilators
Antiarrhythmics
Diuretics
Fluids, electrolytes, nutrients
Treatment of acidosis
Treatment of angina pectoralis
Vasoconstrictors
Anticonvulsants
Corticosteroids

I3.10 Position the patient using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
- Anteroposterior (AP)
- Posteroanterior (PA)
- Anteroposterior (AP) axial
- Erect
- Posterior obliques
- Anteroposterior (AP) post void

**I3.11 Adapt positioning requirements according to patient’s condition**
- Age
- Mobility
- Cognitive status
- Pathology
- Level of consciousness
- Sensory impairment
- Pregnancy
- Trauma
- Body habitus

**I3.12 Adapt positioning requirements according to examination environment**
- Mobile
- Operating room

**I3.13 Evaluate quality of images for the purpose of diagnostic interpretation**
- Patient position
- Demonstration of anatomical structure
- Demonstration of Pathology
- Phase of respiration
- Physiological phase

**I3.14 Obtain additional images as required**
- Corrective measures
- Supplemental images

**I3.15 Counsel patient with respect to post procedural care**
- Dietary
- Medications
  - Hyperglycemic agents

**I4 Perform Imaging Procedure for Cystourethrography**

**I4.1 Understand the gross anatomy, relational anatomy and physiology of the urinary system**

**I4.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies**
- Radiological modalities
- Ultrasound
- Nuclear Medicine
- Magnetic Resonance
- Health records
  - Medical Laboratory reports

**I4.3 Utilize the clinical information provided to adapt the requested examination to an individual patient**
Determine the reason for the examination, given an adequate clinical history
Evaluate the patient’s cognitive, emotional and physical ability
Evaluate existing pathology
Ensure availability of patient support, equipment and resources

I4.4 Plan the radiographic imaging procedure
- Obtain history relating to urinary function
- Assess history of hypersensitivities
- Assess history of existing pathologies/conditions
- Ensure the sequence of the procedures enable optimum diagnosis while providing for the patient’s comfort and safety

I4.5 Verify bladder preparation

I4.6 Assess patient for hypersensitivity/contraindications to the contrast media

I4.7 Select and prepare contrast media
- Assess patient for contraindications
- Prepare water soluble contrast media

I4.8 Perform / participate in urinary catheter insertion

I4.9 Administer contrast media

I4.10 Monitor and respond to patient’s adverse reactions to contrast media

I4.11 Position the patient using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
- Anteroposterior (AP)
- Trendelenberg
- Lateral
- Posterior obliques

I4.12 Adapt positioning requirements according to patient’s condition
- Age
- Mobility
- Cognitive status
- Pathology
- Level of consciousness
- Sensory impairment
- Pregnancy
- Trauma

I4.13 Evaluate quality of images for the purpose of diagnostic interpretation
- Patient position
- Demonstration of anatomical structures
- Phase of respiration
- Physiological phase

I4.14 Obtain additional images as required
- Corrective measures
- Supplemental images

I4.15 Counsel patient with respect to post procedural care
MODULE J  IMAGING PROCEDURES of the Reproductive System

J 1  Perform Imaging Procedures of the Reproductive System
J1.1  Understand the pathology and anomalies related to the female reproductive system, with respect to: patient signs and symptoms, clinical presentation and diagnostic image presentation
   Adenocarcinoma of breast,
   Adenocarcinoma of prostate,
   Carcinoma in situ of breast,
   Cervical carcinoma,
   Ectopic pregnancy,
   Fibroadenoma of breast,
   Fibrocystic breast,
   Infertility (female),
   Ovarian disease,
   Pelvic inflammatory disease
   Uterine fibroids,
J1.2  Interview patient to verify and complement clinical history
J1.3  Prioritize examination according to patient’s medical status and resources available
J1.4  Assess and monitor patient’s condition

J 2  Perform Imaging Procedure for Hysterosalpingography
J2.1  Understand the gross anatomy, relational anatomy and physiology of the female reproductive system
J2.2  Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
   Radiological modalities
   Ultrasound
   Nuclear Medicine
   Magnetic Resonance
   Health records
   Medical Laboratory reports
J2.3  Utilize the clinical information provided to adapt the requested examination to an individual patient
   Determine the reason for the examination, given an adequate clinical history
   Evaluate the patient’s cognitive, emotional and physical ability
   Evaluate existing pathology
   Ensure availability of patient support, equipment and resources
J2.4  Explain the procedure
J2.5  Prepare sterile tray
J2.6  Verify bladder preparation
J2.7 Select contrast media
Assess patient for contraindications
Prepare water soluble contrast media

J2.8 Assess patient for hypersensitivity/contra indications to the contrast media

J2.9 Monitor and respond to patient's adverse reactions to contrast media

J2.10 Position the patient using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
   - Anteroposterior (AP)
   - Posterior obliques

J2.11 Evaluate quality of images for the purpose of diagnostic interpretation
   Patient position
   Demonstration of anatomical structures
   Demonstration of pathology

J2.12 Counsel patient with respect to post procedural care

J3 Participate in Mammographic Imaging Procedure

J3.1 Understand the gross anatomy, relational anatomy and physiology of the breast

J3.2 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
   Radiological modalities
   Ultrasound
   Nuclear Medicine
   Magnetic Resonance
   Health records
   Medical Laboratory reports

J3.3 Utilize the clinical information provided to adapt the requested examination to an individual patient
   Determine the reason for the examination, given an adequate clinical history
   Evaluate the patient’s cognitive, emotional and physical ability
   Evaluate existing pathology
   Ensure availability of patient support, equipment and resources

J3.4 Explain the procedure

J3.5 Assess patient for contraindications

J3.6 Assist in the positioning of the patient using anatomical landmarks, relational anatomy, central ray, collimation and image receptor for the demonstration of the required anatomical structures/pathologies
   - Craniocaudal
   - Mediolateral obliques

J3.7 Verify proper exposure factors based on evaluation of patient
J3.8 Evaluate quality of acquired images for the purpose of diagnostic interpretation
   Patient position
   Demonstration of anatomical structures
   Demonstration of pathology

J3.9 Counsel patient with respect to post procedural care

*NOTE: It is recognized that some students will not have the opportunity to position patients for a mammographic procedure, however students are required to have the knowledge related to the procedure.
MODULE K  IMAGING PROCEDURES in Computed Tomography

K 1  Perform Computed Tomographic Imaging Procedures

K1.1 Understand the gross anatomy, relational anatomy and physiology of the head, chest, spine and abdomen
- Adrenal hyper/hypo function
- Alzheimer’s disease,
- Anencephaly,
- Aneurysm,
- Arteriovenous fistula/malformation,
- Cerebral hemorrhage – epidural, subdural, subarachnoid,
- Cerebrovascular accident (CVA),
- Glioma,
- Head injuries – concussion, contusion, fractures,
- Herniated disc
- Hodgkin’s disease,
- Huntington’s disease,
- Hydrocephaly,
- Leukemia,
- Meningioma,
- Meningitis,
- Meningocele,
- Metastasis
- Multiple sclerosis,
- Myelocle,
- Myelomeningocele,
- Non-Hodgkin’s disease,
- Parkinson’s disease,
- Pituitary adenoma,
- Spina bifida,
- Transient ischemic attack (TIA),

**See other related pathologies in previous modules

K1.2 Understand the pathology and anomalies related to the head, chest, spine and abdomen, with respect to: patient signs and symptoms, clinical presentation and diagnostic image presentation

K1.3 Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
- Radiological modalities
- Ultrasound
- Nuclear Medicine
- Magnetic Resonance
- Health records
- Medical Laboratory reports

K1.4 Plan the radiographic imaging procedure
- Obtain history relating to urinary function
- Assess history of hypersensitivities
- Assess history of existing pathologies/condition
- Ensure the sequence of the procedures enable
K1.5  Assess patient for hypersensitivity/contraindications to the contrast media
K1.6  Select and prepare contrast media
    Assess patient for contraindications
    Prepare water soluble contrast media
    Prepare barium sulphate suspension
K1.7  Perform venipuncture and administer contrast media
K1.8  Assist with the administration of drugs acting on the central nervous system
    Anti-anxiety
K1.9  Use automatic injection devices when required
K1.10 Verify and set injection parameters on automatic injector
K1.11 Monitor and respond to adverse reactions to contrast media
K1.12 Position the patient using anatomical landmarks, relational anatomy and set parameters for the demonstration of the required anatomical structures/pathologies
    - Head (unenhanced/enhanced)
    - Chest (unenhanced/enhanced)
    - Spine (unenhanced)
    - Abdomen (unenhanced/enhanced)
K1.13 Adapt positioning requirements according to patient’s conditions
    Age
    Mobility
    Cognitive status
    Pathology
    Level of consciousness
    Sensory impairment
    Pregnancy
    Trauma
K1.14 Evaluate quality of images for the purpose of diagnostic interpretation
    Patient position
    Demonstration of anatomical structures
    Demonstration of pathology
    Phase of respiration
    Physiological phase
K1.15 Participate in processing and post processing of images
    Reformatting
    Regions of Interest (ROI)
    Shaded surface rendering
    Volume rendering
K1.16 Recognize the appearance of the most common pathologies seen on CT scans of the head, chest, spine and abdomen
K1.17 Obtain additional images as required
    Corrective measures
    Supplemental images
K1.18 Counsel patient with respect to post procedural care
MODULE L  IMAGING PROCEDURES for Bone Mineral Density

L 1  Perform Bone Mineral Density Imaging Procedures
   L1.1  Evaluate the correlation between clinical information provided and the requested examination
          Assessment of patient
          Weight
          Height
          Age
          Medications
          Clinical history
   L1.2  Plan the bone mineral density imaging procedure
          Ensure sequences of procedures enables optimum study result while providing for patient’s comfort and safety
          Ensure availability of patient support equipment
   L1.3  Educate patients and their support persons to enable them to make informed decisions
   L1.4  Position the patient on bone mineral density scanning bed
          Ensure accuracy in the positioning of the patient using positioning aides
   L1.5  Use anatomical landmarks and relational anatomy to best demonstrate anatomical structures/pathologies
   L1.6  Adjust procedure according to patient’s condition
   L1.7  Select acquisition parameters
   L1.8  Perform procedure in accordance with protocol
   L1.9  Operate equipment for image/data acquisition
   L1.10 Evaluate anatomy, physiology and patient position on the image to determine if further images/data are required
          Verify demonstration of required structures
          Verify demonstration of pathology
   L1.11 Recognize normal results and variants
   L1.12 Recognize pathologies/abnormal results
   L1.13 Process to optimize the image
   L1.14 Perform image/data analysis and manipulation
MODULE M  IMAGING PROCEDURES for Vascular/Interventional Studies

M 1  Participate in Vascular /Interventional Imaging Procedures
M1.1  Understand the gross anatomy, relational anatomy and physiology as related to vascular/interventional studies
M1.2  Understand the pathology and anomalies related to the vascular/interventional studies, with respect to: patient signs and symptoms, clinical presentation and diagnostic image presentation
   Anemia,
   Aneurysm,
   Angina pectoralis,
   Aortic stenosis
   Arrhythmias,
   Arteriosclerosis,
   Atherosclerosis,
   Cardiac tamponade,
   Coarctation,
   Congestive heart failure (CHF),
   Coronary artery disease,
   Dextrocardia, septal defects,
   Embolus,
   Hemophilia,
   Hypertension,
   Myocardial infarction, (MI)
   Patent ductus arteriosus, (PDA)
   Patent foramen ovale,
   Pericardial effusion,
   Peripheral vascular disease (PVD),
   Phlebitis,
   Stenosis,
   Tetralogy of Fallot,
   Thrombus,
   Transposition of great vessels,
   Valvular disease,
   **See other related pathologies in previous modules
M1.3  Utilize the clinical information provided to adapt the requested examination to an individual patient
   Determine the reason for the examination, given an adequate clinical history
   Evaluate the patient’s cognitive, emotional and physical ability
   Evaluate existing pathology
   Ensure availability of patient support, equipment and resources
M1.4  Demonstrate an understanding of related disciplines in order to review data available from reports and/or images of previous studies
   Radiological modalities
   Ultrasound
   Nuclear Medicine
Magnetic Resonance
Health records
Medical Laboratory reports

M1.5 Assess patient for hypersensitivity/contraindications to the contrast media
M1.6 Use automatic injection devices when required
M1.7 Verify and set injection parameters on automatic injector
M1.8 Prepare for the administration of medications
  Anticoagulants
  Thrombolytics
    Local anaesthetics
  Narcotic analgesics
M1.9 Monitor and respond to adverse reactions to contrast media
M1.10 Participate in vascular/interventional imaging Cerebral angiography
  Cerebral angiography
  Renal angiography
  Aortic, iliac, femoral (AIF)
  Angioplasty
  Embolization
  Stent insertions
M1.11 Evaluate quality of images for the purpose of diagnostic interpretation
  Patient position
  Demonstration of anatomical structures
  Demonstration of pathology
  Physiological phase
M1.12 Participate in processing and post processing of images
  Pixel shifting
  Region of Interest (ROI)
  RE-registration
  Shaded surface rendering
  Volume rendering
M1.13 Counsel patient with respect to post procedural care