Health Professions Council of South Africa

PROFESSIONAL BOARD FOR THE EMERGENCY CARE

EMERGENCY CARE ASSISTANT

PREAMBLE

The Health Professions Council of South Africa is established in terms of the Health Professions Act, 1974 (Act No. 56 of 1974) to protect the public and guide the professions which requires that all Health Professionals practicing in South Africa shall be registered with the HPCSA and practice in accordance with and within the ethical and legal framework of the Council.

In terms of section 16 of the Health Professions Act, 1974 any person, educational institution or training facility wishing to offer any education and training having as its object to qualify any person for the practicing of any health profession to which the provisions the provisions of the Act apply, shall before offering such education and training apply to the Professional Board in writing for accreditation of such education and training.

The Board aligned its qualifications for emergency care providers with the relevant education legislations, i.e. the Higher Education Act, 1997, Higher Education Qualifications Sub-Framework (HEQSF), National Qualifications Framework Act, 2008, best practices and other national imperatives, such as the proposed National Emergency Care Education and Training Policy (NECET) and the National Health Insurance (NHI) Plan.

This qualification has been developed as the entry level into the emergency care profession, namely the Higher Certificate in Emergency Medical Care, which will lead to the registration as an Emergency Care Assistant (ECA) with the Health Professions Council of South Africa (HPCSA).

EMERGENCY CARE ASSISTANT (ECA)

1. TITLE: Higher Certificate in Emergency Medical Care: Emergency Medical Care (H Cert EMC)

NQF LEVEL: Level 5

CREDIT VALUE: 120 Credits

2. INSTITUTIONS WHERE QUALIFICATION COULD BE OFFERED

- Public Higher Education Institutions
- Private Higher Education Institutions

3. RATIONALE

This qualification is designed to produce entry-level emergency care providers who are clinical assistants within the emergency medical care and rescue environment thereby replacing the Basic Ambulance Assistant Course as the entry qualification in emergency medical services. The qualification provides an entry point into the career pathway of emergency medical services thereby creating access and an opportunity for employment within emergency care. The qualification will develop the necessary foundational knowledge; skills and attitudes necessary to form the basis for further study in the field of pre-hospital emergency medical care and will provide access to qualifications within the HEQSF. Graduates will practice basic and intermediate emergency care primarily on ambulances within South Africa in rural and urban contexts that range from sophisticated emergency medical care facilities to remote primary health care settings. This qualification also aims to promote an understanding of the multi-disciplinary approach to effective, efficient patient care. In addition, this qualification aims to produce an emergency care provider that will take cognizance of South African history and will be able to adapt to the unique circumstances of a changing South Africa with emphasis on equity in health care, social upliftment and reduction of the burden of disease. The qualification is also designed to enable students to pursue further personal and professional development and to promote life-long learning

4. PURPOSE

This qualification is an entry level qualification and recognises the key competencies required of Emergency Care Assistants who will work under the guidance of Emergency Care Technicians, Emergency Care Practitioners and Medical Officers in a variety of contexts. Holders of this qualification will operate mainly in and around the ambulance, within wide ranging contexts, including rural, urban, military, coastal, corporate, mass gatherings, homes and workplaces. In general, the Emergency Care Assistant will provide a supportive service within the pre-hospital context.

5. BROAD CURRICULUM/SYLLABUS, MINIMUM PERIOD

Students are required to achieve all the credits for both the fundamental and core components of the qualification for a minimum period of one academic year. The components of the qualification include Foundations of Professional Practice, Anatomy and Physiology, Physics, Chemistry, Emergency Medical Care and Clinical Practice. There are no electives in this qualification. The 1200 notional hours of this qualification will include both theoretical and clinical competencies as required by the HPCSA, Professional Board for Emergency Care. A minimum of 120 credits is required to obtain the qualification.

6. WHERE AND HOW LEARNING TAKES PLACE

Learning will take place in the classroom environment, in practical laboratories and in the authentic work environment through a variety of andragogy learning methods.

7. WHERE AND HOW ASSESSMENT TAKES PLACE

Integrated assessment strategies across related modules and critical cross-field outcomes are applied and assessed in the classroom, practical venues and in the authentic environment. Integrated assessment takes the form of an appropriate variety of assessment methods, for example: written and oral examinations, problem solving assignments, projects presentations, case studies, portfolios, log books, clinical reports and objectively structured clinical examination, reflective practice journals and simulated medical and rescue scenarios. Through the institution's policies on assessment and moderation, assessment practices will be open, transparent, fair, valid, and reliable to ensure that no student is disadvantaged in any way whatsoever.

Formative Assessment: Learning and assessment are integrated. The scheme of work includes tests and assignments, practical work and competency evaluation of practical skills. The process is continuous and focuses on smaller sections of the work in limited number of outcomes.

Summative Assessment: Summative assessments evaluate the students' abilities to manage and integrate a larger body of knowledge and to achieve the stated outcomes. The summative assessment also focuses on the students' ability to integrate knowledge and skills in the area of emergency care. Summative assessments include theory and practical assessments.

8. RECOGNITION OF PRIOR LEARNING (RPL)

This qualification may be achieved in part through RPL in accordance with the policies and procedures of the higher education institution offering this qualification and on presenting the relevant evidence that meets the outcomes of the qualification.

9. PROGRESSION PATHWAY

Vertical mobility of Higher Certificate in Emergency Care: Graduates will be able to progress into a Diploma in Emergency Medical Care or Bachelors Degree in Emergency Medical Care thereafter graduates will be able to progress directly into a Masters and subsequently into a related Doctoral programme. Vertical mobility is also possible into an Advanced Certificate in Medical Rescue for those individuals that wish to further their career in medical rescue.
The design of the certificate allows for inter-institutional mobility as it would be possible for Higher Certificate in Emergency Medical Care students from one higher educational institution to transfer credits to other South African universities offering the same programme since the Professional Board has designed the learning programme as a national qualification.

10. INTERNATIONAL COMPARABILITY

It is increasingly evident that there is a worldwide need for formally trained health care providers to be included in Emergency Medical Services. A Certified First Responder is a term used internationally to denote an entry-level health career in emergency medical services. In the United States of America (USA) there are several Health Schools and Colleges that provide training resulting in a similar qualification. Generally a high school diploma is required to enter the training programmes. Workers must complete a formal training and certification process. Training is offered at progressive levels. The Emergency Medical Technician – Basic qualification is the entry level for employment within an Emergency Medical Service. At this entry level, the procedures and skills performed are generally non-invasive and this type of training will be very similar to the type of training that the ECA will be exposed to. In the United Kingdom, an Ambulance Aid qualification is offered and these individuals once qualified will work alongside a Paramedic. In the UK, this entry level qualification is on the decline as a greater emphasis is being placed on the University based Paramedic qualifications. These courses are designed to equip the student with the skills required by the National Health Services (NHS) ambulance services. Emergency Care Assistants (ECAs) are a new role in the frontline staff on NHS emergency ambulances within the United Kingdom, introduced as part of modernisation of the NHS ambulance services to cut costs. Having only been created in 2006, the role is evolving rapidly, and has not been standardised over the country, but will usually consist of assisting qualified paramedics and emergency medical technicians with their duties, although this is not always the case in exceptional circumstances. In Canada this qualification compares with that of an Emergency Medical Responder (EMR). This is a level of practice recognised under the National Occupational Competency Profile (NOCP). There are a high number of EMRs in Canada as they play a critical role in the chain of survival. The level of practice of an EMR is not very comprehensive clinically. The skills within the EMRs scope align to those in this curriculum and the scope of practice is regulated. In Ireland, an Emergency First Responder (EFR) is trained in extensive first aid, BLS training and the EFR is able to assist higher trained practitioners with patient care. This level of training is very basic and does not lead to employment within an emergency service. In Australia, a Certificate IV is the basic life support level, which is recognised as the minimum entry level qualification for emergency work in an ambulance service.

In conclusion it may be stated that this qualification has been compared to similar qualifications offered in several other countries around the world. Because there is a great deal of similarity in the curricula offered in several other countries it implies that these curricula reflect best practice. The duration of these programmes differs and literature reviewed reflects examples where there is a range of 100 hours to 1 year. More advanced programmes reflect duration periods from six months to three years.

QUALIFICATION DETAILS

1. FIELD AND SUB-FIELD OF THE QUALIFICATION

Field:	09	Health Professionals and related Clinical Sciences
Sub- field:	0907	Medical Clinical Sciences
	090718	Emergency Medicine

2. ENTRY REQUIREMENTS

To register for the qualification, the candidate must comply with either 2.1 or 2.2 or 2.3 hereunder:

2.1 The applicant with a Senior Certificate (prior to 2009) must have at least a minimum of an E symbol on Higher Grade or a D symbol on Standard Grade pass for all of the following subjects:

- English
- Mathematics
- Biology and / or Physical Sciences

OR

2.2 The applicant with a National Senior Certificate with a Higher Certificate endorsement must have the following subjects and rating codes:

- English (3)
- Mathematics (3) or Mathematical Literacy (6)
- Life Sciences (3) and / or Physical Sciences (3)
- Additional Subject 1 (3)
- Additional Subject 2 (3)

OR

2.3 National Certificate (Vocational), must have achieved a minimum pass of 60% for all of the following subjects:

- English
- Mathematics
- Life Sciences and / or Physical Sciences

AND

2.4 The applicant must have a minimum of 18 points.

2.5 The applicant must pass the Medical Fitness and Physical Fitness Evaluations.

2.6 A minimum of 40 hours voluntary duties in Emergency Medical Services is recommended.

3. INTEGRATED ASSESSMENT

Integrated assessment strategies across related modules and critical cross-field outcomes are applied. Integrated assessment takes the form of an appropriate variety of assessment methods, for example: written and oral examinations, problem solving assignments, projects presentations, case studies, portfolios, log books, clinical reports and objectively structured clinical examination, reflective practice journals and simulated medical and rescue scenarios. Through the university's policies on assessment and moderation, assessment practices will be open, transparent, fair, valid, and reliable to ensure that no student is disadvantaged in any way whatsoever

3.1. Formative Assessment

Learning and assessment are integrated. The scheme of work includes tests and assignments, practical work and competency evaluation of practical skills. The process is continuous and focuses on smaller sections of the work in limited number of outcomes.

3.2 Summative Assessment

Summative assessments evaluate the students' abilities to manage and integrate a larger body of knowledge and to achieve the stated outcomes. The summative assessment also focuses on the students' ability to integrate knowledge and skills in the area of emergency care. Summative assessments include theory and practical assessments.

4. RULES OF COMBINATION

Students are required to achieve all the credits for both the fundamental and core components of the qualification. There are no electives in this qualification. The qualification is competency based. Notional hours will include both theoretical and clinical competencies as required by the HPCSA, Professional Board for Emergency Care. A minimum of 120 credits is required to obtain the qualification.

5. EXIT LEVEL OUTCOMES AND ASSOCIATED ASSESSMENT CRITERIA

The Exit Level Outcomes and Associated Assessment Criteria must be interpreted and applied within the context of the Scope of Practice of Emergency Care Assistants as defined by the Health Professions Council of South Africa.

5.1.1 Exit Level Outcome 1

Demonstrate effective communication and apply the principles of medical ethics, professional behaviour and the legal framework to the context within which Emergency Care Assistants operate while maintaining personal health, wellness and safety.

5.1.2 Associated Assessment Criteria 1

i. Communication with patients, colleagues and other service providers is effective, clear, direct, and accurate, with appropriate use of modality including electronic media. Terminology is consistent with profession usage.
ii. Interactions promote human dignity and are undertaken with due sensitivity to ethnic, cultural, linguistic, and religious and gender diversity.
iii. Ethical principles of beneficence, autonomy and justice, truth telling, promise keeping and confidentiality are correctly applied in all contexts.
iv. All clinical interactions and related practices are in line with the provisions and rules of the codes of ethics of the HPCSA and professional associations.
v. Accurate and comprehensive explanations are provided of the legal framework within which an emergency service provider and / or Emergency Care Assistant operates.
vi. The importance of mental health and wellness on the part of the emergency care provider is comprehensively discussed, highlighting their role and importance, with particular reference to the impact on job effectiveness.
vii. Suitable methods for achieving and maintaining operational fitness are identified, demonstrated and described in terms of lifestyle, diet and exercise techniques, highlighting the impact on self and job effectiveness.
viii. Methods for maintaining personal safety are identified, demonstrated and applied through appropriate risk assessment, scene assessment, decision making and option taking.
ix. Safe and effective lifting, carrying and movement of patients is described and / or demonstrated.
x. Safe and effective use of emergency service vehicles and emergency response driving is described and / or demonstrated.
xi. Operational routines are correctly conducted within an EMS environment.

5.2.1 Exit Level Outcome 2

Demonstrate understanding of the structure and function of Emergency Medical Service (EMS) systems in South Africa and how they relate to the broader health care structures within the country.

5.2.2 Associated Assessment Criteria 2

i. EMS is accurately described in terms of structure, role and function, both public and private, within the South African context.
ii. Correct explanations are provided of the interdependence and interrelationships occurring between EMS and other Allied Emergency and Health Care structures.
iii. The role of the health care team is correctly explained in terms of key responsibilities of each role and the relationships between each role.
iv. National legislation as applicable to emergency care and rescue services are correctly identified and explained.
v. Multi-disciplinary approaches to emergency care and rescue scenarios are correctly explained and / or demonstrated.

vi. Operational needs are correctly explained.
vii. Factors influencing policy and operation of the emergency care and/or rescue services are correctly explained.
viii. Problem areas are correctly identified and addressed using problem solving and decision making techniques.
ix. Applicable labour legislation and labour practice is correctly explained.
x. Principles of disaster management are correctly explained and demonstrated.

5.3.1 Exit level Outcome 3

Demonstrate knowledge and understanding of human and basic sciences underpinning emergency care.

5.3.2 Associated Assessment Criteria 3

i. The composition, general form, spatial orientation and position of structures within the regions of the human body are accurately described and integrated within a clinical context.
ii. The physiological functioning of the human body is correctly explained and integrated into patient care.
iii. Key principles of chemistry are correctly explained and applied to emergency medical care.
iv. Key principles of physics are correctly explained and applied to emergency medical care.
v. Drugs used within the scope of practice of the Emergency Care Assistant are accurately and comprehensively described in terms of class, schedule, trade name, and generic name, mechanism of action, indications, contra-indications, precautions, side effects, packaging, dosage and administration and route of administration.

5.4.1 Exit Level Outcome 4

Provide emergency medical care within an emergency medical service environment to all sectors of the community within the Emergency Care Assistant scope of practice.

5.4.2 Associated Assessment Criteria 4

i. Potential hazards within the emergency service environment are correctly identified in terms of their origins, impact and means of management or mitigation. Scene and incident management is carried out in line with best practice and established procedures.
ii. Emergency medical care equipment is accurately described in terms of function, storage, maintenance and safe use.
iii. Infection control is discussed and implemented in line with established procedures.
iv. Integrated patient care and clinical skills / procedures are correctly demonstrated.

v. The principles of primary health care, disease prevention, health promotion and counselling are described and demonstrated.
vi. HIV and AIDS awareness is promoted in self and among others.
vii. The role of an Emergency Care Assistant within the primary health care system is described.
viii. Clinical assessment and clinical decision-making is performed in line with the scope of practice of an Emergency Care Assistant, and treatment for minor injuries and minor ailments in specific controlled circumstances is provided.
ix. The ability to render emergency care support to the sick or injured individual, groups and the community with due consideration for evidence informed practice is demonstrated.
x. All clinical skills within the Emergency Care Assistant scope of practice is demonstrated.
xi. The ability to recognise an emergency care and/or primary health care situation and apply appropriate knowledge and skills concerning the type of situation by using appropriate equipment is demonstrated.
xii Patient hand over is carried out in line with local protocols and procedures.
xiii. Medical records are constructed which provide sufficient accurate details of patient information and treatment.
xiv. Self-critique, realistic, accurate and fair reflection of own clinical competence and practice is demonstrated.
xv. Ability to offer appropriate clinical advice that will enhance prevention of further injury or ill health is demonstrated.
xvi. Carry out operational routines and procedures within an Emergency Medical Services environment

6. COMPONENTS OF THE QUALIFICATION

COMPONENTS	RECOMMENDED NUMBER OF CREDITS ALLOCATED	NQF LEVEL
FUNDAMENTAL		
Foundations of Professional Practice	12	5
Mental Health and Wellness	8	5
End User Computing	8	5
Anatomy and Physiology	16	5
Physics	8	5
Chemistry	8	5
SUBTOTAL	60	
CORE		
Emergency Medical Care Theory	15	5
Emergency Medical Care Practical	15	5
Clinical Practice	30	5
SUBTOTAL	60	
TOTAL	120	
Electives	There are no electives.	

7. SUBJECT/MODULE OUTCOMES

The Subject/Module outcomes must be interpreted and applied within the context of the Scope of Practice of Emergency Care Assistants as defined by the Health Professions Council of South Africa.

7.1 FOUNDATIONS OF PROFESSIONAL PRACTICE

7.1.1 MODULE OUTLINE

i. Health care systems & structures
ii. Legislation, law, ethics and professionalism
iii. Emergency service vehicles
iv. Occupations health and safety in the EMC environment
v. Radio and communication systems
vi. Procedures and protocols
vii. Emergency medical care equipment
viii. Academic literacy skills
ix. Introduction to evidence based medicine
x. Introduction to medical rescue safety

7.1.2 MODULE OUTCOMES

On completion of this module the student should be able to:

i. Demonstrate a clear understanding of the structure and function of Emergency Medical Service (EMS) systems in South Africa and how the EMS relates to the broader health care structures within the country
ii. Demonstrate a clear understanding of medical ethics, professional behavior and the legal framework within the Emergency Medical Services context
iii. Demonstrate a clear understanding of the various types of emergency service vehicles and to explain and / or demonstrate the correct operating procedures that should be followed when using such vehicles
iv. Demonstrate a clear understanding of the importance of health and safety in and around the workplace and to identify the potential hazards that you may be faced with during the course of your duties as an emergency care practitioner
v. Demonstrate a clear understanding of various types of communication systems that may be used in the emergency services and to provide you with the necessary knowledge skills and insight needed to use the various communication systems effectively during the course of your duties
vi. Demonstrate a clear understanding of useful generic skills that are necessary if you are to provide a professional service within a specific organizational framework (policies and procedures) as well as a legal framework
vii. Demonstrate a clear understanding of the various types of medical equipment that are used in the emergency care and transportation environment and to provide to with the necessary knowledge skills and insight needed to safely and effectively identify, inspect, maintain and operate each item during the course of your duties
viii. Apply effective listening skills
ix. Apply effective reading skills
x. Analyze information by critical thinking
xi. Effectively prepare, plan and present oral presentations
xii. Demonstrate an understating of evidence based medicine
xiii. Demonstrate a clear understanding of the risks and safety concerns on rescue incidents.

7.2 MENTAL HEALTH AND WELLNESS

7.2.1 MODULE OUTLINE

i. Concept of mental health and link between mental health and physical wellbeing
ii. Depression, stress and stress management
iii. Conflict management
iv. Crisis intervention
v. Dealing with death and dying
vi. Substance abuse
vii. HIV and AIDS awareness

7.2.2 MODULE OUTCOMES

On completion of this module the student should be able to:

i. List the vaccines available to the emergency care provider
ii. Discuss safe sharps and medical waste management

iii. Explain the ways in which you can safeguard yourself against being infected by pathogens in the emergency care environment
iv. Explain the procedure that should be followed should you become exposed to pathogens
v. Explain the procedure that should be followed should you become injured on duty
vi. Demonstrate correct and safe lifting and carrying techniques
vii. List and discuss common hazards associated with emergency work
viii. Explain the importance of scene safety and provide a generic approach to rendering scenes safe
ix. Explain the correct method of dealing with bystanders
x. List the items of personal protective equipment and clothing that need to be available during the rendering of emergency care services
xi. Explain the importance of mental health in the emergency care environment
xii. Explain how to identify the signs and symptoms of depression, stress and/or "burn out" both in your own behavior and that of your co-workers.
xiii. Describe stress syndromes
xiv. Explain the common causes of stress and the ways in which we often cope with stress
xv. Explain how to limit the impact stress has on our lives
xvi. Discuss the concept of conflict and conflict resolution
xvii. Explain how people deal with death and dying, and what you could do as an emergency care provider to assist people in dealing with these emotions
xviii. Discuss the importance of HIV and AIDS awareness in the pre-hospital environment

7.3 END USER COMPUTING

7.3.1 MODULE OUTLINE

i. Concepts of Information Technology (IT)
ii. Using the Computer and Managing Files
iii. Word Processing
iv. Presentation
v. Information and Communication
vi. Spread sheets
vii. Database

7.3.2 MODULE OUTCOMES

On completion of this module the student should be able to:

i. Explain concepts and terms associated with Information Technology (IT)
ii. Demonstrate the ability in using common functions of a PC and its operating system
iii. Demonstrate the ability to use a word processing application on a computer
iv. Demonstrate the ability to use a presentation application on a computer
v. Explain concepts and terms associated with using the Internet
vi. Demonstrate the ability to use e-mail software on a computer
vii. Demonstrate the ability to use a spread sheet application on a computer
viii. Demonstrate the ability to use a database on a computer

7.4 ANATOMY & PHYSIOLOGY

7.4.1 MODULE OUTLINE

A. ANATOMY

i. Basic Tissues
ii. Covering, Support and Movement of the Body
    a. Skin
    b. Bones of skeleton
    c. Joints
    d. Muscular System
iii. Regulation and Integration of the Body
    a. Nervous System
    b. Endocrine System
iv. Maintenance of Body
    a. Cardiovascular System
    b. Digestive System
    c. Respiratory System
    d. Urinary System
    e. Reproductive Systems
v. Surface Anatomy

B. PHYSIOLOGY

i. Chemistry
ii. The cell
iii. Skin
iv. Muscle
v. Bone
vi. Nervous system
vii. Endocrine system
viii. Reproductive system
ix. Blood
x. Cardiovascular system
xi. Lymph system
xii. Immune system
xiii. Respiratory system
xiv. Digestive system
xv. Urinary system

7.4.2 MODULE OUTCOMES

A. ANATOMY

On completion of this module the student should be able to:

i. Classify, describe and locate the four types of basic tissues and related structures of the human body
ii. Classify and identify, explain and locate the various components of the musculoskeletal system and their related structures
iii. Demonstrate and explain different movements at particular joints related to the skeleton
iv. Identify, locate and explain the different parts of the skin and its function

v. Define, describe and draw various components of the central and peripheral nervous system
vi. Describe, identify and locate components of the endocrine system and its interconnections
vii. Describe, identify and differentiate various components of the cardiovascular system
viii. Describe and identify different components of the digestive system
ix. Describe and list all the components of the respiratory system
x. Describe and list all the components of the urogenital system
xi. Identify and palpate key skeletal and soft tissue landmarks of the human body

B. PHYSIOLOGY

i. Describe the basic applicable principals of chemistry and cellular activities
ii. Describe the structure and the functions of the integumentary system and its associated appendages
iii. Describe the physiological mechanisms involved in movement
iv. Explain the physiological mechanisms of communication, integration and control of the nervous system
v. Relate the structures and functions of the endocrine glands and reproductive organs to their functions
vi. Describe the anatomy and physiology of the circulatory system
vii. Relate the structure of the organs and accessory glands of the digestive system to their functions
viii. Describe the physiology of the urinary system
ix. Describe the physiology of the respiratory system

7.5 PHYSICS

7.5.1 MODULE OUTLINE

A. MEASUREMENT, MATTER AND THE CHEMICAL PROPERTIES OF MATTER

i. Matter
ii. Forms of measurement
    a. Qualitative
    b. Semi-qualitative
iii. SI units of measurement

B. ENERGY AND THE PHYSICAL PROPERTIES OF MATTER

i. States of matter
ii. Potential and kinetic energy
iii. Speed, velocity, acceleration and Newton's laws
iv. Gravity and gravitational force
v. Kinematics of trauma

C. FORMS OF ENERGY AND PRESSURE

i. Forms of energy
ii. Energy transfer
iii. Pressure and pressure laws

7.5.2 MODULE OUTCOMES

On completion of this module the student should be able to:

A. MEASUREMENT, MATTER AND THE CHEMICAL PROPERTIES OF MATTER

i. Define matter in its simplest form
ii. Differentiate between qualitative and semi-qualitative forms of measurement
iii. Understand what an SI unit is, and understand the fundamental SI units of measurement
iv. Express numbers in scientific notation
v. Express measurements of weight, volume, size, temperature, pressure and energy in SI units
vi. Use the example of blood pressure to explain some of these dynamics

B. ENERGY AND THE PHYSICAL PROPERTIES OF MATTER

i. Understand the different states of matter, e.g. liquid, solid, gas
ii. Differentiate between potential and kinetic energy
iii. Define speed, velocity and acceleration
iv. Understand gravity and gravitational force
v. Apply these principles to the science of kinematics in trauma inflicted on patients.

C. FORMS OF ENERGY AND PRESSURE

i. Understand the forms/ways that energy can present itself, e.g. thermal, electrical, nuclear
ii. Explain how energy/heat is transferred
iii. Discuss how the body uses heat/temperature to compensate to the environment
iv. Define pressure and show how an understanding of Boyle's and Dalton's law explains the respiratory cycle
v. Apply Dalton's law to the exchange of alveolar gases
vi. Understand the principle of diffusion in relation to the oxygen and carbon dioxide in the lungs
vii. Discuss the principles of positive and negative pressure in relation to ventilators, respirators, SCUBA diving and hyperbaric medicine

7.6 CHEMISTRY

7.6.1 MODULE OUTLINE

A. INTRODUCTION TO CHEMISTRY

i. Microscopic level of chemistry
ii. Bonding
iii. Interactions between substances and their application in the medical field
iv. The periodic table
v. Acid, base and buffer systems
vi. Basic calculations

B. INORGANIC CHEMISTRY

i. Hydrogen bonding in water
ii. Water to the human body
iii. Water molecules
iv. Acid base balance

v. Inorganic compounds in the human body

C. ORGANIC CHEMISTRY

i. Hazards associated with using organic compounds
ii. Diabetic ketoacidosis
iii. Organic acids
iv. Mediated transport mechanisms
v. Cholesterol

D. RADIOACTIVITY

7.6.2 MODULE OUTCOMES

On completion of this module the student should be able to:

A. INTRODUCTION TO CHEMISTRY

i. Understand how elements bond together
ii. Understand the microscopic level of chemistry, e.g. atoms, molecules, protons, electrons, etc.
iii. The basic structure of an atom and discuss some of the bonding principles
iv. Interactions between substances and their application in the medical field, e.g. exothermic & endothermic reactions, oxygen and fire, high fevers
v. Understand some of the key elements in the periodic table (mainly the gases)
vi. Discuss the main elements encountered in the EMS field
vii. Understand the basic terminology of the elements and their compounds, e.g. atomic weight, etc.
viii. Understand the importance of acid base and buffer systems
ix. Do basic calculations relating to the adding to of solutions, e.g. drugs into fluids to work out flow rates

B. INORGANIC CHEMISTRY

i. Explain hydrogen bonding in water
ii. Discuss the importance of water to the human body
iii. Explain the dipolar nature of water molecules
iv. Understand the pathophysiology behind acidotic and alkalotic states in the human body, e.g. metabolic and respiratory
v. Explain the importance of inorganic compounds in the human body, such as sodium and potassium at a cellular level

C. ORGANIC CHEMISTRY

i. Explain the difference between organic and inorganic compounds
ii. Explain the hazards associated with using organic compounds, e.g. disinfectants, alcohol
iii. Understand how ketones are formed and their importance in diabetes, e.g. ketosis
iv. Understand the importance/danger of organic acids, e.g. lactic acid, fatty acids etc
v. Understand how mediated transport mechanisms work with particular reference to insulin
vi. Understand how cholesterol is formed, the different types of cholesterol and how it affects the body

D. RADIOACTIVITY

i. Explain the different types of radiation
ii. Understand the medical applications and the dangers associated with the different types of radiation

7.7 EMERGENCY MEDICAL CARE

7.7.1 MODULE OUTLINE

i. Airway management, respiration and artificial ventilation
ii. Patient assessment
iii. Cardiopulmonary resuscitation
iv. Trauma emergencies
v. Medical emergencies
vi. Shock and resuscitation
vii. Obstetric and gynaecological emergencies
viii. Neonatal and Paediatric emergencies
ix. Infectious diseases and primary health care
x. Poisoning
xi. Sociology and psychology
xii. Domestic violence and crisis intervention
xiii. Pharmacology
xiv. Disaster management
xv. Emergency care practicals

7.7.2 MODULE OUTCOMES

On completion of this module the student should be able to:

A. AIRWAY MANAGEMENT, RESPIRATION AND ARTIFICIAL VENTILATION

i. Undertake assessment of airway and breathing
ii. Identify complete and incomplete upper airway obstruction in various age groups and treated according to national and international guidelines
iii. Describe pulmonary aspiration in terms of risk factors and prevention measures
iv. Demonstrate techniques to deliver supplementary oxygen and methods of patient ventilation
v. Demonstrate the use of manual airway manoeuvres and mechanical airway adjuncts based on knowledge of their indications, contraindications, potential complications, and use of each method

B. PATIENT ASSESSMENT

i. Explain scene size-up in terms of purpose of scene size up, and factors that may contribute to an unsafe scene
ii. Identify steps in scene management including additional resources that may be needed to manage multiple patient incidents.
iii. Demonstrate critical steps in primary survey and obtain information to identify life threats and prioritize patient triage.

iv. Perform initial scene survey in medical calls to determine the nature of illness and in trauma, gather information related to the mechanism of injury
v. Obtain patient history in the patient assessment
vi. Use clinical reasoning to integrate the patient's history with the physical assessment findings
vii. Differential diagnosis is the process of weighing the probability of one disease versus other diseases as accounting for a patient's illness
viii. Discuss the purpose and demonstrate general approach to secondary survey

C. CARDIOPULMONARY RESUSCITATION

i. Basic life support interventions and emergency care for adults, children and infants are explained and applied in line with accepted life support theory and principles and the acceptable scope of practice and protocols as defined by the PBEC

D. TRAUMA EMERGENCIES

i. Acute life-threatening trauma emergencies are detected based on an applied understanding of the basic pathophysiology behind common trauma emergencies
ii. The assessment and treatment of traumatic adult patients is explained and demonstrated within the scope of practice of the Emergency Care Assistant
iii. Chemical equations and reactions are explained and applied in context to emergency medical care
iv. The pathogenesis and mechanism of injuries are described in relation to the anatomy and physiology
v. Problem based scenarios are interpreted based on integration of anatomy, physiology and pathology
vi. Decisions regarding treatment are based on and validated by history taking and appropriate patient assessment. The need for higher level of clinical competency is identified correctly.
vii. Types, classification, etiology, clinical picture, and complications of burn injuries are explained in line with accepted life support theory and principles and the acceptable scope of practice and protocols as defined by the PBEC
viii. Emergency care is applied in line with accepted life support theory and principles and the acceptable scope of practice and protocols as defined by the PBEC
ix. Nature of bullets and explosives are explained in relation to mechanism, effects, recognition and emergency care of gunshots and blast injuries
x. Recognition, pathophysiology, contributing factors, emergency care and complications of environmental emergencies are explained in the pre-hospital context
xi. Related gas laws and their application are explained in terms of their significance to the human body dynamics
xii. Physiology, receptors, types, assessment of pain is explained leading to appropriate management and correct identification for a need of referral to a higher level of clinical competency
xiii. Predict injury patterns based on knowledge of the laws of physics related to forces involved in trauma.
xiv. Injury patterns that should be suspected when injury occurs related to a specific type of blunt trauma.

E. MEDICAL EMERGENCIES

i. Acute life-threatening medical related disorders are detected based on an applied understanding of the basic pathophysiology behind common medical related disorders
ii. Decisions on treatment are based on, and validated, by history taking and appropriate patient assessment. The need for referral to a higher level of clinical competency is identified correctly
iii. The assessment and treatment of adult patients is explained and demonstrated within the scope of practice of the Emergency Care Assistant
iv. Chemical equations and reactions are explained and applied in context to emergency medical care
v. The key principles of microbiology are explained and applied in context to emergency medical care with particular reference to Cerebrovascular, Neurological, Respiratory, Cardiovascular, Endocrine and Abdominal emergencies
vi. The pathogenesis of diseases is described in relation to the anatomy and physiology
vii. Problem based scenarios are interpreted based on integration of anatomy, physiology and pathology
viii. The conducting system of the heart is explained in terms of the conducting properties of the cardiac muscle and the anatomy of the conducting system
ix. Various cardiac rhythms and arrhythmias are explained in relation to associated cardiovascular illnesses

F. SHOCK AND RESUSCITATION

i. Define shock and list the causes of hypovolaemic, cardiogenic and distributive shock.
ii. Outline the prehospital management of the patient in shock based on knowledge of the pathophysiology associated with each type of shock.
iii. Life support interventions and emergency care for patients in shock are explained and applied in line with accepted life support theory and principles and the acceptable ECA scope of practice and protocols as defined by the PBEC
iv. Describe principals of fluid administration in shock.

G. OBSTETRIC AND GYNECOLOGY EMERGENCIES

i. The pathophysiology of disease processes are explained in terms of obstetrics
ii. The assessment and treatment of obstetrics are explained and demonstrated within the scope of practice of the Emergency Care Assistant with reference to pre-delivery emergencies, normal vaginal delivery, complicated delivery emergencies and neonatal emergencies.
iii. The assessment and treatment of general gynaecology emergencies are explained and demonstrated within the scope of practice of the Emergency Care Assistant.
iv. Decisions on treatment of obstetric patients are based on and validated by history taking and appropriate patient assessment. The need for higher level of clinical competencies is identified correctly

H. NEONATAL & PAEDIATRIC EMERGENCIES

i. Recognition of neonatal life threatening emergencies during and after delivery is explained with greater emphasis on the urgency of resuscitation interventions if necessary
ii. Appropriate post-resuscitative management and transportation of a distressed neonate in the prehospital environment.
iii. Assessment of the neonate and emergency interventions are explained in line with the ECA scope of practice and the need for higher level of clinical competencies is identified correctly
iv. Identify injuries associated with birth.
v. Decisions on treatment of neonates are based on and validated by history taking and appropriate patient assessment.
vi. The acute life-threatening trauma emergencies are detected based on an applied understanding of the basic pathophysiology of children, which precede common trauma related emergencies
vii. Decisions on treatment of paediatric patients are based on and validated by history taking and appropriate patient assessment. The need for higher level of clinical competencies is identified correctly.
viii. Life support interventions and emergency care for children are explained and applied in line with accepted life support theory and principles and the acceptable ECA scope of practice and protocols as defined by the PBEC
ix. The anatomical and physiological differences between adults and children are described consistent with prevailing theories
x. Paediatric patients are assessed and managed in a pre-hospital emergency context consistent with the scope of practice of the Emergency Care Assistant
xi. The acute life-threatening medical related disorders are detected based on an applied understanding of the basic pathophysiology of children, which precede common paediatric medical and respiratory disorders.
xii. The pathophysiology of disease processes are explained in terms of paediatric patients
xiii. Common paediatric medical emergencies are outlined with reference to aetiology, pathophysiology, associated signs and symptoms and management with regards to seizures, hypo & hyperglycemia, hypo & hyperthermia, poisoning and toxic exposure and infectious diseases.
xiv. Identify the risk factors, key signs and symptoms and management of injuries or illness resulting from child abuse and / or neglect.
xv. Identify prehospital considerations for the care of infants and children with special needs.
xvi. Integrated patient care is demonstrated in simulated paediatric patient scenarios

I. INFECTIOUS DISEASES AND PRIMARY HEALTH CARE

i. Recognition and the spreading of life-threatening diseases are explained including the appropriate preventative, medical interventions and methods of disinfecting
ii. Sharps and medical waste management are explained with discussions of the common communicable diseases to which emergency personnel are exposed

J. POISONING

i. Decisions on treatment of patients are based on and validated by history taking and appropriate patient assessment. The need for higher level of clinical competencies is identified correctly
ii. Patients are assessed and managed in a pre-hospital emergency context consistent with the scope of practice of an Emergency Care Assistant
iii. Acute life-threatening effects of poisoning are detected based on an applied understanding of the basic pathophysiology
iv. Basic life support interventions and emergency care for adults is explained and applied in line with accepted life support theory and principles and the acceptable code of practice and protocols as defined by the PBEC
v. Integrated patient care is demonstrated in simulated patient scenarios

K. SOCIOLOGY AND PSYCHOLOGY

i. Discuss the necessity for and the principle of psychological care of geriatrics, adolescent, paediatric, infant, hysteria, depressed, psychologically and physically disabled patients
ii. Types of stress disorders, effects, management, coping strategies and preventative measures are explained in relation to the care of the Emergency Care personnel
iii. Care of a dying patient and counseling of the family, phases of death dynamics are explained
iv. Care and emotional support for a suicidal patient is discussed and also ways to handle depressed and aggressive patients

L. DOMESTIC VIOLENCE AND CRISIS INTERVENTION

i. Discuss the recognition, early warning signs of abuse and domestic violence
ii. Demonstrate knowledge of the care of an abused patient and the legal obligation of the emergency care personnel
iii. Discuss and explain the safety precautions when attending to domestic incident/riots.
iv. Special consideration when dealing with an abused patient is discussed in relation to the application of the legislative framework
v. Discuss characteristics of sexual assault and prehospital care considerations for the patient who has been sexually assaulted

M. PHARMACOLOGY

i. Discuss the Medicines and related Substance Control Act, 2003
ii. Principles of pharmacology as applied to the emergency care context are described in terms of the following:
    a. Mechanism of drug action
    b. Pharmacokinetics
    c. Routes of drug administration
    d. Drug interactions and adverse drug reactions.
    e. Drugs used within the scope of practice of the ECA are described in terms of class, schedule, trade name, generic name, mechanism of action, indications,

contra-indications, precautions, side effects, packaging, dosage, administration and route of administration.

N. DISASTER MANAGEMENT

i. Demonstrate knowledge and understanding of the role of emergency care providers during a major incident in line with the principles of the Major Incident Management System
ii. Definition of a disaster, effects, safety and scene control are explained in cases of multiple casualty incidents
iii. Communication, triage, access, evacuation, transportation and the role of EMS is explained in relation to major incidents in line with the principles of the Major Incident Management System

O. EMERGENCY CARE PRACTICALS OBJECTIVELY STRUCTURE CLINICAL EXAMINATION

i. Individual clinical skills are explained and simulated sequentially in relation to patient assessment, history taking and management of specific trauma and medical emergencies
ii. The rationale for the accurate performance of individual skills is explained including the integration of skills for a holistic positive outcome of the patient's condition
iii. Clinical skills are performed in line with the ECA scope of practice.

P. SIMULATED PATIENT SCENARIOS

i. Methods of dealing with medical waste, disinfection procedures and infection control are demonstrated and/or explained in line with established protocols
ii. Possible hazards within the emergency care service environment are identified in terms of their sources, impact and means for preventing or minimizing their negative impact. Scene hazard control is carried out in line with established procedures
iii. Problem based scenarios are interpreted based on integration of anatomy, physiology and pathology
iv. Decisions on treatment are based on and validated by history taking and appropriate patient assessment. The need for higher level of clinical competencies is identified correctly
v. Emergency care equipment related to the care of ill and injured patients are explained in terms of function, storage, maintenance and use
vi. Integrated patient care is demonstrated in simulated patient scenarios
vii. The assessment and the treatment of patients are explained and demonstrated within the scope of practice of the Emergency Care Assistant
viii. Patient hand-over to other services are carried out according to local protocols and procedures
ix. Records provide accurate details of the patient information and treatment

7.8 CLINICAL PRACTICE

7.8.1 MODULE OUTLINE

i. Emergency Medical Services duties
ii. Hospital duties

PLACEMENT AREA	ECA
Ambulance	√
Emergency Department	√
Ante-Natal & Obstetric Units	√
Primary Health Care Centre	√
Communication Centre	√

7.8.2 MODULE OUTCOMES

On completion of this module, the student will be able to:

i. Demonstrate competence at meeting the desired learning outcomes relating to the holistic management of an emergency call at the expected level of care, at an emergency care assistant level.
ii. Demonstrate knowledge and skills of the following focus areas:
    a. Emergency medical service operational systems
    b. Professional practice
    c. Emergency medical care
    d. Documentation and record keeping
    e. Transportation of the ill/injured patient
iii. Demonstrate the ability to communicate effectively with the patient and the crew in the emergency care environment.
iv. Demonstrate an ability to perform the required clinical skills and procedures relevant to the emergency care environment within the emergency care assistant scope of practice.
v. Compose and appraise and present patient case studies.
vi. Demonstrate an ability to assess, diagnose and institute appropriate management strategies for critically ill and injured patients.
vii. Demonstrate the knowledge and ability on how to utilize the emergency medical equipment available to emergency care practitioners within the emergency care assistant scope of practice.
viii. Demonstrate team and individual ability within an emergency service's daily operational matters, which will include the checking of the emergency vehicle and emergency medical care equipment.
ix. Demonstrate the ability to produce accurate patient report form records, which document the exact details relating to the incident including patient management.

AMBULANCE DUTIES OUTCOMES

i. Receive a vehicle and equipment hand-over from the outgoing ambulance personnel.
ii. Perform a pre-shift vehicle check.
iii. Use a map book to quickly locate an address and navigate to it.
iv. Perform a scene assessment and report his / her findings to the Control Centre.
v. Clean and restock a vehicle after an emergency call.
vi. Perform a vehicle and equipment hand-over to the incoming ambulance personnel.
vii. Patient Care
viii. Accurately triage a patient.
ix. Quickly and efficiently request paramedic assistance if required.
x. Undertake primary and secondary surveys.
xi. Take a medical history.
xii. Load the patient into an ambulance using appropriate techniques.
xiii. Provide the casualty staff with a thorough and professional patient hand over.

COMMUNICATIONS CENTRE OUTCOMES

i. Manage an incoming emergency telephone call and complete the documentation accurately.
ii. From the information obtained from a caller above, triage a patient and determine an appropriate level of response.
iii. Manage an incoming inter-hospital transfer request and complete the documentation accurately.
iv. From the information obtained from a caller above, triage a patient and determine an appropriate level of response.
v. Dispatch an ambulance / paramedic unit / rescue unit to an emergency call.
vi. Discuss the Control Centre procedures for the management of major incidents.

EMERGENCY CENTRE/CASUALTY/TRAUMA UNIT OUTCOMES

i. Discuss the major differences between treating a patient in a hospital and in the pre-hospital environment.
ii. Discuss the management of a patient in the first hour after admission to the casualty department.
iii. Discuss the major diagnostic investigations undertaken in the casualty department (tertiary survey).
iv. Some possible areas for reflection (not exhaustive)
    a. How are the responsibilities of a nurse and a paramedic different?
    b. What information does the casualty department staff require,, during the patient handover? Is this what is generally relayed by the paramedics?
    c. How can the interface between the casualty and the pre-hospital environment be improved?

LABOUR AND ANTENATAL OUTCOMES

i. Discuss the management of a patient in labour during all the phases of labour after admission to the labour wards.

ii. Discuss the clinical assessment techniques applied to pregnant patients in the antenatal ward/clinic.

iii. Discuss the major diagnostic investigations undertaken in the antenatal and labour ward

iv. Some possible areas for reflection (not exhaustive)

   a. How are the responsibilities of a nurse and a paramedic different?
   b. What information does the labour ward staff require, during the patient handover? Is this what is generally relayed by the paramedics?
   c. How can the interface between the labour ward and the pre-hospital environment be improved?