



**CORE COMPETENCIES REFERENCE
MANUAL FOR RADIOGRAPHY
TECHNOLOGISTS
TO PRACTISE IN ZAMBIA**

CORE COMPETENCIES & MINIMUM STANDARDS

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QUALIFICATION AND RESPONSIBILITIES:

Title of the programme: Diploma in Diagnostic Radiography (Dip Rad) or equivalent.

Key accountability for the job: Provide quality imaging services in health care facilities

Primary roles and responsibilities:

- Knowledge of the basic and clinical sciences relevant to the practice of radiography
- Competence in clinical skills and patients care
- Professionalism and ethical practice
- Monitoring and evaluation
- Infection prevention
- Quality assurance
- Specialized radiographic examination
- Patient care

1.0 INTRODUCTION

The Health Professions Council of Zambia (HPCZ) is a statutory body that was established by the Health Professions Act No. 24 of 2009. The Act renames and continues the existence of the Medical Council of Zambia established by the Medical and Allied Professions Act of 1977. The Health Professions Act No. 24 provides for the registration of health practitioner and regulation of their professional conduct; provides for the licensing of health facilities and the accreditation of health care services provided by health facilities; and provides for the recognition and approval of training programmes for health practitioners.

Following the issuance of the guidelines for introduction of licensing examinations for health professionals to be registered with the Health Professions Council of Zambia, this bulletin provides an outline of the core competencies and minimum standards for registrants who have completed the Diploma in Diagnostic Radiography (Dip Rad) or its equivalent seeking registration as Diagnostic Radiography Technologists in Zambia.

A radiography technologist is a health care practitioner trained at diploma level who is responsible for the application of ionizing &/or non-ionizing radiation for the purpose of visualizing and recording anatomical and physiological images (ISRRT 2004).

2.0 EXIT EXAMINATIONS AND AWARD OF THE DEGREE BSc DIAGNOSTIC RADIOGRAPHY

Training institutions, private or public(local and foreign) approved /recognised by the Health Professions Council of Zambia are mandated to examine and graduate their students under their own seal and authority as prescribed by the HPCZ act number 24 of 2009. The holder of the Diploma in Diagnostic Radiography (Dip Rad) or equivalent will be required to take and pass the HPCZ licensing examination to qualify for registration with the Council as a Diagnostic Radiography Technologist.

3.0 LICENSURE EXAMINATIONS BY THE HEALTH PROFESSIONS COUNCIL OF ZAMBIA

A person shall not practise as a health practitioner, unless that person is registered as a health practitioner in accordance with the Health Professions Act No. 24 of 2009. In the exercise of its functions under this Act, the 2nd and the 3rd Council of the Health Professions Council of Zambia instituted Licensure Examinations to help maintain standards given the emergence of multiple private and public training institutions.

This Bulletin provides on the Core Competencies and Minimum Standards for the Licensing Examinations for Diagnostic Radiography Technologist to Work in Zambia binds all parties

regulated under this Act. Examination fees for licensure examinations, as prescribed by the Council, are payable to the Health Professions Council of Zambia as part of the eligibility to sit for licensing examinations.

The HPCZ Licensing Examination assesses a Diagnostic Radiography Technologists ability to apply knowledge, concepts, and principles, and to demonstrate fundamental patient-centred skills, that are important in health and disease and that constitute the basis for safe and effective patient care. The HPCZ Licensing Examination includes, but is not limited to, theoretical and clinical examinations which complement each other as prescribed in the curriculum for which this programme was approved. No component is a stand-alone in the assessment of readiness for practice as Diagnostic Radiography Technologist in Zambia.

The candidate will be assessed under three domains, namely:-

1. Knowledge
2. Skills
3. Attitude

The above domains will be assessed by means of a theory exam comprising of multiple choice questions followed by a composite objective structured clinical examination (OSCE) and practical.

The main subject areas assessed under all the three learning domains for Diagnostic Radiography Technologist in Zambia are:

:

1. Patient care and Interpersonal effectiveness
2. Physics of Radiography
3. Human anatomy and physiology
4. Basic Imaging techniques
5. Specialised Imaging techniques such as Barium meal and IVU, etc.

The overall expected outcome of the Diagnostic Radiography Technologist Licensure examination is to ensure that the candidate will meet the minimum standards for the role as a Diagnostic radiography Technologist.

4.0 COMPETENCE OUTCOME GUIDELINES

The curriculum must have identified attributes in each educational domain (knowledge, skills and attitude) and present them to guide student learning and assessment by examiners. HPCZ directs Diagnostic Radiographers to be compassionate and empathetic in caring for patients and to be trustworthy and truthful in all their professional dealings. Diagnostic Radiographers have a responsibility to respect and provide care that is up to standard for the lives and health that are entrusted by patients.

Overall Outcomes

Knowledge, Skills and Performance

- Care of the patient is the first concern.
- Provision of a good standard of practice and care by keeping professional knowledge and skills up to date while recognizing the limits of one's competence.

Safety and Quality

- Prompt action if patient safety, dignity or comfort is compromised.
- Protect and promote the health of patients and the public.

Communication, Partnership, and Teamwork

- Uphold the respect of patient's autonomy and dignity.
- Uphold informed consent and confidentiality.
- Work with colleagues in ways that best serve the patient's interests.
- Work with honesty, integrity and fairness.

Maintaining Trust

- Work with honesty, openness and integrity.
- Uphold fairness with patients or colleagues.
- Safeguard the patient's and public's trust in the practitioner and the profession – never abuse the trust.

Management

- Demonstrate awareness and perform administrative duties and roles, and exhibit managerial skills
- Take up entrepreneurship challenges to complement public health services in the country.

5.0 CORE COMPETENCE: DIAGNOSTIC RADIOGRAPHY TECHNOLOGIST

DOMAIN: SCIENTIFIC KNOWLEDGE		
Competence	Competence Statement	Sub-Competences
Radiobiology, radiation protection and radiation physics	Demonstrates understanding and application of radiobiology, radiation protection and radiation physics to the Practice of the Profession	Explains the radiation effect at the molecular and cellular level
		Describes the effect of radiation on human tissue
		Applies principles of physics to radiography practice
		Applies the radiation protection principles to clinical practice
		Describes the construction and operation of Imaging units and equipment
		Discusses the radioactivity, x-ray production and interactions of radiation with matter
		Participates in radiography quality assurance programs

DOMAIN: SCIENTIFIC KNOWLEDGE		
Competence	Competence Statement	Sub-Competences
Radiography techniques and rationale to the practice of the profession	Demonstrates understanding and application of radiography techniques and rationale to the practice of the profession	Explains normal human body structure and function
		Identifies anatomical structures from radiographic images
		Explains the radiographic techniques employed in the diagnosis of medical conditions
		Explains the clinical reasoning underpinning decision making in medical imaging

DOMAIN: SKILLS AND PERFORMANCE		
Competence	Competence Statement	Sub-Competencies
Plain film and contrast aided studies	Performs plain film and contrast aided studies	Performs plain film and contrast aided studies according to protocol
		Analyses and interprets medical imaging requests
		Prepares room and equipment for imaging procedures
		Selects appropriate equipment
		Obtains images of diagnostic value
		Evaluates images for quality
		Operates x-ray imaging and accessory equipment safely
		Identifies contraindications for procedures

DOMAIN: SKILLS AND PERFORMANCE		
Competence	Competence Statement	Sub-Competences
Ultrasound	Perform limited ultrasound procedures	Analyses and interprets ultrasound requests
		Performs obstetric ultrasound under supervision

		Performs gynaecological ultrasound under supervision
		Performs general abdominal ultrasound under supervision
		Prepares patients and equipment for procedure
		Identifies contraindications for procedures
		Takes care of equipment

DOMAIN: SKILLS AND PERFORMANCE		
Competence	Competence Statement	Sub-Competences
Patient care	Provide psychological and physical care to patients	Applies principles of multidisciplinary approach to patient management
		Prepares patients for imaging procedures
		Provides physical care to patient requiring imaging services
		Assesses the psychosocial requirements for patients accessing imaging services
		Manages interpersonal relationships and departmental work cooperation

DOMAIN: SKILLS AND PERFORMANCE		
Competence	Competence Statement	Sub-Competences
Quality assurance	Participate in programmes that assure the delivery of quality radiography and adherence to radiation protection standards	Participates in quality assurance checks and procedures required of radiography technologist
		Implement Standard Operating Procedures that govern quality radiography
		Implement radiation protection requirement for a radiography department

DOMAIN: SKILLS AND PERFORMANCE		
Competence	Competence Statement	Sub-Competences
Management and entrepreneurship	Effectively take up administrative and management responsibility in the health sector.	Demonstrates awareness and applies administrative, management and finance principles.
		Takes up entrepreneurship challenges to complement public health services in the country.

DOMAIN: SKILLS AND PERFORMANCE		
Competence	Competence statement	Sub-Competencies

Research	Participate in basic research and disseminate research findings in form of a report.	Appreciates the role of research in medical imaging
		Explains the general research process

DOMAIN: SCIENTIFIC KNOWLEDGE		
Competence	Competence statement	Sub-Competences
<i>Radiobiology, radiation protection and radiation physics</i>	demonstrate understanding and application of radiobiology, radiation protection and radiation physics to the Practice of the Profession	Explains the radiation effect at the molecular and cellular level
		Describes the effect of radiation on human tissue
		Applies principles of physics to radiography practice
		Applies radiation protection principles to clinical practice
		Describes the construction and operation of Imaging units and equipment
		Discusses radioactivity, x-ray production and interactions of radiation with matter
		Participates in radiography quality assurance

		programs
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DOMAIN: ATTITUDES, VALUES AND PROFESSIONALISM		
Competence	Competence Statement	Sub-Competences
<i>Professionalism, medico-legal and ethics</i>	apply professionalism, medico-legal and ethical principles in clinical practice	Demonstrates awareness of ethical codes and scope of practice
		Is polite, considerate, trustworthy and honest, and act with integrity, maintain confidentiality, respect patients' dignity and privacy and understand the role of informed consent.
		Respects all patients, colleagues and others irrespective of age, socio-economic status, political affiliation, race, religion or creed. Must learn and teach others
		Appreciates the role of multidisciplinary approach to care
		Appreciates the role continuing professional development.
		Is aware of own personal and professional limits and enlist the help of colleagues and supervisors when necessary.
		Communicates clearly, sensitively and effectively with colleagues, patients and their care-givers by active listening, sharing and responding appropriately.

6.0 BLUEPRINT WEIGHTING

Outcome	Subject area	Sub-Subject	Assessment method
			Theory
Radiography techniques and rationale to the practice of the profession	Applied Anatomy and physiology (Radiographic anatomy and physiology)		5
	Radiographic techniques and clinical reasoning		3
Radiobiology, radiation protection and radiation physics to the Practice of the Profession	Radiobiology		10
	Applied Radiation Physics		
	Radiation Protection		10
	Radiographic equipment		
Plain film and Contrast aided studies	Plain Film	Axial Skeleton	25
		Appendicular Skeleton	
		Abdomen and pelvis	
		Chest	
		Head and Neck	
	Contrast Studies	GIT	20
		UGT	
Hepatobiliary			
Pattern recognition			
Ultrasound	Obstetrics		7
	Gyne		
	General Abdomen		
Advanced Imaging techniques	CT		
	MRI		
	NMR		
Patient care			5
Quality Assurance	Equipment		5
	Clinical		5
Management and Administration	Management		5
	Entrapreneurship		
professionalism, medico-legal and ethical principles in clinical practice	Ethics		5
	Medico-legal		
	Codes of conduct and scope of Practice		

SUGGESTED SUBJECT AREAS

7.0 CORE PROCEDURES

The following procedures are the minimum standards and a full list could be found in the curriculum

Radiographic Examinations	i. Participates in performing timely various imaging examinations (Computed Tomography, Ultrasound, Magnetic Resonance Imaging, Cardiac catheterization Imaging procedures, Paediatric Imaging etc.)
Radiographic Image Evaluation	i. Make competent decisions pertaining to evaluation of medical diagnostic images
Supervision	i. Supervision of subordinates
Assessment and Interpretation	i. Conducts timely assessment on patients and interprets clinical requirements in order to determine the most appropriate imaging technique for the patient in order to get optimal diagnostic information. ii. Critically evaluate radiographic equipment and assess suitability for intended examinations

8.0 REFERENCES MATERIALS

Kindly refer to the curriculum for full list of books.

Imaging Procedures	Long, B., Rollins J.S., and Smith, B. (2016) Merrill's Atlas of Radiographic Positioning and Procedures, 13th ED. Mosby. ISBN: 9780323263412
	Whitley. A.S (2015), Clark's Positioning in Radiography, 13th Ed, CRC Press, ISBN 9781444122350. Long, B., Rollins J.S., and Smith, B. (2016) Merrill's Atlas of Radiographic Positioning and Procedures, 13th ED. Mosby. ISBN: 9780323263412
Patient Care & Interpersonal effectiveness	Ehrlich. R.A &Coakes.D.M (2016), Patient Care in Radiography, 9th Ed. Elsevier, ISBN : 9780323353762 Plotnik R. &Kouyoumdjian H. (2013), Introduction to psychology, 10th Edition
Imaging Processes & Analysis	Chesney D.N and Chesney M.O (2004). Radiographic Photography. Blackwell Scientific Publishers. ISBN-049802001
Physics of radiology	Bushberg J.T. (2016) The Essential Physics of Medical Imaging. ISBN-063801 Bushong.S.C (2013), Radiologic Science for Technologists, Mosby, Inc. ISBN: 978-0-323-08135-1
Human Anatomy and Physiology	Ryan, S., McNicholas, M., and Eustace, S. (2010) Anatomy in Diagnostic Imaging, 3rd Ed. ISBN 9780702048326
	Barett KE, Barman SM, Boitano S, Brooks H. (2012). Ganong's Review of Medical Physiology 24 th Edition. McGraw Hill Medical. 978-0071780032.
Radiographic Pathology	Robbins, S.L, Angell, M and Kumar, V (2012). Basic Pathology. W. B Saunders Company, Philadelphia
	Eisenberg R.L, Johnson N.M. (2015), Comprehensive Radiographic Pathology, 6th ed. Mosby. ISBN- 9780323353243

Specialized Imaging Techniques	
INTERPERSONAL & COMMUNICATION SKILLS	Rothmans, J K <i>Epidemiology: An introduction</i> , Oxford University Press
	Guffey ME (2007) <i>Essentials of Business Communication</i> 7th ed. Australia: South-Western College Publishing.
	Hybels S, Weaver R (2004) <i>Communicating Effectively</i> . 7th ed. New York: McGraw-Hill
PROFESSIONALISM	HPCZ (2016) <i>Guidelines for good practice in the Healthcare profession – Maintaining Patient Confidentiality</i> . HPCZ Lusaka
	HPCZ (2016) <i>Guidelines for good practice in the Healthcare profession – Generation and management of patient records</i> . HPCZ Lusaka
	HPCZ (2014) <i>Professional code of ethics and discipline: Fitness to Practice</i> . HPCZ Lusaka
	HPCZ (2016) <i>Patients rights and responsibilities</i> . HPCZ Bulletin, Lusaka
	Banda S.B. Healthcare Ethics and Professionalism Course. https://virtualsityacademy.com/
SYSTEM-BASED PRACTICE	Cole A (2002) <i>Personnel and Human Resource Management</i> . London: Book Power.
	Handy CB (2000) <i>Understanding Organizations</i> . Oxford: Oxford University Press.

