



جائزة الملك عبد الله الثاني  
للتميز الإداري والشفافية  
الدورة الثامنة (٢٠١٦/٢٠١٧)  
المرحلة الأولى

## Civil Service Competency Frameworks Series for Health Professions

### Medical Image Technologist & Assistant

Entry to Practice Competencies

Civil Service Bureau  
2021





**Civil Service Bureau**

ديوان الخدمة المدنية

Entry -to -Practice  
Competencies

2021

***“Optimal investment of human resources ... An absolute priority and the basis for success” Civil Service Bureau Value.***

**Medical Image  
Technologist  
& Assistant**





## مقدمة

استكمالاً لجهود الديوان في تحقيق رؤيته في تطوير الموارد البشرية في الخدمة المدنية بشكل عام، والقطاع الصحي بشكل خاص، باعتبارها حجر الأساس في عمل وكفاءة النظام الصحي في المملكة الأردنية الهاشمية حيث يسعى الديوان جاهدا بالتعاون مع وزارة الصحة وبقية الشركاء، بايجاد آليات لتطوير الكفاءات البشرية بالقطاع الصحي، من خلال بناء اطار مرجعي للكفايات المهنية والفنية، ومؤشرات قياسها بما يكفل وجود آليات منهجية وحديثة في استقطاب الكوادر البشرية الكفؤة، وبناء البرامج التدريبية المبنية على الكفايات بالاضافة الى بناء الاوصاف الوظيفية، و تنظيم وتقييم الاداء المؤسسي والفردى بالاستناد على انواع الكفايات المختلفة.

راجيا ان أضع بين يديكم سلسلة الكتيبات للأطر المرجعية للكفايات الصحية، التي تم تطويرها مع الشركاء، كدليل توضيحي للكفايات المتوقعة من العاملين بالقطاع الصحي في الخدمة المدنية.

فادعو جميع الشركاء المعنيين من وزارات ودوائر ومؤسسات حكومية، وجامعات، و متلقي خدمة للاطلاع على سلسلة الادلة كدليل مرجعي في بناء الاوصاف الوظيفية، وأدوات التقييم والبرامج التدريبية والتحضير لاختبارات التعيين.

املا ان نكون قدمننا ما فيه نفعا للارتقاء بالقطاع الصحي في وطننا الغالي في ظل صاحب الجلالة الهاشمية الملك عبد الله الثاني ابن الحسين المعظم حفظه الله ورعاه.

رئيس ديوان الخدمة المدنية





### Acknowledgments

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## **Introduction**

Complementing the efforts of the Civil Service Bureau to meet its vision in developing the professions and employee in civil services and raising the capacity building to reach excellence in leading human resources to protect public.

CSB has developed Medical Imaging Technologist and Assistant Framework: Competencies & Indicators to build entry -exams for medical imaging staff in civil services, provide framework to managers in civil sectors to build job description, provide guidance to medical imaging technologist and assistance regarding their professional obligations, and provide a framework to assess professional performance and address in competence among them.

This framework developed by reviewing job description ,educational curriculums , best possible evidences of international and regional models and frameworks of medical imaging competencies that are relevant, comprehensive and have global applications and reviewing feedback provided by experts in a variety of civil sectors and reviewed by CSB and MOH.

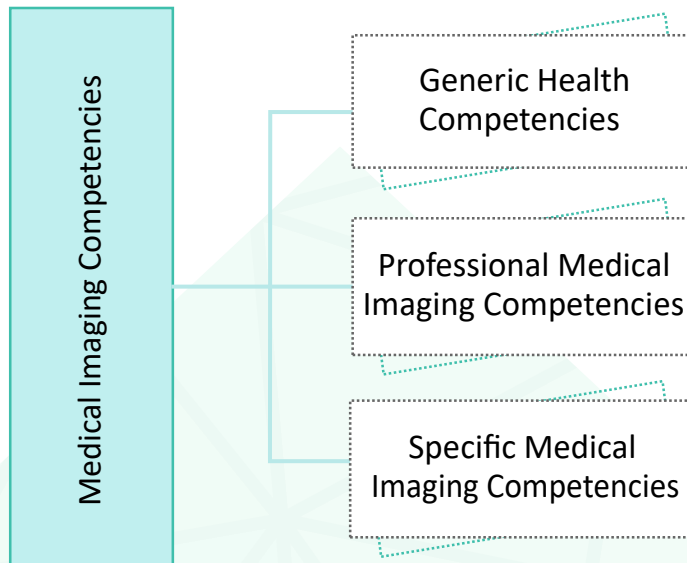


## **Classification of the Medical Image staff**

- **Medical Image Technician:**  
Person who completes Bachelor degree of Medical Image, graduated from an accredited education program, and licensed to practice by Ministry of Health under the public health law
- **Medical Image Assistant:**  
Person who completes diploma degree of Medical Image graduated from an accredited education program, and licensed to practice by Ministry of Health under the public health law



## Framework of Competencies



### The Framework consists of three categories of competencies:

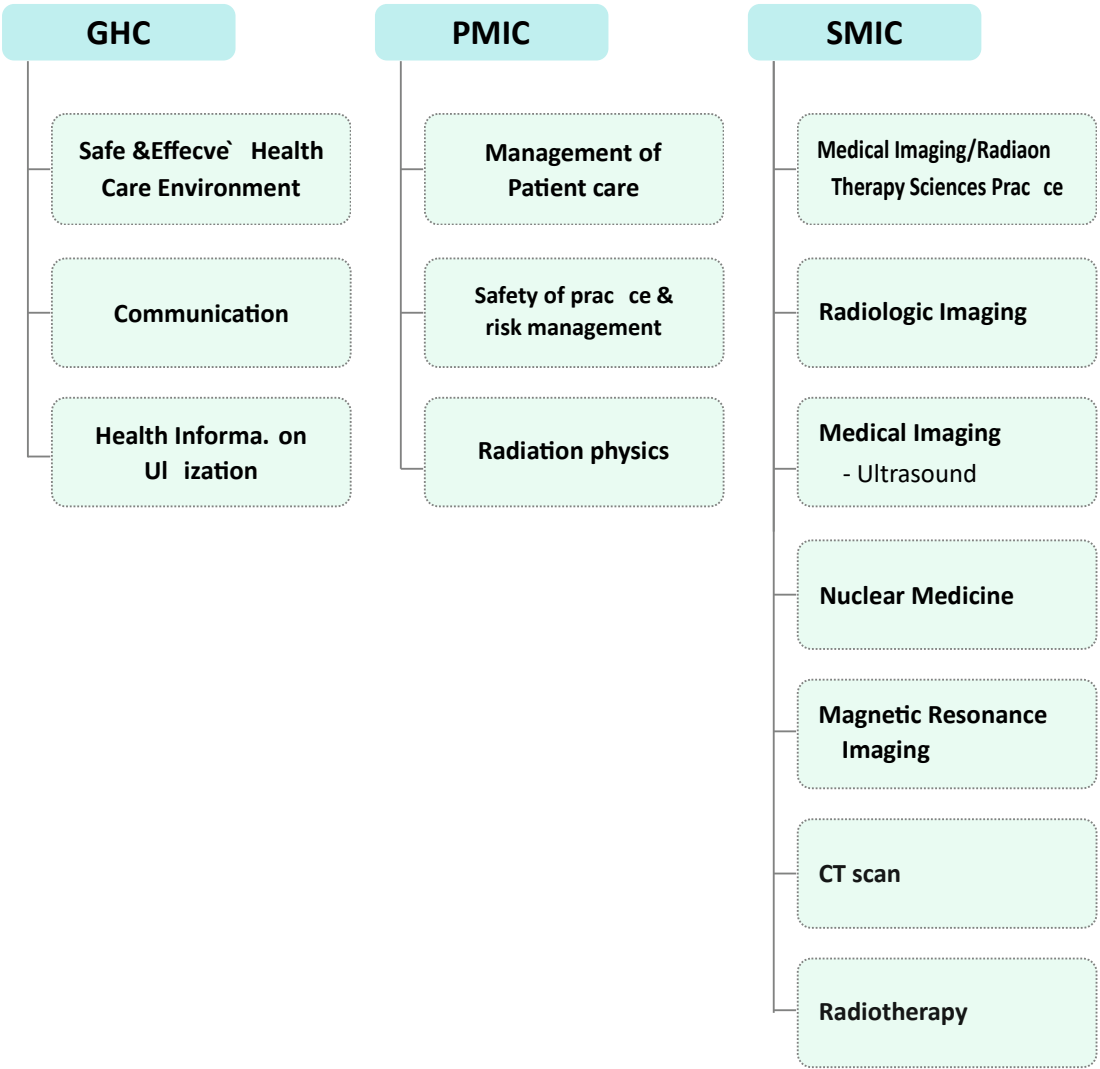
**Generic Health Competencies (GHC):** The competencies that are shared with all health profession in civil services that focus on provision of general health ethical legal care, safety and quality practices, communication and therapeutic relationship, system-based practice, evidence-based practice and health informatics

**Professional Medical Imaging Competencies (PMIC):** The competencies that promote professional and regulated care environment for Medical Imaging by promoting professional responsibilities and manage patient care safely

**Specific Medical Imaging Competencies (SMIC):** The technical competencies that are most required for the entry to practice of Medical imaging technologist and assistant that focus on Radiologic imaging, Nuclear Medicine, Ultrasound, Magnetic Resonance Imaging, and CT scan



Frame work for Medical Image Competencies



## Tables of detailed content for Medical Imaging Technologist & Assistant

### Competencies & Indicators

#### Generic Health Competencies

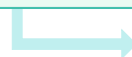
Domains	Sub domains	Indicators
7.1 Safe and Effective Health Care Environment	7.1.1 Health regulations in Jordan Laws, Bylaws and Policies of MOH	7.1.1.1 Identify legislation governing health professions in Jordan 7.1.1.2 Memorize MOH laws, policies and standards 7.1.1.3 Choose the appropriate actions that show awareness of legal implications for health practices
	7.1.2 Ethics	7.1.2.1 Identify MOH code of conduct principles 7.1.2.2 Recognize ethical dilemmas and take appropriate action 7.1.2.3 Able to Provide appropriate care adhered to code of conduct
	7.1.3 Quality Improvement	7.1.3.1 Identify human factors and basic safety design principles that affect safety 7.1.3.2 Identify factors that create a culture of safety (such as, open communication strategies and organizational error reporting systems) 7.1.3.3 Describes how patients, families, individual clinicians, health care teams, and systems can contribute to promoting safety and reducing errors
7.2 Communication	7.2.1 Therapeutic Relationship	7.2.1.1 Identify principles of effective communication through various means 7.2.1.2 Able to provide care that reflects the whole person 7.2.1.3 Identify the physical comfort and emotional support. 7.2.1.4 Recognize patient's feeling of pain and suffering and practice appropriate action to reduce it. 7.2.1.5 Identify practices for reducing fear and anxiety.
	7.2.2 Interdisciplinary Collaboration	7.2.2.1 Apply basic group skills, including communication, delegation, and time management 7.2.2.2 Ability to reach information to those who need it at the appropriate time. 7.2.2.3 Coordinate care processes to ensure continuity of the care provided. 7.2.2.4 Ability to resolve conflicts with other members of the team 7.2.2.5 Understands what each health team member uniquely provides in terms of patient care



Domains	Sub domains	Indicators
7.3 Utilize Health Information	7.3. Evidence Based Practice	<p>7.3.1.1 Select the reliable sources for locating evidence reports and clinical practice guidelines</p> <p>7.3.1.2 Recognize the Value of continuous improvement in clinical practice based on new knowledge</p> <p>7.3.1.3 Discriminate between valid and invalid reasons for modifying evidence-based clinical practice based on clinical expertise or patient/family preferences</p> <p>7.3.1.4 Seek clinical experts before deciding to deviate from evidence-based protocols</p>
	7.3.2 Health Informatics	<p>7.3.2.1 Identify importance of information and technology skills in patient care safety</p> <p>7.3.2.2 Identify essential information that must be available in a common database to support patient care</p> <p>7.3.2.3 Understand the Value of technologies that support clinical decision-making, error prevention, and care coordination</p> <p>7.3.2.4 Understand the concept of confidentiality to protect health information in electronic health records</p>

### 6.21 Professional Medical Imaging Technologist/Assistants Competencies

Domains	Sub domains	Indicators
6.21.1 Management of Patient care	6.21.1.1 Ethical Performance	<p>6.21.1.1.1 Identify ethical principles</p> <p>6.21.1.1.2 Inform client/staff members of ethical issues affecting client care</p> <p>6.21.1.1.3 Evaluate outcomes of interventions to promote ethical practice</p>
	6.21.1.2 Client Rights and Advocacy	<p>6.21.1.2.1 Recognize the client's right to refuse treatment / procedures</p> <p>6.21.1.2.2 Discuss treatment options/decisions with clients and their families</p> <p>6.21.1.2.3 Identify technique of teaching and demonstration of client/staff understanding of client rights.</p> <p>6.21.1.2.4 Advocate for client rights and needs</p>
	6.21.1.3 Confidentiality / Information Security	<p>6.21.1.3.1 Recognize confidentiality and privacy requirements for staff and patients</p> <p>6.21.1.3.2 Explain interventions appropriately when confidentiality has been breached by staff members</p>





Domains	Sub domains	Indicators
	<b>6.21.1.4 Physical Assistance &amp; Monitoring of patients</b>	6.21.1.4.1 Identify patient transfer & movement techniques 6.21.1.4.2 Assist patients with medical equipment (enema, foley, vein puncture) 6.21.1.4.3 Participate in drugs administration
	<b>6.21.1.5 Emergency response</b>	6.21.1.5.1 Identify allergic reaction 6.21.1.5.2 Identify cardiac arrest and CPR 6.21.1.5.3 Define physical injury or trauma 6.21.1.5.4 Define emergency medical disorders (seizure, diabetic reaction)
<b>6.21.2 Safety of practice and risk management</b>	<b>6.21.2.1 safety &amp; Injury Prevention</b>	6.21.2.1.1 Determine client/staff member knowledge of safety procedures 6.21.2.1.2 Identify deficits and factors that may impede client safety 6.21.2.1.3 List precautions that may contribute to an accident or injury prevention 6.21.2.1.4 Recognize the safety measure when using the equipment 6.21.2.1.5 Identify the safety policies at work place to act within the standards "e.g. risk for fall policy, needle puncture policy, medical waste policy, etc." 6.21.2.1.6 Apply knowledge of medical imaging/radiation therapy related hazards and control measures to ensure the safety of others in the workplace
	<b>6.21.2.2 Infection control</b>	6.21.2.2.1 Assess client care area for sources of infection 6.21.2.2.2 Understand organism's mode of transmission for communicable diseases (e.g., airborne, droplet, contact) „ 6.21.2.2.3 Apply principles of infection control (e.g., hand hygiene, aseptic technique, isolation, sterile technique, universal/standard precautions) 6.21.2.2.4 Define the policy and procedures when reporting a client with a communicable disease 6.21.2.2.5 Describe the aspects of client education regarding infection control measures 6.21.2.2.6 Evaluate infection control precautions implemented by staff members
	<b>6.21.2.3 Radiation protection</b>	6.21.2.3.1 Identify appropriate personal protective clothing and equipment



Domains	Sub domains	Indicators
		<p>6.21.2.3.2 Mention the sources of Radiation including (natural background ionizing radiation and Man-Made radiation sources).</p> <p>6.21.2.3.4 Understand the attenuation of Ionizing Radiation (Interactions with Matter)</p> <p>6.21.2.3.5 Identify Radiation Doses of Absorbed Dose, Equivalent and Effective Dose</p> <p>6.21.2.3.6 Describe the Interaction of radiations with Tissues</p> <p>6.21.2.3.7 Identify Molecular and Cellular Response to Radiation</p> <p>6.21.2.3.8 Define Organ Response to radiation</p> <p>6.21.2.3.9 List Stochastic and Deterministic Effects.</p> <p>6.21.2.3.10 Outline the Principles of Radiation Protection: Time, Distance, Shielding</p> <p>6.21.2.3.11 Memorize Radiation Protection Organizations for recommended Dose Limits (ICRP - 1990 and 2003)</p> <p>6.21.2.3.12 Explain Design and Layout of Radiology Facilities</p> <p>6.21.2.3.13 Mention the types of Radiation Survey Monitors</p> <p>6.21.2.3.14 Personnel Dosimeters (Pds) (Film Badges, Thermoluminescence Dosimeter (TLD), - Optically Stimulated Luminescent Dosimeters (OSLD), - Pocket Dosimeter (Pocket Ionization Chamber)</p> <p>6.21.2.3.15 List the Portable Radiation Survey Instruments</p> <p>6.21.2.3.16 Identify Gas-Filled Counters (GM Counter, Ionization Chambers and Proportional Counter), Solid State Detectors</p>
	<b>6.21.2.4 Reporting of Incidents</b>	<p>6.21.2.4.1 Know processes used in error incidents and allocation of responsibility and accountability</p> <p>6.21.2.4.2 Evaluate response to error/event/occurrence</p> <p>6.21.2.4.3 Discuss the interventions in unsafe practice of health care personnel appropriately</p>
<b>6.21.3 Radiation physics</b>	<b>6.21.3.1 Radiation Types</b>	<p>6.21.3.1.1 Discuss basic Radiation physics:- Structure of the atom</p> <p>6.21.3.1.2 Mention the Radiation types</p> <ul style="list-style-type: none"> <li>◆ Particle Radiations and Electromagnetic radiation</li> <li>◆ Ionizing and Non-ionizing radiation</li> <li>◆ Electromagnetic spectrum</li> </ul> <p>6.21.3.1.3 Describe the Interactions of Radiation with Matter</p> <ul style="list-style-type: none"> <li>◆ Basic Interactions of Particle Radiation with Matter</li> <li>◆ Elastic and Non-Elastic Collisions</li> </ul>





Domains	Sub domains	Indicators
		<ul style="list-style-type: none"><li>◆ Basic Interactions of Electromagnetic radiation with matter</li><li>◆ Coherent Scattering</li><li>◆ Photoelectric Effect</li><li>◆ Compton Scattering</li></ul>
	<b>6.21.3.2 X-Ray Tube</b>	<p>6.21.3.2.1 Identify Internal Component of Diagnostic X-Ray Tubes</p> <p>6.21.3.2.2 Recognize Principle of Line Focus</p> <p>6.21.3.2.3 Define Anode Heel Effect</p> <p>6.21.3.2.4 Identify Tube Rating Characteristics</p> <p>6.21.3.2.5 Define X-Ray Tube Shield</p>
	<b>6.21.3.3 X-Ray Production</b>	<p>6.21.3.3.1 Understand the Processes of X-Ray Generation</p> <p>6.21.3.3.2 Know Bremsstrahlung X-Rays</p> <p>6.21.3.3.3 List Characteristics of X-Rays</p> <p>6.21.3.3.4 Recognize X-Ray Spectrum</p> <p>6.21.3.3.5 Assess Intensity and Quality of X-Ray Beams</p>





### 5.21 Specific / Specialized Medical Imaging Technologist Competencies

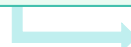
Domains	Sub domains	Indicators
<b>5.21.1 Medical Imaging/Radiation Therapy Sciences Practice</b>	<b>5.21.1.1 Anatomy, physiology and pathology appropriate to the scope of practice</b>	<p>5.21.1.1.1 Apply knowledge the anatomy and physiology of the human body relevant to the scope of practice ( Skeletal system, Abdomen, Chest )</p> <p>5.21.1.1.2 Identify the pathophysiology underpinning disease and injuries affecting the human body as: Type of fractures Type of brain hemorrhage, Infarction</p>
<b>5.21.2 Radiologic Imaging</b>	<b>5.21.2.1 Procedures/Positions for (Chest –breast-abdomen-pelvic) Without contrast media</b>	<p>5.21.2.1.1 Apply basics and specific positioning techniques in radiography for adults and pediatrics</p> <p>5.21.2.1.2 List the Clinical indication</p> <p>5.21.2.1.3 Apply Describe Central of X-Ray and exposure</p> <p>5.21.2.1.4 use evaluation criteria for the image</p>
	<b>5.21.2.2 Procedures/Positions for Upper extremities and lower extremities Without contrast media</b>	<p>5.21.2.2.1 Apply basics and specific positioning techniques in radiography for adults and pediatrics</p> <p>5.21.2.2.2 List the Clinical indication</p> <p>5.21.2.2.3 Apply Central of X-Ray and exposure</p> <p>5.21.2.2.4 use evaluation criteria for the image</p>
	<b>5.21.2.3 Procedures/Positions for Skull (head) - whole spine Without contrast media</b>	<p>5.21.2.3.1 Apply basics and specific positioning techniques in radiography for adults and pediatrics</p> <p>5.21.2.3.2 List the Clinical indication</p> <p>5.21.2.3.3 Apply Central of X-Ray and exposure</p> <p>5.21.2.3.4 use evaluation criteria for the image</p>
	<b>5.21.2.4 Special cases</b>	<p>5.21.2.4.1 Identify and apply image of foreign body in all radiographic examination.</p> <p>5.21.2.4.2 Identify and apply magnification radiography</p>
	<b>5.21.2.5 GI system with contrast media</b>	<p>5.21.2.5.1 Apply basics and specific positioning techniques in radiography for adults and pediatrics</p> <p>5.21.2.5.2 List the clinical indication and contraindication</p> <p>5.21.2.5.3 Apply Central of X-Ray and exposure</p> <p>5.21.2.5.4 use evaluation criteria</p> <p>5.21.2.5.5 Identify types of contrast media</p> <p>5.21.2.5.6 Mention the methods of administration</p> <p>5.21.2.5.7 Prepare Imaging and accessory equipment</p>



Domains	Sub domains	Indicators
	<b>5.21.2.6 Urinary System with contrast media</b>	5.21.2.6.1 Apply basics and specific positioning techniques in radiography for adults and pediatrics 5.21.2.6.2 List the clinical indication and contraindication 5.21.2.6.3 Apply Central of X-Ray and exposure 5.21.2.6.4 use evaluation criteria 5.21.2.6.5 Identify types of contrast media 5.21.2.6.6 Mention the methods of administration 5.21.2.6.7 Prepare Imaging and accessory equipment
	<b>5.21.2.7 Reproductive system with contrast media</b>	5.21.2.7.1 Apply basics and specific positioning techniques in radiography for adults and pediatrics 5.21.2.7.2 List the clinical indication and contraindication 5.21.2.7.3 Apply Central of X-Ray and exposure 5.21.2.7.4 use evaluation criteria 5.21.2.7.5 Identify types of contrast media 5.21.2.7.6 Mention the methods of administration 5.21.2.7.7 Prepare Imaging and accessory equipment
	<b>5.21.2.8 Biliary ducts with contrast media</b>	5.21.2.8.1 Apply basics and specific positioning techniques in radiography for adults and pediatrics 5.21.2.8.2 List the clinical indication and contraindication 5.21.2.8.3 Apply Central of X-Ray and exposure 5.21.2.8.4 use evaluation criteria 5.21.2.8.5 Identify types of contrast media 5.21.2.8.6 Mention the methods of administration 5.21.2.8.7 Prepare Imaging and accessory equipment
	<b>5.21.2.9 Sialography with contrast media</b>	5.21.2.9.1 Apply basics and specific positioning techniques in radiography for adults and pediatrics 5.21.2.9.2 List the clinical indication and contraindication 5.21.2.9.3 Apply Central of X-Ray and exposure 5.21.2.9.4 use evaluation criteria 5.21.2.9.5 Identify types of contrast media 5.21.2.9.6 Mention the methods of administration 5.21.2.9.7 Prepare Imaging and accessory equipment
	<b>5.21.2.10 Angiographic procedures</b>	5.21.2.10.1 Define Angiographic procedure. 5.21.2.10.2 Recognize indication of angiographic procedures



Domains	Sub domains	Indicators
		5.21.2.10.3 Identify tools and equipment use in angiographic procedures 5.21.2.10.4 Recognize possible complications of any angiographic procedure.
	<b>5.21.2.11 Principles of radioactivity</b>	5.21.2.11.1 Define Radioactivity Concepts: <ul style="list-style-type: none"> <li>Physical Half Life, Average Life and Effective Half Life</li> <li>Decay Constants (Total and Partial)</li> <li>Chain Decay</li> <li>Activity</li> <li>Units of Activity.</li> <li>Specific Activity.</li> <li>Production of Radionuclides.</li> </ul> 5.21.2.11.2 Define types of Radioactivity Decay: <ul style="list-style-type: none"> <li>Alpha Decay</li> <li>Negative Beta Decay</li> <li>Positive Beta Decay</li> <li>Electron Capture Decay</li> <li>Gamma Decay</li> </ul>
	<b>5.21.2.12 Radiographic imaging processing /Radiographic film</b>	5.21.2.12.1 Identify Residual Radiation of radiographic film 5.21.2.12.2 Understand radiographic film Construction 5.21.2.12.3 Identify Formation of the Latent Image of radiographic film 5.21.2.12.4 List processing of the Latent Image radiographic film 5.21.2.12.5 Differentiate between different types of radiographic film 5.21.2.12.6 Apply techniques of handling and storage of radiographic film
	<b>5.21.2.13 Radiographic imaging processing /Intensifying Screen</b>	5.21.2.13.1 Describe screen construction 5.21.2.13.2 Define Luminescence 5.21.2.13.3 Understand screen characteristics
	<b>5.21.2.14 Radiographic imaging processing/ Image Quality</b>	5.21.2.14.1 Assess radiographic quality 5.21.2.14.2 Understand Film factors for quality image 5.21.2.14.3 Recognize Geometric factors
	<b>5.21.2.15 Digital Image Processing Concepts</b>	5.21.2.15.1 Identify and Apply the physical principles of digital imaging acquisition, processing, display, storage and communication. 5.21.2.15.2 Compare between screen-film and digital radiography; (The advantages and disadvantages) 5.21.2.15.3 List the basic principles of commonly used digital imaging systems.

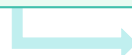




Domains	Sub domains	Indicators
		<p>5.21.2.15.4 Differentiate between types of digital image formats.</p> <p>5.21.2.15.5 Understand the basic principles of image processing techniques.</p> <p>5.21.2.15.6 different types of digital-based imaging modalities (such as; digital fluoroscopy, digital mammography, computed tomography and magnetic resonance imaging and their clinical applications; Indirect and direct DR)</p> <p>5.21.2.15.7 Understand picture archiving and communication systems PACS</p>
	<b>5.21.2.16 Radiographic Exposure</b>	<p>5.21.2.16.1 Identify X-Ray tube construction</p> <p>5.21.2.16.2 Define X-Ray generator</p> <p>5.21.2.16.3 Identify X-Ray emission spectrum</p> <p>5.21.2.16.4 Identify principles of X-Ray Attenuation (Linear and Mass Attenuation Coefficient)</p> <p>5.21.2.16.5 Identify filters and beam restricting devices Control of Scatter Radiation, Aperture Diaphragm, Variable, Aperture Collimator</p> <p>5.21.2.16.6 Understand Grid Characteristics: Grid Ratio; Grid Frequency; Grid Strip.</p> <p>5.21.2.16.7 Recognize Contrast Improvement Factor</p> <p>5.21.2.16.8 Define Bucky Factor or Grid Factor</p>
	<b>5.21.2.17 Image Quality and Quality control</b>	<p>5.21.2.17.1 Apply techniques that produce the best diagnostic image quality.</p> <p>5.21.2.17.2 Recognize tools and equipment which increase quality of images.</p> <p>5.21.2.17.3 Recognize radiographic visibility quality</p> <p>5.21.2.17.4 Identify contrast, gray scale and resolution</p> <p>5.21.2.17.5 Define optimum kVp</p> <p>5.21.2.17.6 Compare between grid ratio and grid radius</p> <p>5.21.2.17.7 Define methods can be used to reduce the effect of scattered radiation</p> <p>5.21.2.17.8 Identify Visibility Factors for X-Ray Tube</p> <p>5.21.2.17.9 Identify Visibility Factors for X-Ray Interaction:</p> <p>5.21.2.17.10 Use Geometrical Factors</p> <p>5.21.2.17.11 Explain the most effective way for the individual radiographer to minimize patient exposure</p> <p>5.21.2.17.12 Describe the effect of off-centering and beam divergence on radiographic quality.</p>



Domains	Sub domains	Indicators
	<b>5.21.2.18 Radio pharmacology</b>	<p>5.21.2.1 8.1 Distinguish Types of contrast media used in radiographic procedures.</p> <p>5.21.2.1 8.2 Mention additional drugs may be used during radiographic studies</p> <p>5.21.2.1 8.3 List adverse reaction of all types of contrast media used in radiographic department.</p> <p>5.21.2.1 8.4 Apply First aid interventions if there is adverse reaction.</p> <p>5.21.2.1 8.5 Know medications used if there is adverse reaction.</p> <p>5.21.2.1 8.6 Apply care of the patient after the end of the procedure with contrast media</p> <p>5.21.2.1 8.7 Recognize radiographic procedures that need contrast media</p> <p>5.21.2.1 8.8 Prepare patients with radiographic Procedures that need contrast media</p> <p>5.21.2.1 8.9 Apply Techniques for procedures need contrast media.</p> <p>5.21.2.1 8.10 Identify indication and contraindications of procedures with contrast media</p>
<b>5.21.3 Medical Imaging</b>	<b>5.21.3.1 Cross Sectional Anatomy</b>	<p>5.21.3.1.1 Understand the directional terminology (coronal, sagittal ...)</p> <p>5.21.3.1.2 Identify different structures of the human body on both computed tomography (CT) and magnetic resonance (MR) images for head and neck</p> <p>5.21.3.1.3 Identify different structures of the human body on both computed tomography (CT) and magnetic resonance (MR) images for skeleton</p> <p>5.21.3.1.4 Identify different structures of the human body on both computed tomography (CT) and magnetic resonance (MR) images for body organs</p>
	<b>5.21.3.2 Ultrasound</b>	<p>5.21.3.2.1 Identify Common features of all transducers and transducer elements</p> <p>5.21.3.2.2 Know Linear and curvilinear array transducers (beam-stepping arrays)</p> <p>5.21.3.2.3 Recognize Phased array transducers (beam-steering arrays)</p> <p>5.21.3.2.4 Identify Hybrid beam-stepping/beam-steering transducers- 3D/4D transducers</p> <p>5.21.3.2.5 Monitor Imaging system performance</p> <p>5.21.3.2.6 Define ultrasound Artifacts</p>

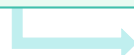




Domains	Sub domains	Indicators
		5.21.3.2.7 Recognize Sources of errors in ultrasound systems 5.21.3.2.8 prepare Paen t for (Liver US , Renal US, Pelvis US, Bladder US, Aorta US)
<b>5.21.4 Nuclear Medicine (NM)</b>	<b>5.21.4.1 Physics of NM</b>	5.21.4.1.1 Idenfy modes of radioac ve decay. 5.21.4.1.2 Define Radionuclide and radiopharmaceu cal produc on. 5.21.4.1.3 Recognize interacon of radiaon with maer . 5.21.4.1.4 Recognize radiation detectors. 5.21.4.1.5 Idenfy EI lectronic Instrumentation for radiaon detecon system e.g.: Main parts of the gamma camera, The types of collimators 5.21.4.1.6 Idenf y stac and dynamic Gamma camera characteriscs 5.21.4.1.7 Idenf y aspect and pet instrument characteriscs.
	<b>5.21.4.2 Radiaon protecon principles</b>	5.21.4.2.1 Understand ALARA principle (as low as reasonably achievable) and Half Life of radiopharmaceut al. 5.21.4.2.2 Idenf y Diagnosc r eference level for dose op mizao n: 5.21.4.2.3 Understand the Distance -Time-Shield principle. 5.21.4.2.4 Apply technology of radioacve waste. 5.21.4.2.5 Apply the procedures of de contaминаon of radioac ve 5.21.4.2.6 Apply procedures for storage and safe handling of sealed radioac ve sources
	<b>5.21.4.3 Quality assurance</b>	5.21.4.3.1 Recognize Image quality parameters of NM for body system 5.21.4.3.2 Recognize Image spaal r esolu on of NM for body system
	<b>5.21.4.4 Management of care</b>	5.21.4.4.1 Prepare Paen t for NM procedure 5.21.4.4.2 Apply instruc ons aer N M procedure. 5.21.4.4.3 Apply NM acquisition f or body systems: Central Nervous System, Endocrine System, Respiratory System, Skeletal system, Cardiovascular System, Genitourinary System Gastrointesna l . 5.21.4.4.4 Explain Radiopharmaceut als NM of body system
<b>5.21.5 Magnec Resonance Imaging (MRI)</b>	<b>5.21.5.1 Physics of MR</b>	5.21.5.1.1 Idenf y basic physics of NMR, relaxation phenomena. relaxation time measurements. 5.21.5.1.2 understand the interac on magnec moment with external magnec field and RF field.



Domains	Sub domains	Indicators
		5.21.5.1.3 Define magnetic susceptibility, image contrast mechanism, and gradient echo versus spin echo.
	<b>5.21.5.2 MR Hardware and safety</b>	5.21.5.2.1 List MR Hardware risks with magnetic field 5.21.5.2.2 Define MR Hardware (Magnetic field gradients) 5.21.5.2.3 Identify MR Hardware risks with Radio frequency fields 5.21.5.2.4 Mention the helium associated risks 5.21.5.2.5 Recall Laser associated risks
	<b>5.21.5.3 Resolution and Image quality</b>	5.21.5.3.1 Memorize indications of K-Space. 5.21.5.3.2 List the applications of Spatial encoding (slice selection) 5.21.5.3.3 List the applications of Spatial encoding (frequency encoding) 5.21.5.3.4 Define Spatial encoding (phase encoding) 5.21.5.3.5 List the uses Field of view and spatial resolution 5.21.5.3.6 Mention the indications of Imaging parameters and tradeoffs 5.21.5.3.7 Identify MR image artifacts "image should be seen"
	<b>5.21.5.4 Protocols and patient preparation</b>	5.21.5.4.1 List Indication and contraindication of MRI. 5.21.5.4.2 Apply Position techniques for patients 5.21.5.4.3 Apply basic sequences and parameters for body organs without contrast media. 5.21.5.4.4 Understand Apply basic sequences and parameters for body organs with contrast media 5.21.5.4.5 Mention indication and contraindication of Contrast media in MRI 5.21.5.4.6 Calculate the dose of contrast media
<b>5.21.6 Computerized Tomography Scan (CT Scan)</b>	<b>5.21.6.1 Physics of CT-Scan</b>	5.21.6.1.1 Identify Physical Principles of Computed Tomography 5.21.6.1.2 Know Hardware Tomography 5.21.6.1.3 Distinguish between Spiral/Helical Computed Tomography 5.21.6.1.4 Recognize Image Manipulation and Three-Dimensional CT 5.21.6.1.5 Identify Radiation dosimeter in CT scan.
	<b>5.21.6.2 Image quality and Image display</b>	5.21.6.2.1 Assess /evaluate CT Image Quality and Radiation Dose 5.21.6.2.2 Illustrate Image Reconstruction and post-processing. 5.21.6.2.3 Recognize CT image artifact.





Domains	Sub domains	Indicators
Radiotherapy	<b>5.21.6.3 Patient care and Patient preparation</b>	5.21.6.3.1 Provide instructions for Patient Pre-CT Scan 5.21.6.3.2 Prepare patient for the CT Scan 5.21.6.3.3 Recognize Contrast Agents, quantity, indication and contraindication 5.21.6.3.4 Apply Injection techniques.
	<b>5.21.6.4 Procedures and Protocols</b>	5.21.6.4.1 Apply Neurological Imaging procedures and protocols 5.21.6.4.2 Apply Thoracic Imaging procedures and protocols 5.21.6.4.3 Apply Abdomen and Pelvis Imaging procedures and protocols 5.21.6.4.4 Apply Musculoskeletal Imaging procedures and protocols 5.21.6.4.5 Apply Imaging procedures and protocols for Interventional CT Imaging
	<b>5.21.6.5 Dose Distribution</b>	5.21.6.5.1 Define Phantoms 5.21.6.5.2 Know Depth Dose Distribution 5.21.6.5.3 Recognize Percentage Depth Dose 5.21.6.5.4 Understand Tissue-Air Ratio
	<b>5.21.6.6 Treatment Planning</b>	5.21.6.6.1 List uses of radiotherapy 5.21.6.6.2 Identify types of radiotherapy 5.21.6.6.3 Recognize Parameters dose curves 5.21.6.6.4 Define Wedge filters 5.21.6.6.5 Apply Combination of Radiation fields 5.21.6.6.6 Apply Isometric techniques 5.21.6.6.7 Use treatment simulation 5.21.6.6.8 Use Field blocks 5.21.6.6.9 Use Field shaping
	<b>5.21.6.7 Electron Beam Therapy</b>	5.21.6.7.1 Understand Electron interactions 5.21.6.7.2 Define the absorbed dose 5.21.6.7.3 List Characteristics of clinical electron beams 5.21.6.7.4 Define Electron arc therapy 5.21.6.7.5 Identify total skin irradiation



### 5.22 Specific / Specialized Medical Imaging Assistant Competencies

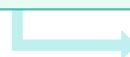
Domains	Sub domains	Indicators
5.22.1 Medical Imaging/Radiation Therapy Sciences Practice	5.22.1.1 Anatomy, physiology and pathology appropriate to the scope of practice	5.22.1.1.1 Understand the anatomy and physiology of the human body relevant to the scope of practice (Skeletal system, Abdomen, Chest) 5.22.1.1.2 Identify the pathophysiology underpinning disease and injuries affecting the human body as:- Type of fractures - Type of brain hemorrhage, Infarction
	5.22.2 Radiologic Imaging	
	5.22.2.1 Procedures/Positions for (Chest –breast-abdomen-pelvic) Without contrast media	5.22.2.1.1 Recognize the basics and specific positioning techniques in radiography for adults and pediatrics 5.22.2.1.2 List the Clinical indication 5.22.2.1.3 Describe Central of X-Ray and exposure 5.22.2.1.4 Understand the evaluation criteria for the image
	5.22.2.2 Procedures/Positions for Upper extremities and lower extremities Without contrast media	5.22.2.2.1 Recognize the basics and specific positioning techniques in radiography for adults and pediatrics 5.22.2.2.2 List the Clinical indication 5.22.2.2.3 Describe Central of X-Ray and exposure 5.22.2.2.4 Understand the evaluation criteria for the image
	5.22.2.3 Procedures/Positions for Skull (head) - whole spine Without contrast media	5.22.2.3.1 Recognize the basics and specific positioning techniques in radiography for adults and pediatrics 5.22.2.3.2 List the Clinical indication 5.22.2.3.3 Describe Central of X-Ray and exposure 5.22.2.3.4 Understand the evaluation criteria for the image
	5.22.2.4 Special cases	5.22.2.4.1 Recognize image of foreign body in all radiographic examination. 5.22.2.4.2 Understand magnification radiography
	5.22.2.5 GI system with contrast media	5.22.2.5.1 Recognize the basics and specific positioning techniques in radiography for adults and pediatrics 5.22.2.5.2 List clinical indication and contraindication 5.22.2.5.3 Describe Central of X-Ray and exposure 5.22.2.5.4 Understand the evaluation criteria for the image 5.22.2.5.5 Mention the types of contrast media 5.22.2.5.6 Identify methods of administration 5.22.2.5.7 Describe the preparation required for Imaging and accessory equipment



Domains	Sub domains	Indicators
	<b>5.22.2.6 Urinary System with contrast media</b>	<p>5.22.2.6.1 Recognize the basics and specific positioning techniques in radiography for adults and pediatrics</p> <p>5.22.2.6.2 List clinical indication and contraindication</p> <p>5.22.2.6.3 Describe Central of X-Ray and exposure</p> <p>5.22.2.6.4 Understand the evaluation criteria for the image</p> <p>5.22.2.6.5 Mention the types of contrast media</p> <p>5.22.2.6.6 Identify methods of administration</p> <p>5.22.2.6.7 Describe the preparation required for Imaging and accessory equipment</p>
	<b>5.22.2.7 Reproductive system with contrast media</b>	<p>5.22.2.7.1 Recognize the basics and specific positioning techniques in radiography for adults and pediatrics</p> <p>5.22.2.7.2 List clinical indication and contraindication</p> <p>5.22.2.7.3 Describe Central of X-Ray and exposure</p> <p>5.22.2.7.4 Understand the evaluation criteria for the image</p> <p>5.22.2.7.5 Mention the types of contrast media</p> <p>5.22.2.7.6 Identify methods of administration</p> <p>5.22.2.7.7 Describe the preparation required for Imaging and accessory equipment</p>
	<b>5.22.2.8 Biliary ducts with contrast media</b>	<p>5.22.2.8.1 Recognize the basics and specific positioning techniques in radiography for adults and pediatrics</p> <p>5.22.2.8.2 List clinical indication and contraindication</p> <p>5.22.2.8.3 Describe Central of X-Ray and exposure</p> <p>5.22.2.8.4 Understand the evaluation criteria for the image</p> <p>5.22.2.8.5 Mention the types of contrast media</p> <p>5.22.2.8.6 Identify methods of administration</p> <p>5.22.2.8.7 Describe the preparation required for Imaging and accessory equipment</p>
	<b>5.22.2.9 Sialography with contrast media</b>	<p>5.22.2.9.1 Recognize the basics and specific positioning techniques in radiography for adults and pediatrics</p> <p>5.22.2.9.2 Mention the types of contrast media</p> <p>5.22.2.9.3 Describe Central of X-Ray and exposure</p> <p>5.22.2.9.4 Understand the evaluation criteria for the image</p> <p>5.22.2.9.5 Mention the types of contrast media</p>



Domains	Sub domains	Indicators
		5.22.2.9.6 Identify methods of administration 5.22.2.9.7 Describe the preparation required for Imaging and accessory equipment
	<b>5.22.2.10 Angiographic procedures</b>	5.22.2.10.1 Understand Angiographic procedure. 5.22.2.10.2 Recall the indication of angiographic procedures 5.22.2.10.3 List the tools and equipment use in angiographic procedures 5.22.2.10.4 Mention the possible complications of any angiographic procedure.
	<b>5.22.2.11 Principles of radioactivity</b>	5.22.2.11.1 Understand Radioactivity Concepts: <ul style="list-style-type: none"> <li>Physical Half Life, Average Life and Effective Half Life</li> <li>Decay Constants (Total and Partial)</li> <li>Chain Decay</li> <li>Activity</li> <li>Units of Activity.</li> <li>Specific Activity.</li> <li>Production of Radionuclides.</li> </ul> 5.22.2.11.2 Distinguish between different types of Radioactivity Decay: <ul style="list-style-type: none"> <li>Alpha Decay</li> <li>Negative Beta Decay</li> <li>Positive Beta Decay</li> <li>Electron Capture Decay</li> <li>Gamma Decay</li> </ul>
	<b>5.22.2.12 Radiographic imaging processing /Radiographic film</b>	5.22.2.12.1 Identify Remnant Radiation of radiographic film 5.22.2.12.2 Know radiographic film Construction 5.22.2.12.3 Recognize Formation of the Latent Image of radiographic film 5.22.2.12.4 Discuss processing of the Latent Image radiographic film 5.22.2.12.5 List types of radiographic films 5.22.2.12.6 Understand the techniques of handling and storage of radiographic film
	<b>5.22.2.13 Radiographic imaging processing /Intensifying Screen</b>	5.22.2.13.1 Define screen construction 5.22.2.13.2 Describe Luminescence 5.22.2.13.3 Mention the screen characteristics
	<b>5.22.2.14 Radiographic imaging processing/ Image Quality</b>	5.22.2.14.1 Understand the radiographic quality 5.22.2.14.2 Mention the Film factors that affect quality image 5.22.2.14.3 Recognize Geometric factors

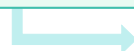




Domains	Sub domains	Indicators
	<b>5.22.2.15 Digital Image Processing Concepts</b>	5.22.2.15.1 Understand Computed Radiography: Physics and Technology 5.22.2.15.2 Know Digital Radiography (Indirect and direct DR) 5.22.2.15.3 Recognize Picture Archiving and Communication Systems PACS
	<b>5.22.2.16 Radiographic Exposure</b>	5.22.2.16.1 Identify X-Ray tube construction 5.22.2.16.2 Define X-Ray generator 5.22.2.16.3 Identify X-Ray emission spectrum 5.22.2.16.4 Mention the principles of X-Ray Attenuation (Linear and Mass Attenuation Coefficient) 5.22.2.16.5 Identify filters and beam restricting devices: Control of Scatter Radiation, Aperture Diaphragm, Variable, Aperture Collimator 5.22.2.16.6 Understand Grid Characteristics: Grid Ratio; Grid Frequency; Grid Strip. 5.22.2.16.7 Recognize Contrast Improvement Factor 5.22.2.16.8 Define Bucky Factor or Grid Factor
	<b>5.22.2.17 Image Quality and Quality control</b>	5.22.2.17.1 Describe the techniques which producing the best diagnostic image quality. 5.22.2.17.2 Recognize tools and equipment which increase quality of images. 5.22.2.17.3 Recognize radiographic visibility quality 5.22.2.17.4 Identify contrast, gray scale and resolution 5.22.2.17.5 Define optimum kvp 5.22.2.17.6 Compare between grid ratio and grid radius 5.22.2.17.7 List methods can be used to reduce the effect of scattered radiation 5.22.2.17.8 Identify Visibility Factors for X-Ray Tube 5.22.2.17.9 Mention the Visibility Factors for X-Ray Interaction: 5.22.2.17.10 Understand the Geometrical Factors 5.22.2.17.11 Explain the most effective way for the individual radiographer to minimize patient exposure 5.22.2.17.12 Describe the effect of off-centering and beam divergence on radiographic quality.
	<b>5.22.2.18 Radio pharmacology</b>	5.22.2.18.1 Distinguish Types of contrast media used in radiographic procedures. 5.22.2.18.2 List additional drugs may be used during radiographic studies



Domains	Sub domains	Indicators
		<p>5.22.2.18.3 Mention adverse reaction of all types of contrast media used in radiographic department.</p> <p>5.22.2.18.4 Explain First aid if there is adverse reaction.</p> <p>5.22.2.18.5 Recall medications used if there is adverse reaction.</p> <p>5.22.2.18.6 Describe the appropriate care of the patient after the end of the procedure with contrast media</p> <p>5.22.2.18.7 Recognize radiographic procedures that need contrast media</p> <p>5.22.2.18.8 Understand the preparation required for patients with radiographic Procedures that need contrast media</p> <p>5.22.2.18.9 Mention Techniques for procedures need contrast media.</p> <p>5.22.2.18.10 Recognize indication and contraindications of procedures with contrast media</p>
<b>5.22.3 Medical Imaging</b>	<b>5.22.3.1 Cross Sectional Anatomy</b>	<p>5.22.3.1.1 Define the directional terminology (coronal, sagittal ...)</p> <p>5.22.3.1.2 Identify different structures of the human body on both computed tomography (CT) and magnetic resonance (MR) images for head and neck.</p> <p>5.22.3.1.3 Identify different structures of the human body on both computed tomography (CT) and magnetic resonance (MR) images for skeleton</p> <p>5.22.3.1.4 Identify different structures of the human body on both computed tomography (CT) and magnetic resonance (MR) images for body organs</p>
	<b>5.22.3.2 Ultrasound</b>	<p>5.22.3.2.1 Identify Common features of all transducers and transducer elements</p> <p>5.22.3.2.2 Understand Linear and curvilinear-array transducers (beam stepping arrays)</p> <p>5.22.3.2.3 Define Phased-array transducers (beam-steering arrays)</p> <p>5.22.3.2.4 Compare between Hybrid beam-stepping and beam-steering transducers-3D/4D transducers</p> <p>5.22.3.2.5 Mention the parameters while monitoring Imaging system performance</p> <p>5.22.3.2.6 Describe ultrasound artifacts</p> <p>5.22.3.2.7 Mention the Sources of errors in ultrasound systems</p> <p>5.22.3.2.8 Explain the Patient preparation required for Liver US, Renal US, Pelvis US, Bladder US, Aorta US)</p>
	<b>5.22.3.3 Nuclear Medicine (NM)</b>	<p>5.22.3.3.1 List the modes of radioactive decay.</p> <p>5.22.3.3.2 Understand Radionuclide and radiopharmaceutical production.</p>

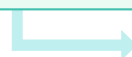




Domains	Sub domains	Indicators
		<p>5.22.3.3.3 Recognize interaction of radiation with matter.</p> <p>5.22.3.3.4 Recognize radiation detectors.</p> <p>5.22.3.3.5 Identify Electronic Instrumentation for radiation detection system.</p> <ul style="list-style-type: none"> <li>Main parts of the gamma camera</li> <li>The types of collimators</li> </ul> <p>5.22.3.3.6 Identify static and dynamic Gamma camera characteristics</p> <p>5.22.3.3.7 Recall aspect and pet instrument characteristics.</p> <p>5.22.3.3.8 Understand ALARA principle (as low as reasonably achievable) and Half Life of radiopharmaceutical.</p> <p>5.22.3.3.9 Identify Diagnostic reference level for dose optimization.</p> <p>5.22.3.3.10 Define Distance - Time - Shield principle.</p> <p>5.22.3.3.11 Apply technology of Radioactive waste.</p> <p>5.22.3.3.12 Describe the techniques for contamination management of radioactive.</p> <p>5.22.3.3.13 Understand the procedures for storage and safe handling of sealed radioactive sources</p> <p>5.22.3.3.14 Recognize Image quality parameters of NM for body system</p> <p>5.22.3.3.15 Recognize Image spatial resolution of NM for body system</p> <p>5.22.3.3.16 Discuss the Patient preparation for NM procedure</p> <p>5.22.3.3.17 Explain the instructions after NM procedure.</p> <p>5.22.3.3.18 Apply NM acquisition for body systems: Central Nervous System, Endocrine System, Respiratory System, Skeletal system, Cardiovascular System, Genitourinary System Gastrointestinal.</p> <p>5.22.3.3.19 Identify Radiopharmaceuticals NM of body system</p>
	<b>5.22.3.4 Magnetic Resonance Imaging (MRI)</b>	<p>5.22.3.4.1 Identify basic physics of NMR, relaxation phenomena. relaxation time measurements.</p> <p>5.22.3.4.2 Understand the interaction magnetic moment with external magnetic field and RF field.</p> <p>5.22.3.4.3 Define magnetic susceptibility, image contrast mechanism, and gradient echo versus spin echo.</p> <p>5.22.3.4.4 List MR Hardware risks with magnetic field</p> <p>5.22.3.4.5 Understand MR Hardware (Magnetic field gradients)</p> <p>5.22.3.4.6 Mention the MR Hardware risks with Radio frequency fields</p> <p>5.22.3.4.7 Identify the risks associated with helium</p>



Domains	Sub domains	Indicators
		5.22.3.4.8 Recall laser associated risks 5.22.3.4.9 Identify Spatial Encoding and k-space. 5.22.3.4.10 Discuss the sequences for the human body such as: Brain MRI, Spine MRI, Joints MRI, Abdomen MRI, Pelvis MR 5.22.3.4.11 Identify MR image artifacts 5.22.3.4.12 Mention the MR Contrast Agents
	<b>5.22.3.5 Computerized Tomography Scan (CT Scan)</b>	5.22.3.5.1 Identify Physical Principles of Computed Tomography 5.22.3.5.2 Know Hardware Tomography 5.22.3.5.3 Distinguish between Spiral/Helical Computed Tomography 5.22.3.5.4 Recognize Image Manipulation and Three-Dimensional CT 5.22.3.5.5 Assess/evaluate CT Image Quality and Radiation Dose 5.22.3.5.6 Identify Image Reconstruction and post-processing. 5.22.3.5.7 Illustrate instructions for Patient Pre-CT Scan 5.22.3.5.8 Mention instructions for Patient Pre-CT Scan 5.22.3.5.9 List Contrast Agents, quantity, indication and contraindication 5.22.3.5.10 Understand the Injection techniques 5.22.3.5.11 Discuss Neurological Imaging procedures and protocols 5.22.3.5.12 Explain Thoracic Imaging procedures and protocols 5.22.3.5.13 Understand Abdomen and Pelvis Imaging procedures and protocols 5.22.3.5.14 Describe Musculoskeletal Imaging procedures and protocols 5.22.3.5.15 Understand Imaging procedures and protocols for Interventional CT Imaging 5.22.3.5.16 Recognize CT image artifacts
	<b>5.22.3.6 Radio therapy</b>	5.22.3.6.1 List uses of radiotherapy 5.22.3.6.2 Mention the types of radiotherapy 5.22.3.6.3 Define Phantoms 5.22.3.6.4 Know Depth Dose Distribution 5.22.3.6.5 Define Percentage Depth Dose 5.22.3.6.6 Understand Tissue-Air Ratio 5.22.3.6.7 Recognize Parameters of is dose curves 5.22.3.6.8 Know Wedge filters 5.22.3.6.9 Apply Combination of Radiation fields 5.22.3.6.10 Know Isometric techniques





Domains	Sub domains	Indicators
		<div>5.22.3.6.11 Understand treatment simulation procedure</div> <div>5.22.3.6.12 Value the importance of Field blocks</div> <div>5.22.3.6.13 Comprehend the usage of Field shaping</div> <div>5.22.3.6.14 Recognize Electron interactions</div> <div>5.22.3.6.15 Describe the absorbed dose</div> <div>5.22.3.6.16 List Characteristics of clinical electron beams</div> <div>5.22.3.6.17 Define Electron arc therapy</div> <div>5.22.3.6.18 Understand Total skin irradiation</div>





## References

1. Competence Standards for Medical Imaging and Radiation Therapy Practice in New Zealand March 2017
2. Canadian Association of Medical Radiation Technologists Competency Profile Magnetic Resonance January 2014
3. Canadian Association of Medical Radiation Technologists Competency Profile Nuclear Medicine Technology January 2014



## فني الأشعة و مساعد فني الأشعة



استكمالاً لجهود الديوان في تحقيق رؤيته في تطوير المهن والموظفين في الخدمة المدنية ورفع بناء القدرات للوصول إلى التميز في قيادة الموارد البشرية لحماية القطاع الصحي .

قام ديوان الخدمة المدنية بتطوير الاطار العام لكفايات فني الاشعة و مساعد فني الاشعة لبناء امتحانات القبول لموظفي فني الأشعة و مساعد فني الأشعة في الخدمة المدنية , و توفير هذا الأطار كمرجع في القطاعات المدنية لبناء الوصف الوظيفي . و لتقييم الأداء المهني وبناء برامج التطوير المهني والمسارات المهنية .

### منهجية تطوير الاطر المرجعية لكفايات فني الأشعة و مساعد فني الأشعة

تم تطوير كفايات فني الأشعة بناء على :

- برامج كليات الأشعة
- الأوصاف الوظيفية لفني الأشعة و مساعد فني الأشعة في وزارة الصحة
- افضل النماذج والأطر الدولية والاقليمية لكفاءات فني الأشعة و مساعد فني الأشعة ذات الصلة والتي لها تطبيقات محلية و عالمية
- مجموعات النقاش المركزة من خبراء علم الأشعة في قطاعات الخدمة المدنية والشركاء من القطاعات الصحية الخاصة و الجامعات و النقابات
- تغذية راجعة من قبل خبراء من وزارة الصحة
- الاعتماد من قبل وزارة الصحة .

بناء على ذلك تم بناء الاطار المرجعي لفني الأشعة و مساعد فني الأشعة للكفايات لتشمل الكفايات التالية:

### الكفايات الصحية العامة: (GHC) Generic Health Competencies



هي الكفايات التي يتم مشاركتها مع جميع المهن الصحية التي تركز على توفير الرعاية القانونية والأخلاقية الصحية العامة , وممارسات السلامة والجودة , والتواصل العلاجي مع المرضى والعمل بروح الفريق . والممارسة المستندة إلى افضل الادلة العلمية و المعلوماتية الصحية التي تتضمن التالي :

■ بيئة رعاية صحية آمنة وفعالة Safe and Effective Health Care Environment

■ الاتصال Communication

■ المعلومات الصحية Utilize Health Information



### كفايات فني الأشعة المهنية : Professional Medical Imaging Competencies



الكفايات التي تعزز بيئة الرعاية المهنية والمنظمة لفني الأشعة من خلال تعزيز المسؤوليات المهنية وإدارة رعاية المرضى بأمان و التي تتضمن التالي :

- إدارة الرعاية الصحية Management of Patient care
- سلامة الممارسة و إدارة المخاطر Safety of practice & risk management
- فيزياء الاشعاع Radiation physics

### الكفايات الممارسة المتخصصة لفني الأشعة: specific Medical Imaging Competencies

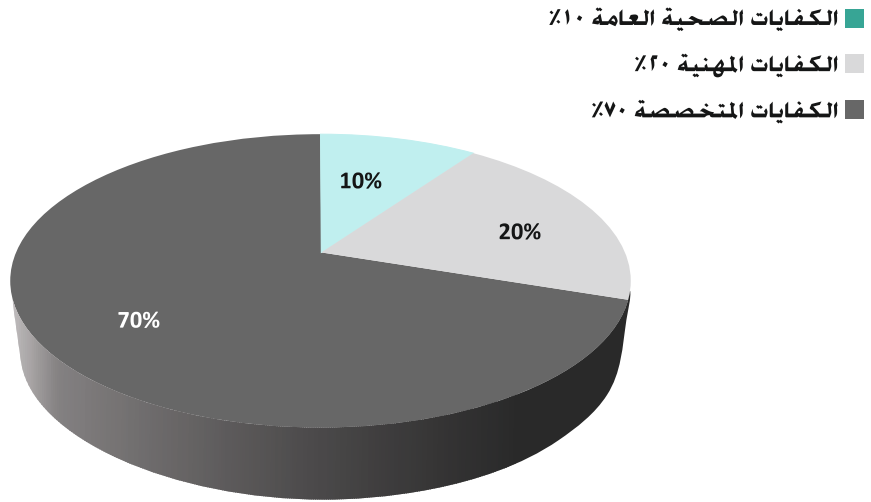


الكفايات التقنية المطلوبة بشكل أكبر لدخول ممارسة مهنة التصوير الطبي الذي يركز على التصوير الإشعاعي والطب النووي والموجات فوق الصوتية والتصوير بالرنين المغناطيسي والأشعة المقطعية والتي تتضمن التالي :

- ممارسة علوم التصوير الطبي / العلاج الإشعاعي Medical Imaging/Radiation Therapy Sciences Practice
- التصوير الاشعاعي Radiologic Imaging
  - ◆ الاجراءات و التموضع للمريض Positions and Procedure
  - ◆ تصوير الاوعية الدموية Angiographic procedures
  - ◆ مبادئ النشاط الاشعاعي Principles of radioactivity
  - ◆ معالجة التصوير الاشعاعي Radiographic imaging processing
  - ◆ مفاهيم معالجة الصور الرقمية Digital Image Processing Concepts
  - ◆ التعرض الاشعاعي Radiographic Exposure
  - ◆ علم الصيدلة الاشعاعي Radio pharmacology
- التصوير الطبي Medical Imaging
  - الموجات فوق الصوتية Ultrasound
  - العلاج الاشعاعي Radiotherapy
  - الطب النووي Nuclear Medicine
  - مسح التصوير المقطعي المحوسب Computerized Tomography Scan (CT- Scan )
  - التصوير بالرنين المغناطيسي Magnetic Resonance Imaging ( MRI )



### النسب المئوية للكفايات المهنية و التخصصية لامتحانات فني الأشعة



لبناء امتحان يقيس القدرات والكفايات لمتلقي الرعاية الصحية تم إجراء ممارسة التحليل ( practice analysis) الذي تم استخدامه لجمع البيانات حول الممارسة الحالية لفني الأشعة فقد تم بناء الاستبانة استناداً على الاطار العام للكفايات لتحديد الاحتياجات الحقيقية لواقع ممارسة المهنة في القطاع العام.

فتم تحديد النسب كالتالي :



النسب المئوية للكفايات المهنية و التخصصية لامتحانات فني الأشعة

