



CORE COMPETENCIES REFERENCE MANUAL FOR SONOGRAPHERS TO PRACTISE IN ZAMBIA

CORE COMPETENCIES & MINIMUM STANDARDS

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QUALIFICATION AND RESPONSIBILITIES:

Title of the programme: Bachelor of Science in Diagnostic Ultrasound (BSc Sonography) or equivalent

Key accountability for the job: Provide quality ultrasound services in a health care facility.

Primary roles and responsibilities:

- Knowledge of the basic and clinical sciences relevant to the practice of medicine
- Competence in clinical skills and patients care
- Professionalism and ethical practice
- Conducts sonographic examinations both basic and specialized for best patient management
- Assessment of patients and Interpretation of clinical requirements to determine the most appropriate sonographic technique to employ for optimal diagnostic information

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 practitioners 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 minimum competency standards for registrants who have successfully completed the Bachelor of Science in Diagnostic Ultrasound (BSc Sonography) and Bachelor of Diagnostic Sonography (BDU) or equivalent seeking registration to practise as a Sonographer in Zambia.

A Sonographer is a highly skilled medical imaging professional who performs medical diagnostic sonographic examinations.

2.0 EXIT EXAMINATIONS AND AWARD OF THE BSC SONOGRAPHY BY TRAINING INSTITUTIONS

Training institutions, private or public (local or foreign), approved or recognised by the Health Professions Council of Zambia are mandated to examine and graduate their students under their own seal and authority. The BSc Sonography, BDU or equivalent is designated the primary qualification of the sonographer and it is a pre-requisite requirement for eligibility for licensure examinations. Accordingly, a holder of the BSc Sonography, BDU or equivalent award will be required to take and pass the HPCZ licensure examination to qualify for registration with the Council as a Sonographer

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 Information on the Core Competencies and Minimum Standards for the Licensing Examinations for sonographer 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 licensing examination.

The HPCZ Licensing Examination assesses a sonographer’s 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 medical practice 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).

The main **subject areas** (assessed under all three learning domains) for Sonography in Zambia are:

1. Obstetrics Ultrasound
2. Gynaecology Ultrasound
3. Small parts Ultrasound
4. Masculatal Ultrasound
5. Echocardiography
6. Vascular Ultrasound
7. Interventional Ultrasound

The overall expected outcomes of the Licensure examination is to ensure that the candidate will meet the minimum standards for the role as a sonographer

4.0 OVERALL 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 a sonographer to be compassionate and empathetic in caring for patients and to be trustworthy and truthful in all their professional dealings. A sonographer has a responsibility to respect and provide care that is up to standard for the lives and health that are entrusted by patient

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

CORE COMPETENCIES: SONOGRAPHER

DOMAIN: Knowledge		
Competence	competence statement	Sub competences
<i>Application of Sonography</i>	Application of Sonography	<ul style="list-style-type: none"> i. Explains and applies Knowledge required in the use of ultrasound machines. ii. Applies knowledge required to perform sonographic examinations and interpretation of sonographic images. iii. Demonstrates understanding of common disease conditions and health problems in our environment, including those common at primary, secondary and tertiary levels of health care system. iv. Demonstrates understanding in research methods, epidemiology and biostatistics. v. Demonstrates understanding on the principles of health care management vi. Applies and demonstrates professionalism and ethics.

DOMAIN: Basic Health Sciences		
Competence	Competence statement	Sub-competences
Application of Sonography	Application of Sonography	i. Explains normal sonographic imaging anatomy and function.
		ii. Explains the Basic Health sciences which form the foundation for sonographic practice.
		iii. Explains the Patho-physiology of common disease processes.
		iv. Explains the role of physiology in health and disease

DOMAIN: Scientific Knowledge		
Competence	Competence Statement	Sub-competencies
Medical Diagnostic Sonographic Procedures	Demonstrates understanding of medical diagnostic ultrasound procedures employed in the care of patients in Zambia.	Demonstrates understanding of a wide range of medical diagnostic and sonographic procedures that are essential to the sonographer's role in the healthcare team

DOMAIN: SKILLS AND PERFORMANCE		
Competence	Competence statement	Sub-competences
Plan and conduct examinations	To demonstrate understanding and apply underpinning knowledge to plan and implement an examination	i. Applies knowledge of anatomy, physiology, embryology, pathophysiology, normal and abnormal sonographic appearances of abdominal organs, glands, abdominal blood vessels, male pelvis, prostate, retroperitoneum, urinary bladder, gastrointestinal tracts, pediatrics and neonatal, gynecology, obstetrics, small parts, vascular studies, musculoskeletal and cardiac
		ii. Applies knowledge of ultrasound imaging systems
		iii. Develops an examination strategy.
		iv. Implements the examination strategy, review examination findings to confirm thoroughness and that the examination addresses the clinical question.
		v. Recognises the need to consult.
		vi. Documents findings

DOMAIN: SKILLS AND PERFORMANCE		
Competence	Competence statement	Sub-competences
Information Communication Technology (ICT)	Utilize Information Communication Technology (ICT) appropriate to the practice of sonography	i. Utilises ICT to communicate sonography information effectively
		ii. Develops, stores, locates, retrieves and utilises patient sonography data on a database
		iii. Accesses online data and information retrieval systems (e.g. Web of Science, PubMed, Google Scholar, Embase, etc.)
		iv. Operates commonly used software such as MS Word, Excel, PowerPoint, Access, etc., including other relevant computer applications

DOMAIN: SKILLS AND PERFORMANCE		
Competence	Competence statement	Sub-Competences
Perform ultrasound examinations	Performs ultrasound investigations of the various body parts and systems	i. Performs ultrasound of General Abdomen sonography
		ii. Performs Male pelvis sonography
		iii. Performs Gynaecology Sonography
		iv. Performs Obstetrics sonography
		v. Performs Small parts (Breast, Thyroid, Parathyroid, Eye, Scrotum, Neonatal brain, etc.)
		vi. Performs musculoskeletal sonography
		vii. Performs vascular sonography
		viii. Performs Cardiac sonography
		Performs Paediatric and neonatal sonography
		Performs Ultrasound guided interventional procedures

DOMAIN: ATTITUDES, VALUES AND PROFESSIONALISM

Competence	Competence statement	Sub-Competences
Communicate Effectively	Effectively communicate as a professional with peers, other healthcare professionals and the public in a professional context.	i. Communicates clearly, sensitively and effectively with colleagues, patients and their care-givers by active listening, sharing and responding appropriately.
		ii. Communicates by spoken, written, and electronic methods and be aware of other methods of communication used in the medical science field.
		iii. Communicates effectively in various roles, for example: as an educator, mentor, patient counsellor, and health/professional advocate.

DOMAIN: ATTITUDES, VALUES AND PROFESSIONALISM		
Competence	Competence Statement	Sub-competences
Work place Collaboration	Collaborate and Function Effectively with other Health Professionals	i. Develops and fosters professional working relationships with other health care professionals and clients
		ii. Understands and respects the roles and expertise of other health and psycho-social professionals in the care of patients as a multi-professional team.
		iii. Works with colleagues in ways that best serve the interests of the patient.
		iv. Demonstrates ability to build team capacity and function at various levels within the team

DOMAIN: ATTITUDES, VALUES AND PROFESSIONALISM

Competence	Competence Statement	Sub-competences
Adherence to health and Sonography safety guidelines	Adopt, comply and implement health and safety guidelines, including develop standard operating procedures of the sonographic unit	i. Demonstrates awareness and adherence to local, regional and international standards of Sonographic unit, including protocols for management.
		ii. Formulates safety rules and regulations for personnel and support staff.
		iii. Promotes health and occupational safety at the workplace.
		iv. Protects patients and improve care

DOMAIN: ATTITUDES, VALUES AND PROFESSIONALISM		
Competence	Competence Statement	Sub-competences
Professionalism and Ethical Practice	Demonstrates professionalism and ethical practice	i. Applies principles of leadership and management of health systems.
		ii. Effectively manages the sonographic unit.
		iii. Selects and applies appropriate strategies and tools to plan, control and manage health system resources under their care.

DOMAIN: ATTITUDES, VALUES AND PROFESSIONALISM		
Competence	Competence Statement	Sub-Competences
Management and entrepreneurship	Provide Leadership, Manage Health Systems and Engage in Entrepreneurship	i. Applies principles of leadership and management of health systems.
		ii. Effectively manages the sonographic unit.
		iii. Selects and applies appropriate strategies and tools to plan, control and manage health system resources under their care.

5.0 COMPETENCE DEVELOPMENT & CONTENT GUIDE

Listing of Examples of Courses for the BSc Ultrasound, BDU or equivalent

Courses for Scientific Knowledge in Ultrasound		
<p>1. Basic Health Sciences:</p> <ul style="list-style-type: none"> ➤ Human and Imaging Anatomy ➤ Human Physiology ➤ General Pathology & Microbiology ➤ General Pharmacology 	<p>3. Basic Computing and Learning Methods</p> <p>4. General Abdominal Ultrasound</p> <p>5. Obstetrics & Gyneacology Ultrasound</p> <p>6. Small parts and Musculoskeletal Ultrasound</p>	<p>7. Vascular Ultrasound</p> <p>8. Echocardiography</p> <p>9. Biostatistics, Epidemiology and Research Methodology</p> <p>10. Peadiatrics and neonatal ultrasound</p> <p>11. Ultrasound guided interventional procedures</p>
Courses for Skills & Performance in Ultrasound		

<ul style="list-style-type: none"> 1. Ultrasound physics, Instrumentation and Equipment maintenance 2. General Abdominal Ultrasound 3. Obstetrics & Gynaecology Ultrasound 	<ul style="list-style-type: none"> 4. Small parts and Musculoskeletal Ultrasound 5. Vascular Ultrasound 	<ul style="list-style-type: none"> 6. Communication skills 7. Learning Methods, Basic Computing 8. Echocardiography 9. Ultrasound guided interventional procedures
<p>Courses for Attitudes, Values & Professionalism</p>		
<ul style="list-style-type: none"> 1. Psychology, Sociology and medical anthropology 2. Management Principles and informatics 		

6.0 BLUEPRINT WEIGHTING

	Theory	Practical
Outcome 1. Demonstrate Understanding and Application of Sonography Requisite to the Practice of the Profession	10%	5%
Outcome 2. Demonstrate Understanding and Application of Basic Health Sciences Requisite to the Study of Sonography	10%	5%
Outcome 3. Demonstrate Knowledge and Understanding of Medical Diagnostic Sonographic Procedures	5%	5%
Outcome 4. Plan and conduct examinations	5%	10%
Outcome 5: Perform ultrasound examinations	30%	35%
Outcome 6. Locate, analyse and synthesise information to support evidence-based practice	5%	5%
Outcome 7. Manage a Sonography unit	5%	5%
Outcome 8. Utilize Information Communication Technology (ICT) Appropriate to the Practice of Sonography	5%	5%
Outcome 9. Communicate Effectively	5%	5%
Outcome 10. Collaborate and Function Effectively with other Health Professionals	5%	5%
Outcome 11. Adherence to health and Sonography safety guidelines	5%	5%
Outcome 12. Professionalism and Ethical Practice	5%	5%
Outcome 13. Provide Leadership, Manage Health Systems and Engage in Entrepreneurship	5%	5%
TOTAL	100%	100%

7.0 CORE PROCEDURES

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

<p>Specialized Sonography Examinations</p>	<ul style="list-style-type: none"> i. Manages and conducts ultrasound examinations of small parts: scrotal, thyroid, eye, prostate neonatal brain ii. Manages and conducts basic echocardiography iii. Manages and conducts ultrasound examinations of the musculo-skeletal system iv. Manages and conducts ultrasound examinations of vascular system (Doppler ultrasound) v. Manages and conducts superficial ultrasound examinations e.g. hernias, lipomas and so on
<p>Basic sonographic examinations</p>	<ul style="list-style-type: none"> i. Manages and conducts ultrasound examinations of the abdomen ii. Manages and conducts examinations of the pelvis iii. Manages and conducts obstetric ultrasound examinations
<p>Sonographic Image Evaluation and Interpretation</p>	<ul style="list-style-type: none"> i. Make reasoned decisions pertaining to interpretation and documentation/reporting of ultrasound findings
<p>Assessment and Interpretation</p>	<ul style="list-style-type: none"> i. Manages and Conducts timely assessment on patients and interprets clinical requirements in order to determine the most appropriate sonographic technique for the patient in order to get optimal diagnostic information.

	<ul style="list-style-type: none"> ii. Manages complex and unpredictable situations including the ability to adapt planned diagnostic imaging examinations, interventions and to manage adverse, critical care incidents. iii. Manages and evaluates sonographic equipment and assess suitability for intended examinations
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8.0 REFERENCES MATERIALS

Kindly refer to the curriculum for full list of books.

Human Anatomy and Physiology	<p>Barett KE, Barman SM, Boitano S, Brooks H. (2012). Ganong’s Review of Medical Physiology 24th Edition. McGraw Hill Medical. 978-0071780032</p> <p>Ryan, S., Mcicholas, M., and Eustace, S. (2010) Anatomy in Diagnostic Imaging, 3rd Ed. ISBN 9780702048326</p>
Imaging Pathology	<p>Eisenberg R.L, Johnson N.M. (2015), Comprehensive Radiographic Pathology, 6th ed. Mosby. ISBN- 9780323353243</p> <p>Robbins, S.L, Angell, M and Kumar, V (2012). Basic Pathology. W. B Saunders Company, Philadelphia</p>
Patient Care & Interpersonal effectiveness	<p>Ehrlich. R.A &Coakes.D.M (2016), Patient Care in Radiography, 9th Ed. Elsevier, ISBN : 9780323353762</p> <p>Plotnik R. &Kouyoumdjian H. (2013), Introduction to psychology, 10th Edition</p>
INTERPERSONAL & COMMUNICATION SKILLS	<p>Guffey ME (2007.) Essentials of Business Communication 7th ed. Australia: South-Western College Publishing.</p> <p>Hybels S, Weaver R (2004.) Communicating Effectively. 7th ed. New York: McGraw-Hill</p>

PROFESSIONALISM

HPCZ (2016). Guidelines for good practice in the Healthcare profession – Maintaining Patient Confidentiality. HPCZ Lusaka

HPCZ (2016). Guidelines for good practice in the Healthcare profession – Generation and management of patient records. HPCZ Lusaka

HPCZ (2014.) Professional code of ethics and discipline: Fitness to Practice. HPCZ Lusaka