Health Professions Council of Zambia

CORE COMPETENCIES REFERENCE MANUAL FOR RADIATION THERAPISTS TO PRACTISE IN ZAMBIA

CORE COMPETENCIES& MINIMUM STANDARDS

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QUALIFICATIONS AND RESPONSIBILITIES:

Title of the programme: BSc Radiation Therapy or equivalent

Key accountability for the job: Provide quality radiotherapy services to patients, their families and community, in a radiotherapy facility.

Primary Roles and responsibilities:

1. Clinical care
2. Treatment planning
3. Advanced therapeutic techniques
4. Perform managerial functions, roles and skills
5. Research
6. Entrepreneurship
7. Capacity building
8. Training of health care professionals and students
9. Professionalism
10. Monitoring and evaluation
11. Infection prevention
12. Quality assurance and control
13. Radiation protection

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 registered with the Health Professions Council of Zambia, this bulletin provides an outline of the core curriculum and minimum standards for registrants who have completed the bachelor of Radiation Therapy or its equivalent seeking full registration as Radiation Therapists in Zambia.

A Radiation Therapist is a health-care practitioner responsible for delivering a therapeutic dose of ionizing radiation for the treatment of malignant disease, and carrying out related activities as a member of the radiation therapy team (ISRRT 2004)

2.0 EXIT EXAMINATIONS AND AWARD OF THE DEGREE BSc RADIATION THERAPY

Training institutions, private or public (local and foreign) approved/recognised by the Health Professions Council of Zambiaare 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 BSc in Radiation Therapy or equivalent will be required to take and pass the HPCZ licensing examinations to qualify for registration with the Council as a Radiation Therapist.

3.0 LICENSURE EXAMINATIONS BY THE HEALTH PROFESSIONS COUNCIL OF ZAMBIA

A person shall not practice as a health care practitioner, unless that person is registered as a health care practitioner in accordance with the Health Professions Act. No. 24 of 2009. In the exercise of its functions under this Act, the 2ndCouncil 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 “Manual of the Information on the Core Competencies and Minimum standards for the Licensing Examinations for the Radiation Therapist to work in Zambia” binds all parties regulated under this Act. Examination fees for all 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 Examinations assesses a Radiation Therapist’s ability to apply knowledge, concepts, and principles, and to demonstrate fundamental patient - centred skills, that are important in health and disease that constitute the basis of safe and effective patient care. The HPCZ Licensing Examinations 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 Radiation Therapy Practice in Zambia.

The candidate will be assessed under three domains, namely:

1. Knowledge,
2. Skill,
3. Attitude

The above domains will be assessed by means of a theory examination comprising 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 Radiation Therapists in Zambia are:

1. Radiotherapy Equipment
2. Radiobiology
3. Molecular Oncology
4. Oncology and epidemiology
5. Radiation Therapeutic Practice
6. Physics of Radiation Therapy
7. Research
8. Patient Care & Interpersonal skills

The overall expected outcome of the Radiation Therapist's Licensure examination is to ensure that the candidate will meet the minimum standards for the role as a RadiationTherapist.

4.0 COMPETENCE OUTCOME GUIDELINES

The curriculum must haveidentified attributes in each educational domain (knowledge, skills and attitude) and present them to guide student learning and assessment by examiners. HPCZ directs Radiation Therapists to be compassionate and empathetic in caring for patients and to be trustworthy and truthful in all their professional dealings. Radiation Therapists 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 COMPETENCIES: RADIATION THERAPIST

Table 1. Domain:Knowledge

COMPETENCY	COMPETENCY STATEMENT	SUBCOMPETENCIES
1. Radiotherapy techniques and rationale to the practice of the profession	Graduate should be able to demonstrate understanding and application of radiotherapy techniques and rationale to the practice of the profession	• Explains the normal human anatomy and physiology as well as pathology • Explains the basic radiotherapy treatment techniques employed in the treatment of both non-malignant and malignant disorders • Analyses the biology and pathology of Cancers • Explains the clinical reasoning underpinning decision making in oncology management
2. Application of Radiobiology	Graduate should be able to demonstrate understanding and application of radiobiology to the clinical practice of the profession.	• Integrates laws and principles of radiation biology to the clinical practice of radiation therapy • Explains the radiation effect at the molecular and cellular level • Describes the effect of radiation on human tissue • Assesses the effect of radiation on malignant cells and tissues • Applies the principles of fractioned radiotherapy • Applies radiobiological models in clinical practice • Justifies the use of biological modifiers in radiotherapy

3. Application of Radiation physics and radiation protection	Graduate should be able to demonstrate understanding and application of radiation physics and radiation protection to the clinical practice of the profession	• Applies mathematical principles to the clinical practice of radiation therapy • Applies the principles of photon and electron teletherapy • Applies the principles of basic and 3D radiotherapy treatment planning • Applies the principles of radiation therapy physics, to Brachytherapy • Applies the principles of radiation protection, to clinical practice • Describes the construction and operation of Imaging, and radiotherapy equipment. • Discusses radioactivity and the process of x-ray production • Describes interactions of photons and electrons with matter • Plans, Evaluates and Audits radiation therapy quality assurance programs

Table2. Domain: Skills

COMPETENCY	COMPETENCY STATEMENT	SUBCOMPETENCIES
1. Perform radiotherapy procedures	Graduate should be able to perform procedures related to the delivery of a prescribed course of radiotherapy	• Analyses and interprets a radiotherapy prescription and radiotherapy treatment plans • Prepares and/or produces immobilisation, shielding, beam shaping, and beam modifying devices and moulds • Performs simulation and treatment planning procedures as well as dosimetric calculations • Operates imaging and radiotherapy equipment as well as associated accessories safely • Executes a prescribed course of treatment by ensuring correct positioning, immobilisation, and complete necessary documentation

		• Verifies treatment position, beam placement, dose delivered, and undertake corrective action in the event of deviation • Treats both non-malignant and malignant disorders arising from the various body systems, using radiation • Treats oncologic emergencies using radiation • Performs 2.5 and 3D treatment planning procedures
2. Patient Care	Graduate should be able to provide psychological and physical care to patients and their families before, during and after treatment	• Applies the principles of multidisciplinary approach to patient management • Provides quality care to cancer patients • Assesses the psychosocial impact of cancer on the patients and their families • Designs and evaluates counselling processes for patients on cancer treatment, and their families • Manages interpersonal relationships and departmental work cooperation • Provides palliative care to cancer patients
3. Quality Assurance and Control	Graduate should be able to participate in programmes that assure the delivery of quality radiotherapy and adherence to radiation protection standards	• Designs and manages specific quality assurance checks and procedures required in radiotherapy technology • Oversees implementation of clinical quality assurance programmes • Develops and implements Standard Operating Procedures that govern quality radiotherapy • Assesses and implements radiation protection requirements for a radiotherapy department
4. Management	Graduate should be able to effectively	• Performs managerial roles in order to achieve

and Entrepreneurship	perform managerial functions, roles and apply managerial skills and entrepreneurship	organizational/departmental targets • Exhibits managerial skills in order to achieve organizational/departmental targets • Performs managerial functions in order to achieve organizational/departmental targets • Engages in entrepreneurial activities and challenges in order to complement stakeholders as well as stockholders efforts.
5. Research	Graduate should be able to conduct basic biomedical research and disseminate research findings in form of a report.	• Conceptualizesresearch problems in radiotherapy • Carries out critical literature review using relevant data retrieval systems • Writes research proposals/reports • Applies principles of scientific enquiry and collects data • Utilizes appropriate statistical methods and tools to analyze data • Interprets and critically discusses research findings in the context of published work • Demonstrates academic writing and research presentation skills

Table 3. Domain: Attitude

COMPETENCY	COMPETENCY STATEMENT	SUBCOMPETENCIES
1. Professionalism, medico-legal aptitude and ethical practice	Graduate should be able to apply professionalism, medico-legal aptitude and ethical principles to clinical radiotherapy	• Practices informed decision making • Respects patients privacy in handling matters • Practices confidentiality with patient information • Demonstrates adherence to code of practice • Demonstrates sensitivity

	practice	to diverse patient groups • Exhibits appreciation of the role of multidisciplinary approach to radiation therapy. • Exhibits appreciation of the role of continuing professional development. • Exhibits an awareness of personal and professional limits and enlists 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	Assessment method	
		Theory	Practical
Radiotherapy techniques and rationale to the practice of the profession	Applied Anatomy and physiology (Radiographic anatomy and physiology)	5	
	Radiographic techniques and clinical reasoning	10	10
Application of radiobiology	Radiobiology	5	7.5
Radiation physics and radiation protection	Applied Radiation Physics	10	12.5
	Radiation Protection		
	Radiographic equipment		
Perform radiotherapy procedures	Simulation	35	45
	Mouldroom		
	Radiotherapy delivery		
	Treatment planning		
Patient care		10	15
Quality Assurance	Equipment	5	5
	Clinical		
Management and entrepreneurship	Management	5	

	Entrepreneurship		
Research		10	
Professionalism,, medico-legal and ethics	Ethics Medico-legal Codes of conduct and scope of Practice	5	5
		100%	**100%**

7.0 CORE PROCEDURES

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

General Patient Care Procedures	1	Patient preparation
	2	Counselling
	3	Patient education
	4	Monitoring and evaluation of patients
	5	Side effects management
Quality Assurance and Control Procedures:		
	1	Patient records management
	2	Machine Log Book management
	3	Cobalt 60 Unit
	4	Linear Accelerator-
	5	Conventional Simulator
	6	CT Simulator
	7	Brachytherapy Unit
	8	Port Film verifications
	9	Clinical Aspects
	10	Checklists
	11	Standard Operating procedures
		Radiation Therapy protocols
	12	Radiotherapy error management
	13	Patient records management
	14	Machine Log Book management
Simulation Procedures:	1	Whole Brain
	2	CSA
	3	Head and Neck
	4	Breast

	5	Abdomen
	6	Pelvis
	7	Skeletal
Dosimetry	1	Single Field
	2	Parallel Opposed Fields
	3	Weighted Fields
	4	Wedged Fields
	5	Computer Generated isodose Plans
	6	Electron fields
Treatment Accessory Devices	1	Custom Block making (Photon or Electron)
	2	Wax and Bolus application
	3	Custom Immobilization Device making
	4	Patient mould making
	5	Custom Block making (Photon or Electron)
	6	Wax and Bolus application
Radiation Therapy procedures	1	Brain
	2	CNS
	3	Head and Neck
	4	Thorax
	5	Breast
	6	Abdomen
	7	Skeletal
	8	Electron
	9	Brain
	10	CNS
Treatment Planning:	1	2D treatment planning
	2	Virtual Simulation
	3	3D CRT planning
	4	2D treatment planning

8.0 REFERENCE MATERIALS

Physics of Radiation Therapy	1	Bushberg J.T. (2016) The Essential Physics of Medical Imaging. ISBN-063801
	2	Khan. F (2003) The Physics of radiation therapy 3rd ED. Williams and wilkens
Radiobiology	1	Hall.E and Giaccia A (2012), Radiobiology for the Radiologist.7th ED. Lippincott Williams & Wilkins. ISBN 978-1-60831-193-4
	2	Joiner M and Van Der Kogel A (2009) Basic Clinical Radiology.4th Ed . Great Britain, Arnold. ISBN 978-0-340-92966-7
Clinical Oncology	1	Washington C. and Leaver D. (2016) Principles and practice of radiation Therapeutic.4th Ed. St Louis. Mosby.
	2	Dobbs, j.Barrett, A.And Ash D (2009) Practical radiotherapy planning
Patient Care	1	Ehrlich. R.A &Coakes.D.M (2016), Patient Care in Radiography, 9th Ed. Elsevier, ISBN : 9780323353762
	2	
Pathology	1	Robbins, S.L, Angell, M and Kumar, V (2012).Basic Pathology. W. B Saunders Company, Philadelphia
	2	McSween, R.M.N and Wharley, K (2008). Muir's Textbook of Pathology. Edward Arnold, London.
Anatomy and Physiology	1	Drake R.L., Vogl W. and Mitchell A.W.M. (2005), Gary's Anatomy for Students, Churchill Livingstone. ISBN-0443066124
	2	Barett K.E, Barman S.M, Boitano S, Brooks H. (2012). Ganong's Review of Medical Physiology 24th Edition. McGraw Hill Medical. 978-0071780032.
Treatment Planning	1	Barrett, A., Dobbs J., Morris S and Roques T. (2009) Practical radiotherapy planning. 4th ed. Holder Anold. UK. ISBN978-034-0927731
	2	Khan,FM&Gerbi B.J. (2012) Treatment planning in Radiation Oncology. 3rd ed. Williams and Wilkins,Philadelphia, USA. ISBN978-1-6083431-7

Professionalism	1	HPCZ (2016) *Guidelines for good practice in the Healthcare profession – Maintaining Patient Confidentiality*. HPCZ Lusaka
	2	HPCZ (2016) *Guidelines for good practice in the Healthcare profession – Generation and management of patient records*. HPCZ Lusaka
	3	HPCZ (2014) *Professional code of ethics and discipline: Fitness to Practice*. HPCZ Lusaka
	4	HPCZ (2016) *Patients rights and responsibilities*. HPCZ Bulletin, Lusaka
	5	Banda S.B. Healthcare Ethics and Professionalism Course. https://virtualsityacademy.com/
Epidemiology and Research	1	Wayne W. Daniel (2010) 9ed. Biostatistics, Basic concepts and methodology for the Health sciences. ISBN: 978-0-470-41333-3
	2	Betty R. Kirkwood and Jonathan A.C Sterne (2003) second edition. Essential medical statistics. ISBN: 978-0-86542-871-3.
Management and Entrepreneurship	1	Smit PJ, Cronje GJ, Brevis T and Vrba MJ (2013) Management Principles: A contemporary Edition for Africa. 5th ed. JUTA, RSA, ISBN978-0-70217-281-6
	2	Reuvid J (2009) Start-up & run your own business. The essential guide to planning, funding and growing your new enterprise. 7th ED Kogan. ISBN 978 0 7494 5415 9