

THE UNITED REPUBLIC OF TANZANIA



**MINISTRY OF HEALTH, COMMUNITY
DEVELOPMENT, GENDER, ELDERLY, AND CHILDREN**

NATIONAL EMERGENCY MEDICAL SERVICES



**NATIONAL GUIDELINE
FOR OPERATING EMERGENCY MEDICAL SERVICES
(OUT OF HOSPITAL EMERGENCY CARE)**

**First Edition
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NATIONAL GUIDELINES FOR EMERGENCY CARE SERVICES IN HEALTH FACILITIES

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Abbreviations

ACLS	Advanced Cardiac Life Support
AFT	Abbott Fund Tanzania
BLS	Basic Life Support
CEmONC	Comprehensive Emergency Obstetric and Newborn Care
CME	Continuing Medical Education
CPD	Continuing Professional Development
DALY	Disability Adjusted Life Years
ED	Emergency Department
EMD	Emergency Medicine Department
EMS	Emergency Medical Services
GOT	Government of Tanzania
HIS	Health Information System
HMIS	Health Management Information System
HRHIS	Human Resource Health Information System
ICT	Information, Communication and Technology
MOF	Ministry of Finance
MOHCDGEC	Ministry of Health, Community Development, Gender, Elderly and Children
MRI	Magnetic Resonance Imaging
MSD	Medical Stores Department
PORALG	President's Office Regional Administration and Local Government
PPM	Planned Preventative Maintenance
SECG	Standard Emergency Care Guideline
TZS	Tanzanian Shillings
UHC	Universal Health Coverage
WDI	World Development Indicators
WHO	World Health Organization

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FOREWORD

Health is among the priority sectors in Tanzania, serving to provide timely care and well-being to people during emergencies and disasters. However, emergency medical care as an emerging discipline in Tanzania faces challenges, primarily due to its infancy. Substantial time and investments in standard infrastructure, human capital and financial resources are required to ensure adequate response to the rising demand for emergency services. The rising burden of road traffic accidents, natural disasters, man-made technological disasters, the un-relieving obstetric emergencies, emergencies emanating from non-communicable diseases altogether makes the establishment of prehospital emergency services (EMS) and emergency a pre-requisite for a modern health care system in Tanzania. It is well noted that the Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC) have embarked on building a responsive and resilient health sector encompassing a robust system for Emergency Medical Services (EMS) that will provide pre-hospital emergency care and safely move the patient from the place of incident to a definitive care point facility. Therefore, transforming the traditional Outpatient Units into modern and efficient emergency department will save more lives and evade disabilities. Emergency Medicine Department (EMD) will ensure the rising patient volume is provided with continuum for emergency care by linking EMS to hospital emergency care, to intensive/critical care and finally, a definitive care.

Establishing EMDs will also provide a platform to enhance coordinated emergency care and therefore reduce delays for care. This guideline therefore, provides standards. It clearly describes the standards required in terms of equipment, infrastructure, human capacity and layout for an effective EMD for all health facilities.

I am confident this Guideline will facilitate the provision of timely, effective and high quality emergency care at all levels of health care facility in Tanzania.



Dr. Zainab A.S. Chaula
Permanent Secretary (Health)

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- ← President's Office Regional Administration and Local Government
- ← Muhimbili National Hospital (MNH)
- ← Muhimbili University of Health and Allied Sciences (MUHAS)
- ← Benjamin William Mkapu Hospital
- ← World Health Organisation (WHO)
- ← Atrium Health (USA)-Emergency Department
- ← African Federation for Emergency Medicine (AFEM)
- ← Emergency Medicine Association of Tanzania
- ← Abbott Fund Tanzania

The Ministry acknowledges individual experts for their hard work throughout the development of this document. The list of experts who participated directly in production and finalization of this guideline is as follows:

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It is my expectation that this EMS Guideline will provide smooth, efficient and high quality emergency care services at all levels of health facilities in Tanzania



Prof. Muhammad Bakari Kambi
Chief Medical Officer

GLOSSARY

1. **Ambulance:** An ambulance is a specially designed (land, water or air) vehicle equipped with skilled health care providers, medications, supplies and devices intended to provide out of hospital medical care, and transportation of sick or injured people to, from or between places of treatment.
2. **Ambulance Bay:** Designated area where ambulances await dispatch instructions to respond to calls. In some circumstances, ambulance staging posts and ambulances stations may have overlapping functions.
3. **Ambulance Receiving Area/Drop-off:** A patient drop-off location accessible to ambulances at a Receiving Facility as designated in the destination Standard. Ideally this site should only be used for ambulance reception and there should be a separate entrance for all other patients.
4. **Basic Emergency Care:** Provision of initial management of acute illness and injury, including but not limited to: basic airway management, bag-valve-mask ventilation, chest compressions, control of hemorrhage, assistance with precipitous delivery, neonatal resuscitation, stabilization of fractures, administration of glucose or oxygen and ongoing patient monitoring.
5. **Basic Life Support (BLS):** Provision of initial life-saving care, including basic airway repositioning, CPR, control of hemorrhage, immobilization of fractures.
6. **Decontamination:** Removal of dangerous substances or microorganisms from objects or people so they are safe for contact.
7. **Destination Triage:** The process of deciding, usually guided by protocol, the most appropriate facility for a given the patients' needs.
8. **Emergency Care System (ECS):** The subset of the healthcare system that responds to emergency health conditions. The ECS spans system activation, first aid, prehospital care, facility-based care, and the legislation and policies that govern emergency care.
9. **Emergency Medical Services (EMS):** refer to formalized pre-hospital care, provided by emergency care professionals who respond to medical emergencies within a well-defined jurisdiction. EMS refers to an established entity, agency or system, which is appropriately integrated into the existing out of hospital emergency care (OHEC) and facility-based healthcare system, thereby facilitating the coordinated, timely, and safe provision of emergency care and transportation to the most appropriate healthcare facility
10. **Infection control:** Risk assessment and use of standard and transmission-based precautions that protects healthcare providers from infection and prevents the spread of infection from person to person.
11. **In-service training / Continuous Professional Development (CPD):** The education and training provided to certify and registered pre-hospital personnel during their professional career to maintain develop and enhance their knowledge and skills.
12. **Multiple Casualty Incident or Mass Casualty Incident (MCI):** An event which generates more patients at one time than locally available resources can manage using routine procedures (generally 4 or more victims). Examples include: a road traffic crash, building fire, or a large-scale event such as an earthquake or mass toxic exposure.
13. **Personal Protective Equipment (PPE):** Equipment worn to minimize exposure to hazards that cause serious workplace injuries and illnesses. These injuries and illnesses may result from contact with infectious, chemical, radiological, physical, electrical, mechanical, or other hazards. Medical non-sterile and surgical sterile gloves, surgical masks, goggles or face shields and gowns are considered essential PPE that must always be available to the pre-hospital service provider, but other types of PPE may be required, depending on the circumstances.
14. **Protocol:** Defined, pre-determined, written guidance to be followed for specific situations such as a clinical condition or an administrative situation.



CHAPTER 1

BACKGROUND AND STATE OF EMERGENCY CARE IN TANZANIA

1.1. Tanzania Demographic

The United Republic of Tanzania is located in East Africa on the coast of the Indian Ocean and covers a geographic area of 940,000 square kilometres, of which 60,000 square kilometres is covered by inland water bodies. The country is bordered by Kenya and Uganda to the north, Rwanda, Burundi and Democratic Republic of Congo to the west, Zambia and Malawi to the southwest and Mozambique to the south. The main water bodies include Lake Victoria, Lake Tanganyika and Lake Nyasa. Tanzania has a population of 50.1 million people¹. In 2016, the country Gross Domestic Product (GDP) at current prices was USD 47.4 million and the per capita GDP was USD 900³. The death rate is 732.3 per 100,000 people².

1.2. Background of Emergency care in Tanzania

The emergency care system in Tanzania is under-developed and the emergency medicine specialty is still in its infancy. As such, most hospitals do not have a dedicated Emergency Department and emergency care systems strengthening has only entered the policy discussion as of recently. Despite Muhimbili National Hospital (MNH) Emergency Medicine Department (EMD) and other regional EMD has a success story and model for replication, the current distribution of EMDs in Tanzania is uneven with limited availability in rural areas where most of the population resides. Most hospitals across Tanzania rely on reception areas, referred to as casualty rooms, which are used as a centralized point of entry to the hospital. Staff channel the incoming patients to various departments and wards based on their presenting complaint or referral diagnosis – often times with little or no diagnostics. Most casualty rooms are not equipped or staffed to provide rapid evaluation, resuscitation and management of acutely ill or injured patients.

The opening of an Emergency Medicine Department at Muhimbili National Hospital has been financially sustainable and consistently generates funds for the hospital. The Emergency Medicine Department at Muhimbili National Hospital was initially managed and funded by international donors, but is now running independently with government support. This was possible through investment in key staff, including those beyond clinical professionals (example: accountants, procurement officers, cashiers, quality assurance staff and social workers). While protecting and even increasing service availability for all patients, integration of non-clinical staff functions improved revenue capture from private and insured patients, improved efficiency of stock management, and negotiated with private institutions to offer tailored comfort and convenience services.

The Government of Tanzania, through the MOHCDGEC, in collaboration with local and international stakeholders decided to launch the first and still the only Masters of Medicine training program in Emergency Medicine at MUHAS, in order to develop local capacity for emergency care and disseminate the practice of emergency medicine across Tanzania. The program at MUHAS started in 2010, and by the end of 2018 it had graduated 37 specialists, most of who have been posted to different regional and tertiary hospitals across Tanzania. The program has expanded its enrolment and by 2020 it expects to graduate 38 additional specialists to make a total of 75 Emergency medicine specialists in the country. In addition to the masters of medicine program, MUHAS started a dedicated rotation for undergraduate students pursuing Doctor of Medicine (MD) since 2014, in order to provide exposure to concepts in resuscitation and stabilization earlier in the physicians' careers. MUHAS also offers a Master in Critical Care Nursing and has launched an EM rotation for nurses pursuing diploma, degree and masters to ensure there is a common knowledge and approach towards the care of patients presenting to the EMD. In order to compliment the emergency care development, several short courses for EMS are now offered by MUHAS collaboration with MNH, EMAT and Government. Various books and protocols have been developed to support emergency care training of students and health care providers.

In 2011, doctors and nurses working in emergency care settings founded the Emergency Medicine Association of Tanzania (EMAT). EMAT is a not-for-profit organization of volunteer doctors and nurses who work in the emergency medicine and critical care health and allied fields in Tanzania. The main mission of EMAT is to pioneer, promote and advocate for the development of Emergency Medicine in Tanzania so as to save the lives

1 NBS 2012

2 IHME Tanzania Country Profile ³The World Bank. 2016. "World Development Indicators"

of many Tanzanians who die due to acute illness and injury.

The establishment of a basic EMD at every hospital is a key priority of the implementation roadmap for Emergency care in of the followings key items including Development of system wide standards for emergency unit processes (discharge, length of stay, handover, etc), Development of criteria and protocols for admission to inpatient services, Development of system wide standards for emergency unit infrastructure, staffing, and equipment & supplies, Integrate dedicated emergency care training into undergraduate nursing and medical training curricula, Review emergency care elements in existing hospital accreditation standards, Implement strategies to protect prehospital and facility-based emergency care staff from infectious risks and Implement a strategy to protect prehospital and facility-based emergency care staff and infrastructure from acts of violence.

1.3. Emergency care as a critical component of universal health coverage

Tanzania faces a disproportionate burden of trauma, acute and chronic illness, communicable disease, and maternal and child mortality. Clear evidence exists that a well-designed emergency care system can play a pivotal role in addressing this burden by providing life-saving sensitive care for a wide-range of conditions, including: injury, complications of pregnancy, exacerbations of non-communicable diseases (e.g. heart attacks, strokes, chronic respiratory disease), and acute infections (e.g. sepsis, malaria).¹ Despite significant improvements in many aspects of Tanzania's health system in recent decades, the emergency care system remains underdeveloped and overlooked.

In Tanzania, as in other developing countries, emergency medicine (EM) is still an emerging specialty - most hospitals do not have a fully functional emergency department (ED). Particularly in areas where barriers to care exist, EDs are often the first point of contact with the healthcare system and provides early recognition, resuscitation and referral that saves lives and makes other parts of the health system more effective and more cost-effective by ensuring that people in need arrive in time for interventions to be effective. Furthermore, emergencies are unavoidable -- occurring anywhere and anytime regardless of whether there is an organized system of emergency care in place. Thus, it is all the more advantageous to ensure that a system is thoughtfully designed to respond appropriately and quickly while upholding quality of care and utilizing resources effectively. Timely and accessible emergency care is a critical component of universal health care: with sound planning and organization, it has the potential to address conditions causing over half of deaths and a third of disability incurred annually in low- and middle-income countries.

Prioritizing emergency care has many positive externalities in terms of mortality reductions and capacity building, and examples show that it can be feasibly implemented in Tanzania. A study conducted at Muhimbili National Hospital demonstrated a 40% decrease in overall hospital mortality in the two years after the establishment of their Emergency Medicine Department (EMD) in 2010. The program has established sustainable training programs for local emergency care providers so that long-term success is not dependent upon external expertise or support.

Given the positive results at MNH and the critical role that emergency care plays in reaching universal health coverage, outlining plans for the national expansion of successful models of emergency care is an important step in articulating the overall Health Sector Improvement Plan.

1.4. Assessing the state of Emergency Care in Tanzania

Establishing a strategic roadmap for emergency care system strengthening, requires an understanding the emergency care system components in Tanzania – including defining features as well as strengths and gaps identified over time. In 2016, the MOHCDGEC and the Emergency Medicine Association of Tanzania collaborated with WHO to undertake a national system-level assessment of Tanzania's ECS using the WHO Emergency Care System Assessment (WHO ECSA) tool.

Nearly ninety key stakeholders completed the WHO ECSA, a survey instrument designed to help policy-makers and planners assess a national ECS and identify gaps in order to set priorities for system development. In March 2017, a national stakeholders meeting was convened -- composed of a diverse group of individuals that and represented major emergency care groups in Tanzania. Review and deliberation resulted in consensus on a range of action priorities across six areas: system organization, governance and financing; emergency care data and quality improvement; pre-hospital standards and protocols; facility-based care; rehabilitation; and emergency and disaster preparedness. The findings of the WHO ECSA implementation provide a useful description of the

current emergency care system, identifies areas where improvement is needed and identifies concrete and feasible actions for near and longer-term improvements.

1.5. System organization, governance and financing

System organization, governance and financing

The designated lead agency within MOHCDGEC responsible for Emergency Care is the Emergency Preparedness and Response Unit (EPRU), whose mandate is to provide guidance on emergency care policy issues and coordinate national efforts in this arena. Despite this, stakeholders identified that integration of emergency care at the policy level (e.g., it is not explicitly listed in the National Health Strategic Plan) could be improved to increase access to pre-hospital and facility-based emergency care, especially in rural settings.

Regarding financing, the principle of emergency care is to treat all patients according to acuity and regardless of ability to pay. However, ECSA stakeholders noted a prevalence of out-of-pocket payments for services or user purchase of medications/supplies due to stock-outs across public and private hospitals. The group identified several areas for improving emergency care funding, including: establishing a dedicated funding stream in the national budget, and incorporating pre-hospital and in-hospital emergency care into universal government-funded national health insurance scheme

Despite common misconceptions, there are promising reasons for investment in emergency care at the national level including increased public financing. Although in many settings the ED may be seen as a drain on resources, there is evidence that demonstrates financial viability and profitability of an ED - the opening of an EMD at MNH has been financially sustainable and consistently generates funds for the hospital. Furthermore, reducing the morbidity and mortality of patients seeking emergency services can reduce the future financial burden of a patient on the hospital and health system at large. Integrated emergency care is an investment that can save lives and money. This guideline will address this item by *ensuring* access to emergency care for all to without prior payment required, develop national report on emergency care (eventually utilizing data from HMIS system), and help in mechanism of establishment for dedicated protected funding stream for emergency care services within national budget for emergency care

1.6. Emergency care data and quality improvement

Data collections, analyses, synthesis and reporting is crucial to a well-functioning healthcare system. Access to reliable data specific to emergency care enables a better understanding of population health needs, causes of morbidity and mortality, and existing strengths and gaps in service delivery. Data is vital for the development of evidence-based policies and to improve the emergency ecosystem both at the population and facility level. During the WHO ECSA, stakeholders identified several challenges in regards to emergency data collection and use for quality improvement. While a range of health care data is currently collected by the Bureau of Statistics, no dedicated program exists for emergency care data. Additionally, data is rarely stored or aggregated in a way where it can be easily analysed. Attributes of national reporting, facility-level reporting and eHealth strategies includes Human resource by district and region, Facilities providing Emergency Services, Facilities with blood transfusion services, Facilities with diagnostic capabilities including X-ray, CT scan, MRI and ultrasound machines, Facilities providing BLS, PTC, BEC and ACLS. These indicators are insufficient for adequately informing national policies and facility decision-making on emergency care. At the moment, none of the recommended emergency care indicators are routinely collected at the facility and national levels. (DHIS2)

At the facility level, health information is collected in *mtuha* books (paper registries collating key statistics) and includes patient data related to admissions, procedures performed, discharges and death before discharge. While facility-level data is utilized for local strategic planning and resource allocation, the paper-based nature of records makes aggregation, storage and analysis difficult. Frequent loss to follow up makes mortality and morbidity estimates difficult to obtain. Additionally, no active mechanism exists for external verification of data reported by facilities or for integrating facility data consistently into system planning efforts. Lastly, the limited scope of emergency care data collected leads to a lack of critical information on acute clinical presentations and management necessary to inform quality improvement and planning.

In 2013, the Ministry of Health and Social Welfare (now the MOHCDGEC) developed the Tanzania National e-Health Strategy to address some of the challenges of the Health Information System (HIS) through Information and Communications Technology (ICT). However, electronic health records are not currently widespread or uniform. Some standardized electronic data is collected for specific purposes: for example, collaboration between

World Bank and the National Police collect standardized electronic data on road traffic injuries. Although this is effectively used by local police forces, stakeholders feel it is not effectively integrated with other data sources that could be useful for health providers and policymakers. It is fundamental that important emergency care indicators are incorporated into electronic health records as well as other existing standard electronic data collection processes.

National policies and resources to strengthen and improve the HIS in Tanzania, such as the eHealth Strategy and the government push to link all District and Regional Hospitals to the national HMIS, will be necessary for ensuring access and enabling use of high-quality emergency care data. This guideline will help in the improvement of existing data sources (eg, national bureau of statistics, facility data, RAIS) relevant to emergency care system planning at national level, and develop central mechanism for coordination and integration into planning processes, Implement simple standardized clinical forms for emergency care visits (WHO form template available), Integrate emergency care data points into existing national standard electronic data collection processes (eg, HMIS, casualty module, etc), Develop specific quality improvement programme for pre-hospital and facility-based emergency care (build on existing quality efforts)

1.7. Prehospital care

The implementation of system-wide standards and protocols for provision of prehospital care is a vital component of emergency care delivery. Tanzania has recently undertaken significant steps to establish a formal prehospital system which will help in first aid training and develop coordinated strategy (including setting standard training content, and standards for first aid kit), Develop training and certification pathway for ambulance providers (establish new cadre and scheme of service), Develop system-wide standards for ambulance services, including staffing requirements, care protocols, equipment, and handovers is needed, Add intensive short course on pre-hospital emergency care within existing nursing and clinical officer education pathways and Develop system-wide criteria and protocols for inter-facility transfer.

1.8. Emergency and disaster preparedness

Tanzania's everyday ECS is the key mechanism for addressing health needs during disasters, outbreaks and other large-scale emergencies. It is crucial to understand the extent to which the ECS can rapidly mobilize needed human and material resources when and where needed.

In recent years, the government has initiated several risk-mitigation measures, such as: 1) preparation of all-hazard preparedness and response plan, 2) capacity-building for emergency response, 3) initiation of a "one-health" plan, and 4) establishment of the public health Emergency Operation Center (PHEOC) to improve coordination mechanisms. But coordination mechanisms are only as effective as the response they mobilize. Despite these efforts, emergency preparedness and response remains limited by human and financial resource gaps and a lack of established pre-hospital care services. Important gaps include inadequate hazard mitigation and limited response and recovery management systems.

Following the WHO ECSA tool implementation, stakeholders identified several overarching challenges and priorities in regards to emergency and disaster preparedness. Namely, regular evaluations (and accompanying guidelines and procedures to do so effectively) of the system's preparedness and capability to respond to large-scale emergencies are lacking. Stakeholders agreed that a review of current emergency care components of national disaster preparedness and response is needed to address the emergency care components of national standards for disaster preparedness and response, Develop a dedicated communication strategy between the Emergency Preparedness and Response section and health facilities, Undertake regular (every two years) assessments by region of the ability of the Emergency Care System to respond to disasters, including conducting drills every two years, Incorporate the requirement for disaster planning into hospital accreditation process (providing a template for a facility disaster plan to hospitals as below) and Emergency Preparedness and Response section to develop and distribute a facility-level disaster plan template

CHAPTER 2

TANZANIA HEALTHCARE SERVICES

2.1 Health Sector Strategic Plan IV

Guided by the priorities set by the Sustainable Development Goals (SDGs), and previous versions of the Health Sector Strategic Plan (HSSP), HSSP IV 2015 – 2020 was developed with the overall objective of covering all households with essential health and social welfare services. To the greatest extent possible, we aim to meet the expectations of the population, adhering to objective quality standards, and applying evidence-informed interventions through efficient channels of service delivery.

Significant progress has been made in the health sector, as is evidenced by a decrease in maternal and under-5 (U5) mortality rates, a decrease in HIV prevalence and an increase in life expectancy (Fig 2.1). The establishment of strong emergency care systems further addresses the goal set in the HSSP IV 2015-2020 and aims to have a positive and rapid impact on health trends. No fewer than 10 of the Sustainable Development Goal (SDG) targets are directly addressed by emergency care:

- 3.1 Reduce by three quarters, between 2015 and 2030, the maternal mortality ratio
Treatment for obstetric emergencies
- 3.2 Reduce by three quarters, between 2015 and 2030, the under-five mortality rate
Treatment for acute paediatric conditions including diarrhea and pneumonia
- 3.3 Reverse the incidence of malaria and other major diseases and reduce deaths by half by 2030
Treatment of acute infections and sepsis
- 3.4 By 2030, reduce by one-third premature mortality from NCDs
Treatment of acute exacerbations of NCDs
- 3.6 Halve the number of global road traffic crash fatalities and serious injuries by 2020
Post-crash emergency care
- 3.8 Achieve UHC including financial risk protection and access to quality essential healthcare
Emergency care is an essential component of universal health care
- 3.9 By 2030, substantially reduce deaths and illnesses from hazardous chemicals
Treatment for acute exposure to hazardous materials
- 3.13 Strengthen capacity for early warning, risk reduction and management of health risks
Prepared and resilient emergency care systems with surveillance capacity
- 11.5 By 2030, significantly reduce the number of deaths caused and people affected by disasters
Disaster preparedness and response
- 16.1 Significantly reduce all forms of violence and related death rates everywhere
Treatment for victims of violence

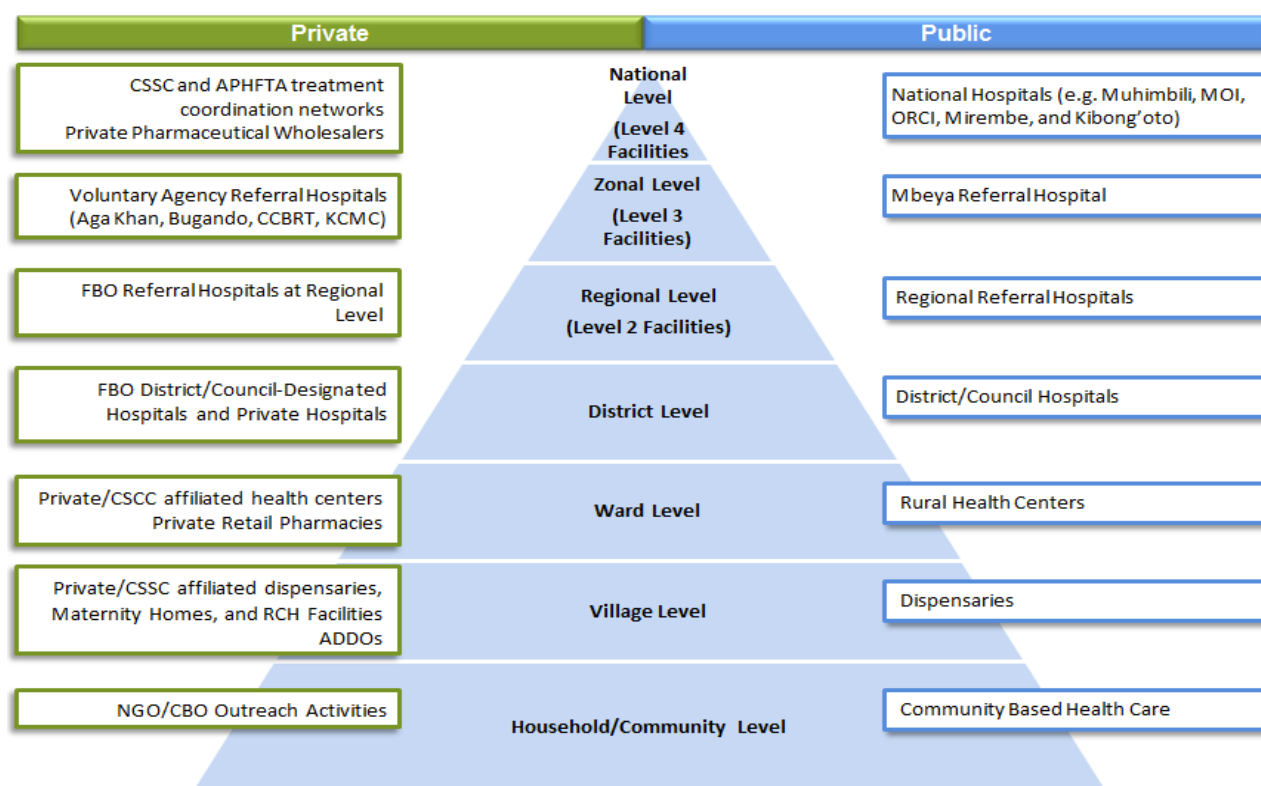
2.2 Organization and Management of Health Care System in mainland Tanzania

MOHCDGEC is mandated to oversee and administer health services in mainland Tanzania. However, at sub-national levels the PORALG –Department of Health- manages and administers health services at council to community levels. MOHCDGEC defines priorities for the health sector, offers technical guidance to organizations involved in service delivery, defines, controls and promotes maintenance of quality standards and sets policies for health care delivery.

Figure 2 outlines the basic structure of the Tanzanian health care delivery system. Community-based preventative and curative services are provided at dispensaries and health centres. A proportion of health centres are equipped to admit patients and provide minor and some major surgical procedures. District hospitals provide medical and surgical services for patients referred from lower-level facilities. Regional referral hospitals provide more specialized medical and surgical care while Zonal and National hospitals are capable of offering more advanced medical and surgical care. Zonal and National hospitals often serve as teaching hospitals³.

3 MOHCDGCEC, 2015, Health Sector Strategic Plan IV,

Figure 2.2: Health care pyramid in Tanzania Mainland (Public and Private)



Source: Health Sector Strategic Plan IV

2.3 Tanzania's Healthcare System

The government of Tanzania has made significant progress in providing health services to its citizens through an increase in public and private providers. The total number of health facilities in the country has increased from 6,321 in 2010 to 7519 in 2017. These facilities are divided into **257** hospitals, **777** health centres and 6549 dispensaries (including 89 Clinic) ⁴ and 74% of these facilities are owned by the government⁵.

2.4 Disease Burden

In Tanzania, the overall burden of disease remains high. Communicable diseases like HIV/AIDS, malaria, lower respiratory infections and diarrheal disease remain the main causes of mortality. However, the incidence of non-communicable diseases (NCDs) is on the rise and is becoming a major contributor to mortality and morbidity. Additionally, injury remains a top killer in Tanzania, especially among the younger working-age population, and the capacity to treat victims is limited in most parts of the country, and particularly in rural regions.

Non-communicable Diseases: Non-communicable diseases (NCDs) are estimated to account for 31% of total deaths in Tanzania⁶. Cardiovascular diseases, ischemic heart diseases and congenital heart disease are among the top causes of death.

Maternal Mortality: Efforts have been made in reducing maternal mortality. The 2015-2016 Maternal Mortality Ratio (MMR) was 556 per 100,000 live births, down from 870 per 100,000 live births in 1990. Despite this 47% reduction of MMR between 1990-2014, MMR remains relatively high. Tanzania failed to achieve Millennium Development Goal 5 (MDG5) of reducing MMR to 292 in 2020⁷

4 MOHCDGEC Health sector performance profile 2017 report

5 MOHCDGEC Health sector performance profile 2017 report

6 World Health Organization, Non-communicable Diseases (NCD) Country Profile, 2014

7 MOHCDGEC Health sector performance profile 2017 report

It is currently estimated that 70% of maternal deaths in Tanzania are obstetric-related⁸. The MOHCDGEC's National Roadmap Strategic Plan to Improve Reproductive, Maternal, New-born, Child & Adolescent Health (One Plan II), aims to increase coverage of comprehensive emergency obstetric and newborn care (CEmONC) services from its current 9% at upgraded health centres and 73% at hospitals to 50% and 100% respectively by 2020.

2.5 Healthcare Financing

The health care system in Tanzania is financed through various sources including taxation, donor funding, pre-payment schemes and out-of-pocket (OOP) payments in the form of user fees. Since the introduction of cost sharing in 1993, households fund OOP and pre-payment through health insurance schemes. The health financing strategy was developed to improve and strengthen the current health insurance system. This will ensure health-financing sustainability and improve health services in the country including emergency care.

Health financing in the country is still faced with the challenges of low resource availability in relation to the actual needs. Furthermore, the uptake of health insurance services is still low. Currently the government is in the process of strengthening health financing by establishing a mandatory health insurance scheme. Innovative mechanisms to fund the emergency medical services, short and medium term funding schemes such as the establishment of a dedicated Trauma fund is needed to cover the cost of emergency care services and roll out of EMS across the country.

CHAPTER 3

RATIONALE AND OBJECTIVE OF THE NATIONAL GUIDELINES FOR EMERGENCY CARE SERVICES

3.1. Rationale

Coordinated delivery of pre-hospital and facility-based emergency care is essential in Tanzania, given the mixed epidemiologic burden, where high rates of injuries and cardiovascular emergencies co-exist with persistent challenges of infectious disease and maternal and child health. Standard guidelines are needed to ensure that early recognition, resuscitation and referral takes place at the frontline of the health system, and to ensure a systematic approach to every ill and injured person so that no life-threatening conditions are missed and needed interventions are provided. The establishment of an ECS is in line with national and international priorities and recommendations. The National Guidelines for Emergency Care Guidelines (NGECS) will support high-quality emergency care delivery and takes into consideration both the strengths and challenges that inform and empower each institution to prioritize the steps they can take to implement a basic level of emergency care regardless of resource availability.

3.1.1. Addressing the Sustainable Development Goals

The recent transition from the Millennium Development Goals (MDGs) to Sustainable Development Goals (SDGs), which were adopted by the Member States including Tanzania at the United Nations General Assembly, has further highlighted the urgent need for advancing emergency care in Tanzania. Effective emergency care directly addresses no fewer than 10 of the SDG targets:

- S DG 3.1: Reduce by three quarter between 2015 and 2030 the maternal mortality ratio (*Treatment of obstetric emergencies*)
- S DG 3.2: Reduce by three quarters between 2015 and 2030 the under-five mortality (*treatment of emergency paediatric conditions including pneumonia and diarrhoea; treatment of obstetric emergencies*)
- S DG 3.3: Reverse the incidence of malaria and other major infectious disease and reduce deaths from these diseases by half by 2030 (*emergent treatment of acute infections and sepsis*)
- S DG 3.4: By 2030, reduce by one-third premature mortality from NCDs (*emergent treatment of exacerbation of NCDs*)
- S DG 3.5: Strengthen the treatment of substance abuse (*emergency care and harm reduction intervention*)
- S DG 3.6: Halve the number of global road traffic crash fatalities and serious injuries by 2020 (*Post traffic accident emergency care*)
- S DG 3.8: Achieve universal health coverage including financial risk protection and access to quality essential healthcare (*Emergency care is an essential component of universal care*)
- S DG 3.9: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals (*emergency medicine treatment of acute exposure to hazardous materials*)
- S DG 11.5: By 2030, significantly reduce the number of deaths caused and people affected by disaster (*emergency medicine disaster preparedness and response for resilient health systems*)
- S DG 16.1: Significantly reduce all forms of violence and related deaths rates everywhere (*emergency medicine treatment of victims of violence*).

3.1.2. Implementing Ministry of Health Guidelines

WHO had recommended that governments undertake a process of National Emergency Care System Assessment in order to inform appropriate planning, and this guideline is informed by and represents a coordinated national response to the results of the ECSA process that Tanzania conducted in 2017. The SECG is the step toward creating the National plan by addressing several interconnected domains: (1) Service delivery (2) Infrastructure (3) Minimum Set of Equipment for Emergency medicine department (4) Information management and technology (5) Human Resources (6) Training requirement for Emergency Medicine staff (7) Emergency Medicine Department Financing (8) Building Research and Training Capacity Around Emergency Care Systems (9) Strengthening the capacity of professional societies in SECG implementation (10) Governance

The establishment of an Emergency Medicine Department in all referral hospitals, as outlined in the SECG, aligns with current efforts by the MOHCDGEC, PORALG and its implementing partners in their efforts to improve healthcare outcomes in Tanzania. It supports existing policy priorities of the MOHCDGEC as outlined in the *Health Sector Strategic Plan IV*.

3.2. Objectives of the National Guidelines for Emergency Care Guidelines

To provide guidance on the establishment and management of Emergency Medical Services at health care facilities in all levels.

Specific objectives of the Guidelines

For a Tanzanian Health facility, provide:

- i. Recommended guiding drawings for infrastructures to allow optimal design in zoning and patient flow pattern in emergency departments/units.
- ii. Guideline for minimum quantity and standards of equipments and supplies for emergency departments/units
- iii. Guideline for minimum staffing requirements for emergency departments/units at each health facility
- iv. Guideline for minimum requirements for initial and continuous professional development of staff for emergency departments/units at each health facility
- v. Guideline for monitoring and evaluation of care delivery at emergency departments/units at each health facility

CHAPTER 4

STANDARDS FOR EMERGENCY MEDICINE DEPARTMENT

4. Service delivery

4.1. Operational definition of Emergency Medicine Department

Emergency Medicine Department (*also known as Emergency Unit/Emergency Department or Accidents and Emergencies*) is a specialized area of a hospital dedicated to provision of time-sensitive medical care by a trained emergency care provider. These providers should be equipped with basic resources to triage, resuscitate, diagnose, treat and appropriately discharge, admit or transfer patients presenting with acute illness and injury. Emergency Medicine Department (EMD) operate 24 hours a day, seven days a week and patients receive appropriate care until they are clinically stable for further definitive intervention or discharge home. This department cannot operate in isolation, is an integral component of health delivery system within a hospital both operationally and structurally.

4.2. Standard of an Emergency Medicine Department

An EMD is expected to meet a minimum set of standards (in terms of equipment, supplies, infrastructure, staffing and services) in order to meet expected level of care provision at the Hospital. The set of standards described in this guideline is based on recommendations by international bodies, such as World Health Organisation (WHO), African Federation for Emergency Medicine (AFEM), and International Federation for Emergency Medicine (IFEM) as well as the experience in Tanzania developing a model program at Muhimbili National Hospital EMD. This Guideline will provide framework for an EMD based on design, service description, service requirements, and workforce and support services.

4.3. Basic characteristics of an Emergency Medicine Department

- i). Emergency Medicine Department must operate structurally and functionally within a health facility
- ii). Emergency Medicine Department shall have a structural flow described in 4.5 below
- iii). Emergency Medicine Department shall have minimum set of equipment as described in appendix 2 below
- iv). Emergency Medicine Department shall have access to emergency theatre and blood products 24 hours a day
- v). Emergency Medicine Department Shall have minimum set of point of care tests as described in appendix 2 below
- vi). Emergency Medicine Department shall have access to central hospital laboratory for emergency
- vii). Emergency Medicine Department shall operate 24 hours a day, 7 days a week and 365 days a year
- viii). Emergency Medicine Department shall have a minimum staffing level as described in section 4.14 below.
- ix). Emergency Medicine Department shall be able to deliver the minimum essential emergency care services appropriate to level, as specified in this guideline

4.4. Emergency Medicine Department infrastructure design and layout

An Emergency Medicine Department must be purposefully designed to enable identification and immediate care for the most acute patients. **Figure 6.1** provides an example of a Basic Emergency Unit (with minimum basic functionality) with dedicated areas needed for effective flow of patients, depending on acuity, from initial review (quick-triage) to either immediate care (resuscitation), or further evaluation (triage) and registration. The resuscitation area/room is equipped to receive and manage the most acute emergency presentations with monitoring and resuscitation equipment. There may be other areas designed to manage less acute presentations, including triage, and basic primary and secondary assessments.

The design of the department must allow quick access of the staff to the patient at all times. Traffic flow of patients, staff, and supplies is critical and requires careful planning for efficiency and safety, with particular

attention to the movement of patients requiring immediate or life-threatening care. All lifesaving equipment must be easily and quickly accessible. **Figure 6.2** below, is a prototype of what an emergency medicine department will look like. The details of the minimum components of the structure as follows:

i. Ambulance bay/ambulance reception (drop off bay)

An ambulance bay is used for the delivery of both ambulant and non-ambulant (trolley bound) patients to the Emergency Department. It has a possible secondary function as a decontamination zone and as a triage and/or treatment area for Mass Casualty Incidents (MCIs). A minimum space of 4 x 6 metre (per vehicle) is required. There must be an allowance for an unloading space at the rear or side of the vehicle's door opening and pedestrian access along both sides of a parked vehicle. Functional requirements:

- Separate vehicle access
- Adequate lighting
- Security – for controlled access into the Emergency Department
- Adequate weather protection (particularly rain protection)
- Access to room with cleaning facilities
- Direct access to triage
- Direct access to resuscitation rooms
- Non-slip surfaces
- Adequate drainage system
- Signage including ground marking for vehicle bays

ii. Relative waiting area

Many different people use this space, twenty-four hours a day, and the size will depend on the size and level of the EMD. Concerned visitors may be under stress while waiting for news of a patient therefore seating here should be durable but comfortable.

Functional requirements:

- The relative waiting area must have roof, chairs, and access to washroom without entering EMD patient treatment areas (the minimum number of chairs: National Hospital-300, Zonal Referral Hospital- 200, Regional Referral Hospital-100, District Hospital-50, Health Center-20, Dispensary-10).
- The relative waiting area is ideally connected to the public address system, or should be easily accessible by staff to provide information or inquiry to patient families.
- Readily accessible security personnel to protect relatives from violence (for example, retaliation for an altercation in which a patient was involved).

iii. Isolation room

Isolation room should be provided for the temporary accommodation and treatment of potentially infectious patients. Positioning of this room should be adjacent to the triage area where patients are received, to allow for the immediate isolation of potentially highly infectious patients without the need for the patient going through and potentially contaminating or infecting other patients in the Emergency Department. Consider negative-pressure isolation in patients for whom there is concern for highly contagious respiratory infections such as active pulmonary tuberculosis.

iv. Decontamination area

This area is generally located near the ambulance entrance. It has a tiled shower area used to decontaminate patients exposed to chemicals, pesticides, or radiation. It may also be used to take care of the hygienic needs of some patients.

Functional requirements:

- The decontamination room should be directly accessible from the ambulance bay without entering any other part of the Emergency Department.
- Should have a flexible water hose, floor drain and contaminated water trap.
- Both ventilation and drainage systems must be independent and capable of being isolated
- Should have capacity to decontaminate 1-2 people (example: farm exposure to insecticides)

v. Registration, social welfare and billing (cashier) rooms*

The Emergency Medicine Department requires dedicated registration and billing area within EMD, so as to

expedite the care of patients who are critically ill and in need of emergency services. In addition to this, there has to be a social welfare office along the registration and billing rooms to ensure that all patients in need of services receive them in a timely manner. The billing room must be secured with a safe to ensure staff and cash collections are safe.

vi. Triage

A triage area is designed for the initial clinical assessment of patients and determination of relative medical urgency or level of acuity. Triage should occur on patient's arrival by credentialed clinical staff. Patients who enter the EMD through the ambulatory entrance are evaluated at triage. The triage room should be located adjacent to the admitting/waiting area. To fulfil the concept of triage first, the triage and reception areas should be designed so that the first point of contact for patients is the triage nurse. A wheelchair and/or stretcher may be stored in this area or close to this area.

vii. General treatment area/ rooms/ cubicles

This area is required to assess, manage and initiate treatment of stable (queue) patients.

Functional user requirements:

- Minimum of one examination bed per room
- Doctor's Consultation table
- One (1) Doctor's chair
- Two (2) Patients Chairs and
- One (1) Nurse's chair
- Hand wash basin (with elbow tap/sensor) and accessories (eg., alcohol hand rub)
- Air-conditioned room
- Fire detection device
- Door
- Window
- Should have cross ventilation and sufficient light
- Internet connectivity, power source, intercom
 - Access between adjacent rooms (four rooms should be interconnected)
 - Ceiling hung railing and curtain
 - At least one clinical cubicle/room designated for use by children

The number of treatment rooms will depend on overall bed capacity, level of the hospital, catchment area, location of facility and projected population growth, etc.

viii. Resuscitation rooms

A resuscitation room provides reception, assessment, and initiation of treatment of patients who have a life-threatening condition, were subjected to major trauma or time critical illness. The resuscitation room should be enough to accommodate the following functional user requirements:

- Working station with chairs, tables and computers (minimum of one doctor, one nurse and one additional staff).
- Head-bed trunk to accommodate two (2) beds with two ports for vacuum/suction, three ports for oxygen, one port for medical gas
- Ventilator machine
- Two wall mounted cardiac patient monitor
- ECG Machine
- Point of care ultrasound machine
- Defibrillator machine
- Crash trolley
- Wall mounted shelves
- Hand washing basin with elbow tap
- Personal Protective Equipment (eg., gloves, masks, and face shields)
- Ceiling mounted railing and curtain
- Sufficient ceiling light
- Adequate ventilation and lighting (daylight)
- Fire detectors

- Temperature control with inlet and outlet
- Infusion pump
- Blood warmer machine
- Hooks for drip stands
- X-ray viewing box
- Sliding sensor-controlled door (Refer guidelines)

The number of resuscitation rooms depends on overall bed capacity, level of the hospital, catchment area, location of facility and projected population growth, etc.

ix. Procedure room

One of the resuscitation rooms shall be designated as the procedure room, which may be required for the performance of procedures such as suturing, joint/fracture reduction in a stable patient, tube thoracotomy, abdominal paracentesis and bladder catheterisation. The room must be large enough to accommodate the following functional user requirements:

- Adequate size to allow a patient bed with provision for overhead monitors, emergency trolleys, defibrillator machine, with provision of all medical gas support, oxygen, vacuum, and air, hand washing sink with elbow tap, working station, cupboard, drip stands, chairs.
- Adequate floor space to accommodate mobile equipment, example ultrasound machine, ECG.
- Adequate space to accommodate the maximal personnel concurrently involved in treating a patient (minimum 2 doctors and 1 nurse)
- Appropriate physiological monitoring systems to allow safe analgesia and sedation.
- Adequate room/storage capacity to allow suture trolleys/procedure trolleys/dressing trolleys/ resuscitation equipment.

x. Commanding centre

Staff workstation is where staff can undertake work that is not performed at a patient's bedside. They are used for discussion, advice, and for the entry or writing of notes. Separate consulting rooms should be provided specifically for patient consultation.

Functional requirements

- Adequate size and space to allow a minimum of 6 health care providers (at regional to tertiary level) and 3 health care providers for District Hospital to sit and have a documenting space.
- Must be positioned in an area that allows visualization of resuscitation room.
- Shall have the public address commanding microphone

xi. Nurse station

Nurse workstation is where shift nurses will be stationed for discussion, advice, and the entry or writing of clinical notes. Separate consulting rooms should be provided specifically for patient consultation.

xii. Emergency pharmacy

The EMD must have an in-house pharmacy that is up to standard with qualified pharmaceutical personnel who will provide pharmaceutical services, dispensing medication to all patients within and out of EMD. The pharmacy will operate 24 hours, 7 days per week, and will incorporate a sub-store for additional emergency medicines, medical equipment, and supplies actions. The pharmacy must be equipped with shelves, cabinets, washing basin, etc. as prescribed by the standards of the Pharmacy Council of Tanzania.

xiii. Point of Care (POC) test area

The EMD must have an in house POC room to conduct rapid diagnostic tests that are not to be taken to central pathology laboratory, so as to expedite the care of patients. These tests include, malaria test, Urine dipstick, HIV etc. This room must be equipped with washbasin and running water.

xiv. Medical gas room

The EMD must have a medical gas room that will be used to store the gas tanks, or in places with oxygen plant (and manifold) then to be able to supply the oxygen within the facility. This must be outside the department and in close proximity to resuscitation rooms for convenience.

xv. Sluice room

The sluice room must be equipped with a flushing mechanism to ensure all the remains and contaminated fluids are well disposed. The room must have an exit that is headed outside the department.

xvi. Patients' toilet facility

The in EMD toilet facilities must be able to cater for both able and disabled patients. There must be separate male and female facilities.

xvii. Staff changing room

The EMD shall have a-dedicate changing area for male and female staff. These must be equipped with staff cabinets, toilet facility, wash basin and shower facilities.

xviii. Meeting /debriefing/teaching room

The Emergency Department requires dedicated facilities for formal education, tutorials/mannequin simulation, and meetings. This area may be used by medical, nursing or other staff. It should be a private, non-clinical area with noise attenuation, often near the staff room and offices and with access to toilets and amenities.

xix. Head of department and In-charge nurse offices

There must be an office for Head of department, and another office for In-charge nurse, to allow for handling of administrative matters pertaining to the department.

xx. Staff break room

The EMD must have a staff break room, to allow staff to have breakfast, lunch or dinner break within the emergency department, without having to leave the department during clinical shift. This room must be equipped with a wash basin and furnished based on local needs.

xxi. Store

The EMD must have a store that keeps the buffer stock of consumable that is not part of pharmacy. This will ensure the department have the necessary equipment in time of high-volume emergencies.

xxii. Emergency trauma procedure room

To ensure timely access to definitive surgical care for patient with emergency surgical conditions, the hospital should ensure the availability of emergency operation theatre at all time.

xxiii. Information Technology (IT) Room and Office

For IT personnel who support the IT services within the department, and also placement of server, whenever appropriate.

xxiv. Power Room

To secure all electrical Power panels, accessories and backup power to operate the department.

4.5. Schedule of accommodation of EMD at deferent Health facilities

Below is a proposed schedule of accommodation for the architectural designs of health facilities;

SCHEDULE OF ACCOMMODATION OF EMD FOR REGIONAL HOSPITALS			
SN	ROOM NAME	ROOM SIZE (m)	CONTENTS
1	Drop off	5.5 x 9.47	-
2	Stretchers bay	3.96 x 3	4 stretchers
3	Mass Causality	5 x 6.66	1 HWB and 1SH
4	Mass Causality Storage	2.04 X 1.8	-
5	Isolation	4.02 X 2.81	1 bed
6	PPE Removal	1.8 x 2.81	1 HWB,
7	PPE Store	2.04 X 1.82	-
8	Preparation room	2.04 x 2.05	-
9	Resuscitation - 1	3.5 X 5	2 bed, 2 monitor, 1 HWB & working station

SCHEDULE OF ACCOMMODATION OF EMD FOR REGIONAL HOSPITALS			
SN	ROOM NAME	ROOM SIZE (m)	CONTENTS
10	Resuscitation - 2	3.5 X 5	2 bed, 2 monitor, 1 HWB & working station
11	Trauma Resuscitation	4.27 x 5	-
12	Sluice	2.85 x 3.35	1 HWB & 1 flushing WC
13	Doctor In charge office	3.6 X 5	1office table, 1office chair, shelf, round table with 3chairs
14	Nurse in charge office	2.95 x 4.01	1office table, 1office chair, shelf, round table with 3chairs
15	Secretary	1.63 x 2.06	1office table & 1office chair
16	WC VIP	1.9 X2.06	1 WC & 1HWB
17	Store	1.8 x 2	-
18	Meeting room and Tea room	3.3 x 5.55	2table with 6 chair each
19	ICT room	2.25 x 3.3	1 office table, 1 office chair and space for ICT equipment's
20	Changing room female	3.75 x 2.95	1 WC, 1 HWB & wardrobe
21	Changing room male	3.75 x 2.95	1 WC, 1 HWB & wardrobe
22	Equipment corner	0.9 x 1.53	-
23	Medical gas room	3.6 x 3.6	-
24	Power room	1.85 x 1.96	-
25	WC relative female	1.5 x 2.36	1 squatting wc & 1HWB
26	WC relative male	1.7 x 2.36	1 squatting wc & 1HWB
27	WC patient female	1.45 X 2.36	1 WC dis-abled and 1HWB
28	WC patient male	1.45 X 2.36	1 WC dis-abled and 1HWB
29	Waiting area	-	Benches to accommodate minimum 100 people
30	Dispensing	3.71 x 3.32	2 office table, 2 office chair and shelf
31	Treatment - 1	3.71 x 3.66	1 bed, 1table, 1 chair & 1 HWB
32	Treatment - 2	3.71 x 3.45	1 bed, 1table, 1 chair & 1 HWB
33	Treatment - 3	3.71 x 3.1	1 bed, 1table, 1 chair & 1 HWB
34	Social welfare	3.71 x 2.15	1 table, 1 chair & bench to accommodate 2 people
35	Payment	3.71 x 3.75	2 tables and 2 chairs
36	Registration room	3.71 x 2.5	-
37	Reception and Information desk	3.4 x 4.05	1 Worktop, 2 chairs
38	Triage	3.67 x 4.05	1 bed, 2 table, 2 chairs & HWB
39	Paediatric treatment room	3.445 X 4.05	1 bed, 1table, 2 chair, working station and 1 HWB
40	Paediatric resuscitation room	4.935 x 4.05	3 bed, 2 monitor, 1 chair, working station and 1 HWB
41	Nurse station	2.55 x 1.8	1 table & 1 chair
42	Point of care test room	2.25 X 2.4	1 HWB
43	Command post	3 x 4.5	1 table with 8 chairs
44	Septic tank	2 x 4	-
45	Soak away Pit	4 diameter	-
46	Ambulance parking	4 x 6	-
47	Hel-park for Helicopter landing	To be determined by relevant Authority	-

SCHEDULE OF ACCOMMODATION OF EMD FOR DISTRICT HOSPITALS			
SN	ROOM NAME	ROOM SIZE (m)	CONTENTS
1	Drop off	5.5 x 9.47	-
2	Stretchers bay	3.96 x 3	2 stretchers
3	Mass Casualty	5 x 4.26	1 HWB and 1SH
4	Mass Casualty Storage	2.04 X 1.8	-
5	Isolation	4.02 X 2.81	1 bed
6	PPE Removal	1.8 x 2.81	1 HWB,

CHEDULE OF ACCOMMODATION OF EMD FOR DISTRICT HOSPITALS			
SN	ROOM NAME	ROOM SIZE (m)	CONTENTS
7	PPE Store	2.04 X 1.82	-
8	Preparation room	2.04 x 2.05	-
9	Resuscitation - 1	3.4 X 5	2 bed, 2 monitor, 1 HWB & working station
10	Trauma Resuscitation	4.47 x 5	-
11	Sluice	2.85 x 3.35	1 HWB & 1 flushing WC
12	Doctor In charge office	3.6 X 5	1office table, 1office chair, shelf, round table with 3chairs
13	Nurse in charge office	2.95 x 4.01	1office table, 1office chair, shelf, round table with 3chairs
14	Secretary	1.63 x 2.06	1office table & 1office chair
15	WC VIP	1.9 X2.06	1 WC & 1HWB
16	Store	1.8 x 2	-
17	Meeting room and Tea room	3.3 x 5.55	2table with 6 chair each
18	ICT room	2.25 x 3.3	1 office table, 1 office chair and space for ICT equipment's
19	Changing room female	3.75 x 2.95	1 WC, 1 HWB & wardrobe
20	Changing room male	3.75 x 2.95	1 WC, 1 HWB & wardrobe
21	Equipment corner	0.9 x 1.53	-
22	Medical gas room	3.6 x 3.6	-
23	Power room	1.85 x 1.96	-
24	WC relative female	1.5 x 2.36	1 squatting wc & 1HWB
25	WC relative male	1.7 x 2.36	1 squatting wc & 1HWB
26	WC patient female	1.45 X 2.36	1 WC dis-abled and 1HWB
27	WC patient male	1.45 X 2.36	1 WC dis-abled and 1HWB
28	Waiting area	-	Benches to accommodate minimum 50 people
29	Dispensing	3.71 x 3.1	2 office table, 2 office chair and shelf
30	Treatment - 1	3.71 x 3.66	1 bed, 1table, 1 chair & 1 HWB
31	Treatment - 2	3.71 x 3.45	1 bed, 1table, 1 chair & 1 HWB
32	Payment	3.71 x 3.65	2 tables and 2 chairs
33	Registration room	3.71 x 2.5	-
34	Reception and Information desk	3.4 x 4.05	1 Worktop, 2 chairs
35	Triage	3.67 x 4.05	1 bed, 2 table, 2 chairs & HWB
36	Pediatric treatment & resuscitation	4.98 X 4.05	1 bed, 1table, 2 chair, working station and 1 HWB
37	Nurse station	2.55 x 1.8	1 table & 1 chair
38	Point of care test room	2.25 X 2.4	1 HWB
39	Command post	3 x 3	1 table with 4 chairs
40	Septic tank	2 x 4	-
41	Soak away Pit	4 diameter	-
42	Ambulance parking	4 x 6	-
SCHEDULE OF ACCOMMODATION OF EMD FOR HEALTH CENTER AND DISPENSARY			
SN	ROOM NAME	ROOM SIZE (m)	CONTENTS
1	Drop off	2.4 X 4.05	-
2	Stretchers bay	1.35 X 3	1 stretcher and 1 wheel chair
11	Resuscitation & Trauma room	3.4 X 4.05	2bed, 2 monitor, 1 HWB & Working station
12	Sluice	1.5 X 3.4	1 sink and 1 flushing WC
29	Waiting area	2.4 X 6.85	Bench to accommodate at least 10 people
30	Dispensing	2.4 X3.4	1 table, 1 chair and shelves
31	Treatment - 1	3 X 4.05	1 bed, 1 table, 2 chairs and 1HWB
32	Treatment - 2	4 X 3.4	1 table, 2 chairs and 1HWB
38	Triage	4.35 X 4	1 bed, 1 table, 2 chairs and 1HWB

4.6 Structural layout of emergency department at deferent Health facilities

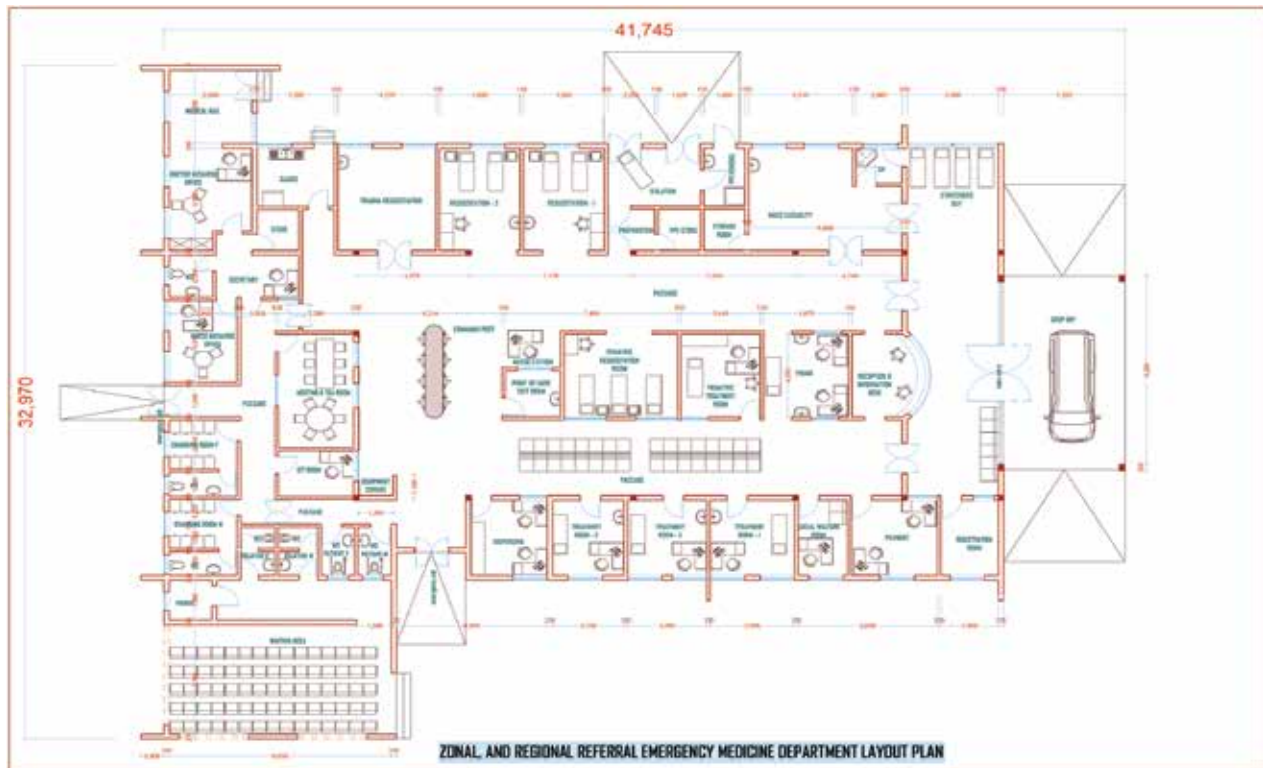


Figure 4.1: Zonal, and Regional Referral Hospital EMD layout



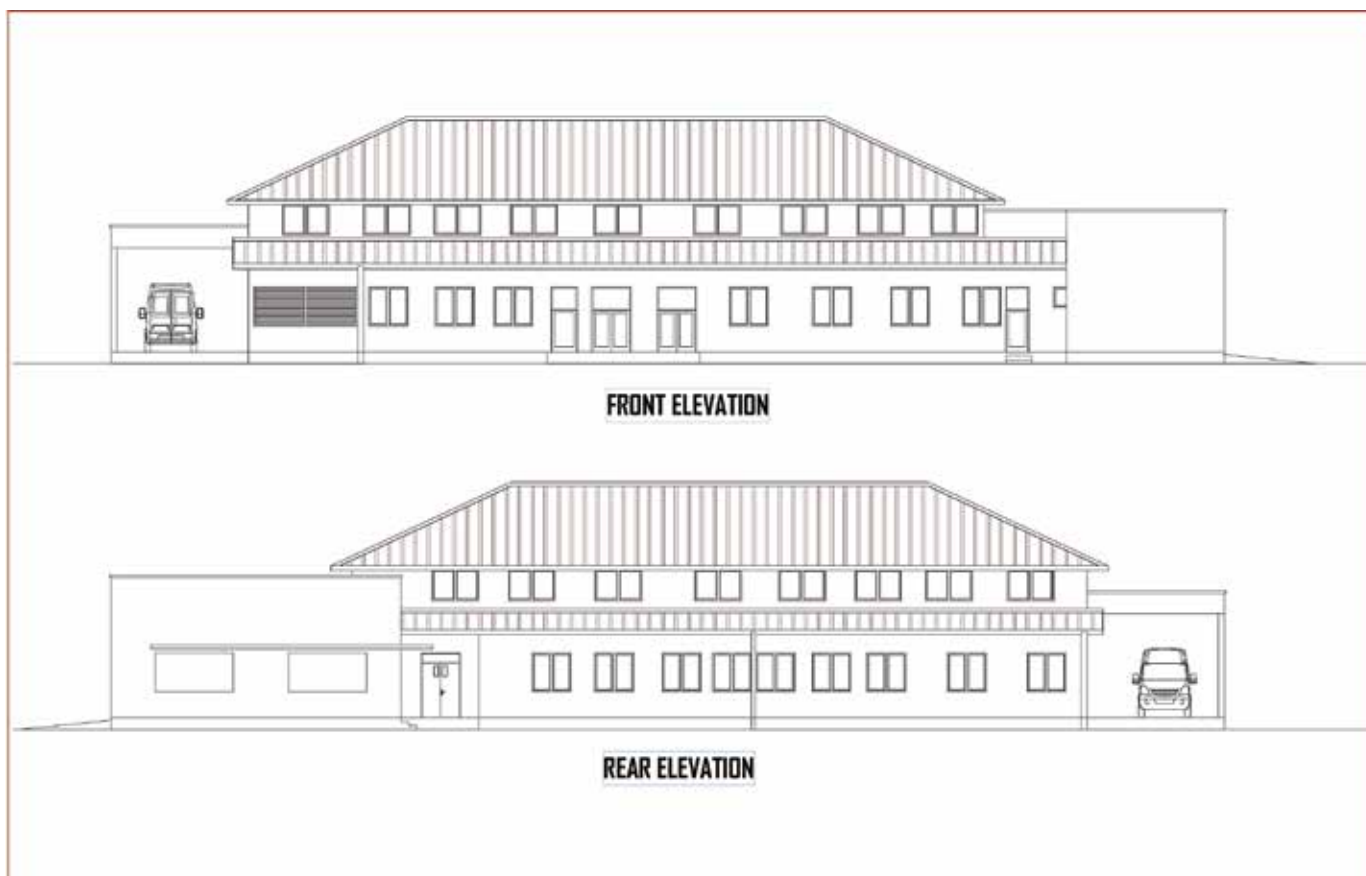


Figure 4.2: District Hospital Emergency Medicine Department layout

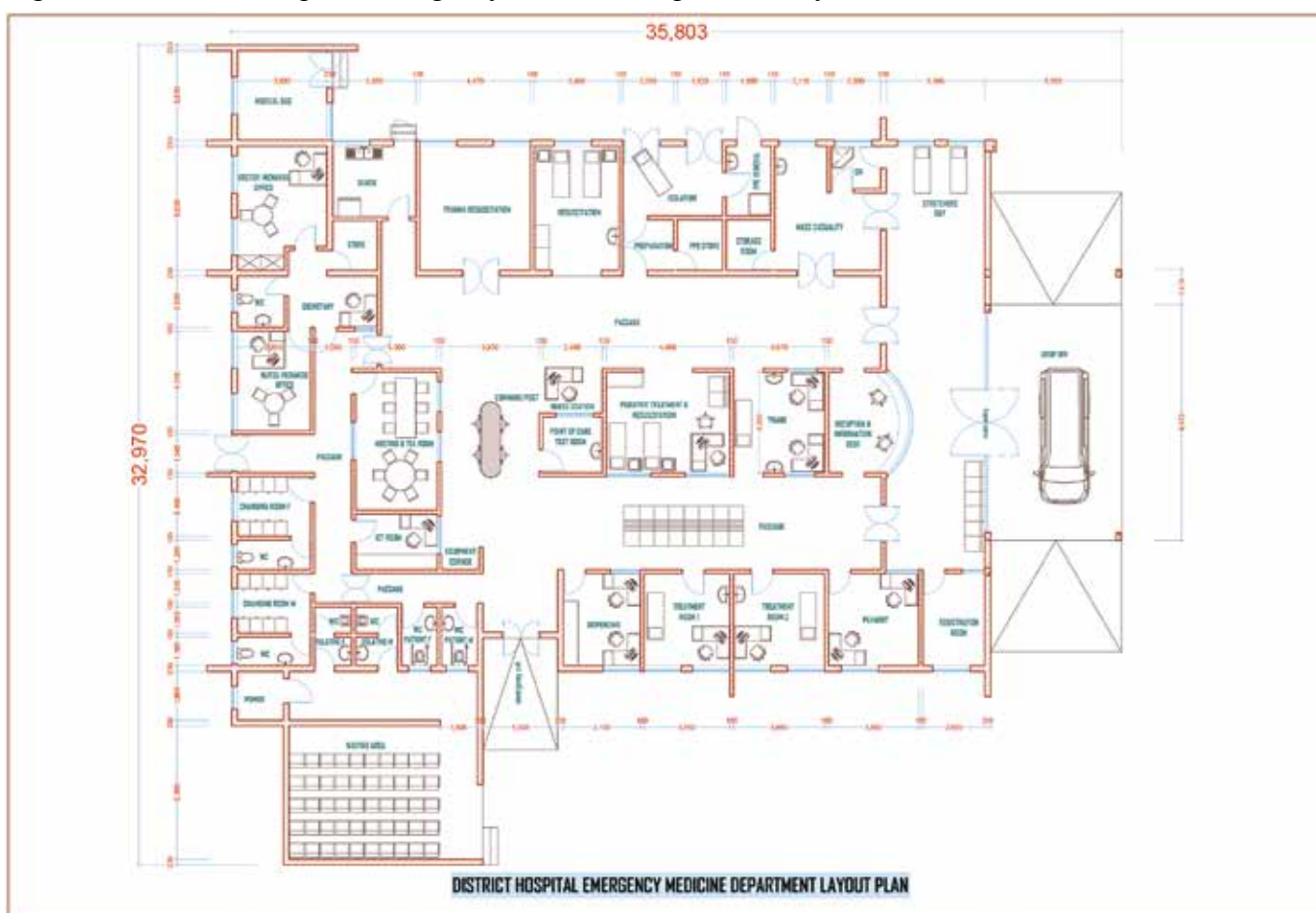
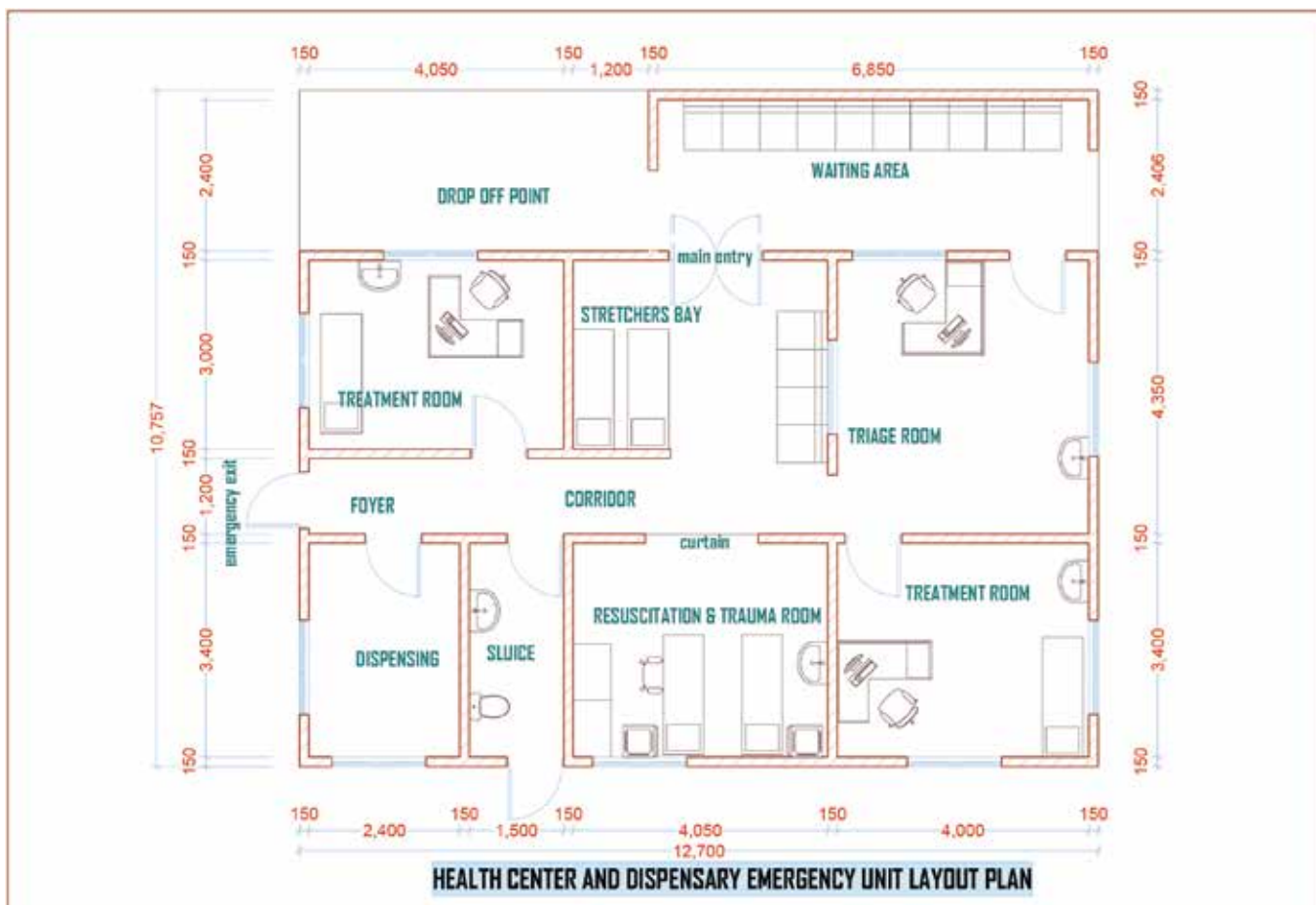


Figure 4.3: Health Centre and Dispensary Emergency Medicine Unit layout



4.7. Minimum Set of Equipment and consumables for an EMD

i. Medical equipment and consumables

An EMD must have adequate medical equipment and consumables to be able to provide appropriate and timely resuscitation to critically ill patients, in order to prevent mortality or life-long disability. Emergency equipment must be portable, resilient and mobile to allow for convenience and durability, furthermore, there has to be enough consumables to cater for the volume of patients attended at the EMD. The EMD equipment must be sourced from reliable supplier who provides timely back-up and also has a preventive maintenance plan that is cost-effective. The staff working in the emergency department must all receive training on how to operate essential equipment.

Appendix 2 provides a summary of minimum equipment and consumables required to be available in EMD at different levels of health facilities.

ii. Other non-medical equipment

- i). Nurse station shall have a minimum of 2 chairs
- ii). The commanding centre shall have a minimum of 6 health care providers at regional to tertiary level) and 3 health care providers for District Hospital to sit and have a documenting space.
- iii). Treatment room shall have 1 table and 3 chairs.
- iv). Resuscitation room shall have a minimum of 2 chairs, and wall cabinets used as tables to document.
- v). The conference rooms shall have one table and 6 chairs (minimum)
- vi). Break room shall have a minimum of 2 small tables and 5 chairs, fridge and microwave
- vii). Administrative (HOD and Nurse In charge) offices must be equipped with one metal cabinet, office

table, executive chair, 2 guest chairs, cabinet, computer and printer.

viii). Store shall have cabinets to store consumables

ix). Pharmacy shall have pharmacy cabinets, store cabinets, fridge, table, 2 chairs, computer and printer.

x). Changing rooms must have lockers for staff (number variable depending on number of staff).

xi). Registration room must have one table, two chairs, one cabinet, one computer, and one printer.

xii). Social welfare room must have one table, three chairs, one cabinet, one computer, and one printer.

xiii). Cashier room must have one table, two chairs, one metal cabinet, one computer, one printer, and one cash safe.

xiv). POC room must have one table, two chairs, and one cabinet.

xv). Relatives waiting area must have chairs (number variable depending patient volume), and a T.V Set

4.8. Information management and technology

Hospitals that have already integrated ICT as part of the care process within hospital operations (medical records, billing, ordering, clinical documentation, human resources and inventory management), must ensure the adequate availability of computer and ICT facilities that are customized to specific hospital needs.

4.9. Human resource requirements for an emergency medicine department

An Emergency Medicine Department must have adequate staffing that is permanently stationed (non-rotating) staff that are adequately trained to care for critically ill patients using the knowledge and equipment described in **section 2.3 above**.

4.10. Clinical oversight

The clinical oversight for the emergency medicine department shall be provided by a specialist trained in Emergency Medicine. This should be a doctor with a Masters of Medicine in Emergency Medicine, from a recognised institution within or outside of Tanzania. If there is no Emergency Medicine trained specialist, clinician who has trained in emergency stabilization may oversee the department and provide clinical oversight. Furthermore, Supportive supervision, mentorship and coaching of lower level facilities will be provided by emergency department from higher facilities with expertise trained personnel.

4.11. Minimum staff required for Emergency care services

The minimum number of staff needed for each emergency department depends on the size of the department and the volume of patients to which the department attends. Table 1 below summarizes the minimum staffing level per shift. Those who have been trained and certified on emergency care courses, shouldn't be tasked to other duties other than emergency care.

a) Medical Staff:

Medical staffs with basic emergency medicine training should be available 24 hours per day, seven days per week either on-site (ideally) or available at short notice (within 10 minutes of any phone call). There should be at least three permanent health personnel who are at minimum credentialed in Advanced Life Support (for both medical and trauma cases, in adults and paediatrics) and emergency ultrasound.

b) Nursing Staff

Nursing staff with basic training in emergency care should be dedicated to the Emergency Department and on-site 24 hours a day, seven days a week. Nurses should be credentialed at minimum in triage.

c) Supportive staff

Emergency medicine needs the following supportive staff: medical recorder, IT personnel, quality assurance accountant, cashiers, social worker, and procurement and supplier officer.

4.12. Required Support services

- Plain radiology available on-site
- Point of care testing available on-site (For random glucose, haemoglobin, transfusion service,

- electrocardiogram, pregnancy test, urine dipstick)
- Access to secondary services such as surgery, medicine, orthopaedics, paediatrics, and obstetrics and gynaecology (access includes advice by telephone, and referral hospital outreach service)

4.13. Ethical standard

Tanzanian citizens have a right to safe medical care. To fulfil this right, health personnel working in EMD shall:

- Follow the principles of the Patient's Rights.
- Ensure that patient welfare is their primary professional responsibility.
- Respond promptly and to the best of their abilities when the need for emergency medical services arises.
- Strive to protect the best interest of their patients
- Communicate truthfully with patients and secure their informed consent for treatment (unless the urgency of the patient's condition prevents this).
- Respect patient privacy.
- Deal fairly and honestly with colleagues, and take appropriate action to protect patients from health care providers who are impaired, incompetent, or who engage in fraud or deception.
- Engage in continuing study to maintain the knowledge and skills necessary to provide high quality care for emergency patients.
- Support EMAT efforts to secure access to emergency and other basic health care for all Tanzania.

4.14. Training requirement for EMD staff

All staff working in the EMD must receive training on basic and advanced lifesaving skills for both adult and paediatrics. Several short courses exist that provide lifesaving skills which are known to impact the quality of care provided at the EMD. Examples of these courses includes: Basic and Advanced Life Support courses (BLS and ALS), Basic Emergency Nursing, Paediatric Emergency Care Training (PECT), Basic Emergency Care (BEC), Primary Trauma Care (PTC), and others. These short courses need to be specifically tailored to the staff needs. Basic primary and secondary assessment should be available including paediatric, adult and trauma life support and stabilisation of critically ill patients prior to admission to the ward or referral to another health facility. Courses provided must meet minimum standards and should be internationally recognized or approved by Emergency Medicine Association of Tanzania (EMAT) and/ or other organ approved by the government.

1.1. Tables of minimum staffing level per clinical shift in EMD

Table 4.1. Minimum staffing level per clinical shift in EMD of Tertiary hospital

	EM specialist	Doctor	Nurse	Health attendant	Pharmacist/ Pharm tech	Social welfare	Medical Records	Cashier
Reception	0	0	0	6	0	0	0	0
Triage	0	1	2	1	0	0	0	0
Treatment	1*	3	3	0	0	0	0	0
Resuscitation	1*	4	4	0	0	0	0	0
Procedure	0	1	1	1	0	0	0	0
POC room	0	0	0	1	0	0	0	0
Pharmacy	0	0	0	0	2	0	0	0
Registration	0	0	0	0	0	0	2	0
Cash/Billing	0	0	0	0	0	0	0	1
Social welfare	0	0	0	0	0	1	0	0
Sluice	0	0	0	1	0	0	0	0
Total	2	9	10	10	2	1	2	1

**The role of Emergency Specialist is to supervise the clinical shift and oversee the patient care*

Table 4.2. Minimum staffing level per clinical shift in EMD of **Zonal referral hospital**

	EM specialist	Doctor	Nurse	Health attendant	Pharmacist/ Pharm tech	Social welfare	Medical Records	Cashier
Reception	0	0	0	4	0	0	0	0
Triage	0	1	2	1	0	0	0	0
Treatment	1*	2	2	0	0	0	0	0
Resuscitation	1*	3	3	0	0	0	0	0
Procedure	0	1	1	1	0	0	0	0
POC room	0	0	0	1	0	0	0	0
Pharmacy	0	0	0	0	1	0	0	0
Registration	0	0	0	0	0	0	1	0
Cash/Billing	0	0	0	0	0	0	0	1
Social welfare	0	0	0	0	0	1	0	0
Sluice	0	0	0	1	0	0	0	0
Total	1	7	8	8	1	1	1	1

**The role of Emergency Specialist is to supervise the clinical shift and oversee the patient care*

Table 4.3. Minimum staffing level per clinical shift in in EMD of **Regional Referral Hospital**

	EM specialist	Doctor	Nurse	Health attendant	Pharmacist/ pharmtech	Social welfare	Medical Records	Cashier
Reception	0	0	0	3	0	0	0	0
Triage	0	1	2	1	0	0	0	0
Treatment	0	2	3	0	0	0	0	0
Resuscitation	1*	3	4	0	0	0	0	0
Procedure	0	1	1	1	0	0	0	0
POC room	0	0	0	1	0	0	0	0
Pharmacy	0	0	0	0	1	0	0	0
Registration	0	0	0	0	0	0	2	0
Cash/Billing	0	0	0	0	0	0	0	1
Social welfare	0	0	0	0	0	1	0	0
Sluice	0	0	0	1	0	0	0	0
Total	1	7	8	7	1	1	1	1

**The role of Emergency Specialist is to supervise the clinical shift and oversee the patient care*

Table 4.4. Minimum staffing level per clinical shift in in EMD of **District Hospital**

	EM specialist	Doctor	Nurse	Health attendant	Pharmacist/ Pharm tech	Social welfare	Medical Records	Cashier
Reception	0	0	0	2	0	0	0	0
Triage	0	0	2	1	0	0	0	0
Treatment	0	2	2	0	0	0	0	0
Resuscitation	1*	2	2	0	0	0	0	0
Procedure	0	1	1	1	0	0	0	0
POC room	0	0	0	1	0	0	0	0
Pharmacy	0	0	0	0	1	0	0	0
Registration	0	0	0	0	0	0	1	0
Cash/Billing	0	0	0	0	0	0	0	1
Social welfare	0	0	0	0	0	1	0	0
Sluice	0	0	0	1	0	0	0	0
Total	1	5	7	6	1	1	1	1

**The role of Emergency Specialist is to supervise the clinical shift and oversee the patient care*

Table 6.4. Minimum staffing level per clinical shift in in EMD of **Health Centre and Dispensary**

	EM specialist	Clinician	Nurse	Health attendant	Pharmacist/Tech	Social welfare	M/Records	Cashier
Reception	0	0	0	1	0	0	0	0
Triage	0	0	1	0	0	0	0	0
Treatment	0	1	0	0	0	0	0	0
Resuscitation	0	0	1	0	0	0	0	0
Procedure	0	0	0	0	0	0	0	0
POC room	0	0	0	0	0	0	0	0
Pharmacy	0	0	0	0	0	0	0	0
Registration	0	0	0	0	0	0	0	0
Cash/Billing	0	0	0	0	0	0	0	0
Social welfare	0	0	0	0	0	0	0	0
Sluice	0	0	0	1	0	0	0	0
Total	0	1	2	2	0	0	0	0

4.15. Emergency Medicine Department Financing

The implementation of emergency care services delivery will depend on the financial resources allocated and given special consideration within the Hospital level. There are many competing priorities for government funding compare to the resources available, emergency care services activities will save life and increase the quality of healthcare in the country as per HSSP IV, which aims to increase the share of total government expenditure allocated to health from 9.1% in 2015 to 10.0% by 2020. Strengthening emergency care services in the country will reduce the treatment cost in the country.

The opening of the first full capacity public EMD in Tanzania has shown that the practice of emergency care in Tanzania can generate revenue from patients who are able to cost-share, and insured patients, as such supporting sustainability of high-quality care which reduces morbidity and mortality. This approach might be replicable across different level of hospitals, if hospitals dedicate resources to the EMD to enable high quality services to attract patients, and provide non-clinical human resource support for financial and supplies management.

4.16. Build Research and Training Capacity Around Emergency Care Systems

Research and training are an integral component of education, quality improvement and capacity building. At present, few facilities in Tanzania conduct autonomous research around emergency care. Currently EMAT is coordinating research efforts in Tanzania and may serve as a resource for individuals or institutions in need of guidance and mentorship in research. WHO provides resources, including standardized data sets, standardized clinical forms and a web-based emergency care registry platform to support systematic incorporation of research and analysis into emergency care practice?

4.17. Strengthening the capacity of professional societies in SECG implementation

Professional societies, such as EMAT, have a strong role in ensuring emergency care providers continue to provide quality emergency care services. Officially defining their role in supervision and implementation, and engaging them in site development, will show a clear commitment to the training of a new generation of professionals and improving of the service that they provide.

CHAPTER 5

MONITORING AND EVALUATION FRAMEWORK

In order to monitor emergency care capacity at a facility and national level and measure the impact of the National Guidelines for Emergency Care Services, a monitoring and evaluation framework must be developed. Monitoring and evaluation is a process of continuous measurement, reporting and review of key indicators that informs the management decisions at a facility, regional and national level.

5.1. Baseline Assessment

The guideline regional and district sites in establishing emergency departments that meet minimum standards. Prior to establishing an emergency department each site should conduct an assessment of the current state of emergency care at their facility. The guideline Appendices provide clear guidance and a checklist for this assessment. Through the assessment the gaps can be identified and prioritized. This assessment should be repeated after establishing a new emergency department and at regular intervals to understand the progress towards providing quality emergency care.

5.2. Emergency care clinical indicators

The MoHCDGEC recommends that standard data points should be reported to help implement the guideline and monitor its impact. MoHCDGEC provides resources, including standardized data sets, standardized clinical forms and a web-based emergency care registry platform to support systematic incorporation of research and analysis into emergency care practice. MoHCDGEC recommendations for candidate emergency care indicators appear below.

5.2.1 Emergency patient volume

- i. A standard emergency logbook/register should be made for reporting case volume, case mix, risk adjustment factors, grade of provider.
- ii. This logbook should be reported and tracked on a monthly basis via Health management information system/trauma registry at a national level.
- iii. At a facility level, the logbook should be tracked and reported at the monthly National Guidelines for Emergency Care Services meeting.
- iv. Cadres of the staff providing care should be tallied to gain an understanding of what providers are contributing to emergency care in Tanzania.

5.2.2 Emergency Medicine Department Morbidity and Mortality

- i. Emergency Medicine Department mortality should be tracked and reported at the health facility, District, Regional and National level.
- ii. Emergency Medicine Department mortality should be split between deaths that occurred at EMD, deaths that occurred on the way to the ward and brought in dead.
- iii. The morbidity and mortality of the following specific clinical conditions should be reported as part EMD mortality
 - a. **Mortality from trauma:** reported as percentage of patients with trauma-related chief complaint who die within 24 hours of EMD presentation (*Numerator: number of deaths from trauma within 24 hours of EU presentation and the Denominator: number of patients with trauma-related chief complaints*).
 - b. **Mortality from lower respiratory tract infection (LRTI) (in adult):** reported as percentage of adult patients with diagnosis of LRTI who die within 24 hours of EMD (*Numerator: of adult patients who die from LRTI within 24 hours of EMD presentation and the Denominator: of adult patients who have a diagnosis of LRTI*).
 - c. **Mortality from lower respiratory tract infection (in paediatrics):** reported as percentage of paediatrics under 5 years patients with diagnosis of LRTI who die within 24 hours of EMD (*Numerator: of patients under 5 years who die from LRTI within 24 hours of EMD presentation and the Denominator: of under 5 years patients who have a diagnosis of LRTI*).
 - d. **Sepsis morbidity** (from specific conditions example: Malaria, Pneumonia, neonatal sepsis, measles, HIV) *Morbidity indicator: percentage of patients with diagnosis of sepsis given antibiotics*

during EU length of stay. Also additional indicator is the percentage of adult patients with SBP less than 90 mmHg given intravenous fluid.

e. Obstetric emergencies (Maternal health includes: Post partum haemorrhage, eclampsia/pre-eclampsia, ectopic pregnancy) *Morbidity indicator: percentage of patients with diagnosis of eclampsia or pre-eclampsia receiving magnesium, percentage of adult patients with SBP <90 mm Hg given intravenous fluid, of patients with active bleeding who have physical maneuvers applied to control haemorrhage, of patients with postpartum haemorrhage who receive pharmacological manoeuvres to control bleeding, of patients with diagnosis of sepsis given antibiotics during EMD length of stay).*

5.2.3 Access to emergency services

- i. Monitor number of facilities providing 24-hour access to services
- ii. Once established, emergency volume data and emergency referrals data can be used to track service delivery at each facility
- iii. Establishment of EMS logs should be used to determine the proportion of the population who have access to emergency services within 1-hour on a yearly basis.

5.2.4 Emergency care short courses for provider

- i. Basic Emergency Care, Basic and advanced life support / Primary trauma care/ advanced trauma care and other courses for providers can be reported annually to the electronic human resource for health tracking system.
- i. The ratio of emergency care short course trained providers and Emergency specialists to population should be calculated and reported nationally
- i. Emergency care and non-emergency services provided by emergency care providers and emergency specialists should be reported up to national level.

5.2.5 Proportion of seriously injured patients transported by ambulance

Trauma registries at each facility should track the mode of transport for each admitted injured patient.

5.3. Emergency Medicine Department assessment tools

The MoHCDGEC recommends the use of validated tools to perform assessment of EMD. In this aspect, the Ministry has adopted and modified the World Health Organisation emergency unit assessment tool, and developed context appropriate tools that shall be used to assess all the EMD in Tanzania. This too is described in appendix 2 below.

CHAPTER 6

GOVERNANCE FRAMEWORK

Effective leadership and governance will be key to successful implementation of the Emergency care guideline. This will be dependent on coordination amongst broad range of stakeholders. A clear chain of accountability must be established at all levels from facility teams up to the national level at the MOHCDGEC.

6.1 National level

SECG will be Operationalized by the Department of Curative Services within the MOHCDGEC in collaboration with the Director of Health Services and Nutrition from PO-RALG. During disaster response, the activation of facilities will follow the national incident management system (IMS through the Emergency Operational Centre (EOC).

Roles and responsibilities .

- To develop and review emergency care guideline, policy, strategic plans, protocols and SOPs.
- Mobilization of resources for provision of emergency care in the country
- Coordination of the stakeholders and NGOs to support emergency medicine development
- To ensure planning and roll out of emergency care delivery
- Conduct planned monitoring and evaluation of emergency care delivery
- Collaborate with other sectors in emergency care delivery

6.2 The Quality Assurance Team

Supervision and monitoring of SECG operationalization will be coordinated by Emergency Preparedness and Response Unit. However, internal quality assurance and day to day operations in all RRH and sub national levels will be done by DCS in collaboration with PO-RALG.

6.3 Regional level (Regional Health Management team)

Each regional health management team should designate an SECG representative to oversee and coordinate the implementation of emergency care delivery. The regional health management team will be responsible for:

- The collection of data from the hospital
- Reporting of emergency care indicators to the national level
- Facility visit to supervise SECG implementation
- RHMT will be responsible for collating and disseminating best practice information to the hospital
- Coordination of the stakeholders and NGOs to support emergency medicine development

6.4 District level (Council Health Management team)

Each Council health management team should designate an SECG representative to oversee and coordinate the implementation of emergency care delivery. The Council health management team will be responsible for:

- The collection of data from the hospital
- Reporting of emergency care indicators to the national level
- Facility visit to supervise SECG implementation
- CHMT will be responsible for collating and disseminating best practice information to the hospital
- Coordination of the stakeholders and NGOs to support emergency medicine development

6.5 Facility level

Facility director/ in charge: will be responsible for ;

- ☐ Oversight of SECG activities

- ☐ Setting up and monitoring with baseline and ongoing data collection activities at the facility level
- ☐ Assigning a SECG champion responsible for moving the emergency care agenda forward
- ☐ Assign EMD leader and supervisors
- ☐ Allocate and mobilize resources for emergency care services
- ☐ Ensure availability of necessary equipment, supplies and drugs
- ☐ Ensure inclusion of SECG in facility health plan
- ☐ Oversee the development of a facility plan that reflects in improving emergency care services in the facility

Head of Emergency Medicine Department

Each facility providing emergency care services will have an identified head of emergency care services. The head of emergency care services will be responsible for:

- ☐ Coordinating department and hospital policies.
- ☐ Mobilising and motivating the facility emergency team (clinical and non-clinical), ensuring the team works together and feels valued.
- ☐ Developing a protocols and guidelines and action plan for the facility which will be reviewed by the hospital director
- ☐ Supporting the implementation of the SECG in the facility
- ☐ Coordinating collection of emergency monitoring data
- ☐ Coordinating, with the Quality Improvement Team (QIT) at the facility, to ensure that SECG recommendations are implemented
- ☐ Arranging internal meeting to discuss mortality and morbidity, review emergency data monthly and discuss opportunities for quality improvement around emergency care.
- ☐ Supporting emergency training to clinical and non-clinical staff in the facility

Emergency Medicine Block manager /nurse supervisor

Each facility providing emergency care services will have an identified Block Manager who shall have the following responsibilities

1. Overseeing all nursing care and patient welfare at Emergency Medicine Department
2. Act as secretary for the SECG in the department
3. Oversight of day to day activity of the Emergency Medicine Department
4. Along with the head of EMD, represent Emergency Department to hospital management

6.6 Non-governmental stakeholders

Professional societies

The Professional societies will be responsible for the following:

- ☐ Conduct research whose findings will help MoHCDGEC to develop evidence based emergency guidelines.
- ☐ To conduct advocacy via newsletters, congresses, meetings and conferences on importance of emergency care.
- ☐ Develop curricula for training programs in collaboration with the ministry of health, PO-RALG and other stakeholders.
- ☐ Providing CPDs for continue professional development for quality assurance of education and continuing professional education

NGOs and implementing partner organizations

These organizations will be responsible for the following:

- ☐ Ensure that their projects are aligned with the priorities set out in the SECG
- ☐ Coordinate with the SECG steering committee to ensure coordination between activities and avoid duplication
- ☐ Coordinate with the MOCDGEC and PO-RALG health systems strengthening resource centre to be sure that resources across SECG and other sectors are being fully leveraged and captured.
- ☐ To support the ministry in roll out of emergency care across the country.
- ☐ To support the Dissemination and advocacy of Emergency Care Guideline across the country

CHAPTER 7

DISSEMINATION AND ADVOCACY

Forthwith to endorsement by the management of the MOHCDGEC, the Guideline will be launched and disseminated via hard, soft copies and trainings to the relevant levels of health care and will be published in the MOHCDGEC website. The MOHCDGEC, PORALG and implementing partners will mobilize resources, and develop schedule of dissemination to ensure that the guideline is shared at different levels of health care provision, and across all sectors

APPENDICES

Appendix 1: Emergency Medicine Department Assessment Tool

i. Facility Characteristics

Identifying Information

1.1.1	Date			
1.1.2	Name of facility			
1.1.3	Address of facility (include city, state or province)			
1.1.4	GPS Reading (if available)	Latitude:	<u>Degrees</u>	<u>Minutes</u>
		Longitude:	<u>Seconds</u>	
1.1.5	Name person filing out form			
1.1.6	Facility Contact(s)	Name:	Phone:	Email:
		Name:	Phone:	Email:
1.1.7	Level of facility*	<input type="checkbox"/> Health centre or clinic (1) <input type="checkbox"/> 1 st level hospital (2) <input type="checkbox"/> 2 nd level hospital (3) <input type="checkbox"/> Tertiary hospital (4)		
1.1.8	Type of facility	<input type="checkbox"/> Private hospital (1) <input type="checkbox"/> NGO hospital (2) <input type="checkbox"/> Government hospital (3)		
1.1.9	Distance to nearest higher level facility:			
1.1.10	Is there an area (room, unit, department) specifically designated for emergency care?			Yes (1) No (2)
1.1.11	Population served by facility (e.g., 123,000):			
1.1.12	Interview Start Time (Use 24 hr clock system):			

ii. Facility Metrics

Descriptor		Number
1.2.1	Emergency unit visits per year	
1.2.2	Outpatient visits per year (excluding emergency unit visits)	
1.2.3	Inpatient admissions per year	
1.2.4	Beds/gurneys dedicated for general emergency care (not including inpatient beds)	
1.2.5	Inpatient hospital beds	
1.2.6	Functioning operating theatres (24/7)	
1.2.7	Functioning high acuity unit (e.g. ICU) beds with capacity for continuous monitoring and mechanical ventilation	
1.2.8	Emergency operations per year	
Available hours		
1.2.9	During which hours is the emergency unit covered by providers who are <u>physically</u> present in the unit?	
1.2.10	During which hours is the emergency unit covered by providers who are on call, <u>inside</u> the facility?	
1.2.11	During which hours is the emergency unit covered by providers who are on call <u>outside</u> the facility?	
Opening hours of:		
1.2.12	Emergency Unit	
1.2.13	Laboratory	
1.2.14	Pharmacy	
1.2.15	Radiology	
1.2.16	Operating Theater	
1.2.17	Comments:	



iii. Infrastructure and essential equipment

Rating: 1 - Generally unavailable, 2 - Some availability, 3 – Adequate

Infrastructure Element		Rating (1-3)	Comments (if rating < 3)
1.3.1	Clean, running water		
1.3.2	Electricity source (e.g., wired, generator)		
1.3.3	Designated telephone or radio for communicating with other facilities and/or prehospital providers		
1.3.4	Paper-based emergency unit chart		
1.3.5	Electronic emergency unit chart		
1.3.6	Isolation room for infectious diseases (e.g., TB, haemorrhagic fever)		
1.3.7	Easy physical access to emergency unit for those requiring a wheelchair or stretcher		
1.3.8	Designated waiting area		
1.3.9	Designated triage area		
1.3.10	Designated resuscitation area		
1.3.11	Personal protective equipment (e.g., hair covers, eye protection, N95 face masks, impermeable gowns, shoe covers, gloves) in a range of sizes		
1.3.12	Electronic cardiac monitoring in emergency unit		
1.3.13	Crash trolley or code cart with high-acuity equipment and supplies of various sizes in emergency unit		
1.3.14	Rapid access to a transport ambulance and provider to administer care during transport for patients who need to be transferred to another facility		
1.3.15	Is there a dedicated mechanism (radio, telephone) for communication with other facilities for transfer of patients?		
1.3.16	Is there access to storage space within (or with immediate proximity to) the emergency unit, including secure storage for controlled substances?		
1.3.17	Access to dedicated staff work area (e.g. for paperwork, consultation calls)		
1.3.18	Access to toilet facilities for patients and staff		
1.3.19	Access to handwashing facilities in each patient care area		
1.3.20	System for stocking, managing, and dispensing medications in emergency unit		
1.3.21	Oxygen in emergency unit		

Which of the following methods supply oxygen in this unit?		Yes	No
1.3.22	Oxygen is supplied through a central piped system	1	2
1.3.23	Oxygen is supplied in tanks that are stored on this unit	1	2
1.3.24	Oxygen is supplied by oxygen concentrator stored on this unit	1	2
1.3.25	Emergency unit calls for tank of oxygen from central location if needed	1	2
1.3.26	Emergency unit calls for oxygen concentrator from central location if needed	1	2
1.3.27	Comments:		

iv. Diagnostic Services

Rating: 1 - Generally unavailable, 2 - Some availability, 3 - Adequate (For rating < 3, mark all relevant barriers) [For data entry: code any marked barriers as 1, unmarked barriers as 2]

Descriptor		Rating (1-3)	Infrastructure	Absent Equipment	Broken Equipment	Stock out (Supplies)	Training	Personnel	User fees	Opening hours	Other (specify in comments)
Laboratory-based Testing											
1.4.1	Hemoglobin										
1.4.2	Full blood count										
1.4.3	Coagulation profile (PT/PTT)										
1.4.4	Electrolytes										
1.4.5	BUN and creatinine										
1.4.6	Lipase										
1.4.7	Cardiac marker (e.g., troponin)										
1.4.8	Arterial blood gas										
1.4.9	Cross matching for blood and blood products										
1.4.10	Blood cultures										
1.4.11	Capacity to obtain sterile blood samples for lab testing										
1.4.12	System for reporting lab results in a timely fashion										
Point of Care Testing – available in the emergency unit											
1.4.13	Urine dipstick										
1.4.14	Urine pregnancy										
1.4.15	Glucose										
1.4.16	Malaria Rapid Diagnostic Test (RDT)										
1.4.17	Rapid HIV testing										
Diagnostic imaging											
1.4.18	Stationary X-ray										
1.4.19	Portable X-ray for use in emergency unit										
1.4.20	Ultrasound in the hospital										
1.4.21	Ultrasound for use in emergency unit										
1.4.22	CT scan										
1.4.23	System for reporting radiology results in a timely fashion										
1.4.24	Comments:										

v. Human Resources

Emergency Care Clinical Providers

2.1.1	Do you have a core of fixed (non-rotating) providers permanently assigned to the emergency unit?	Yes (1)	No (2)
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Descriptor		Total Number	Number of licensed or certified
Number of <u>non-rotating</u> providers assigned to emergency unit			
2.1.2	Nurses/nurse midwives		
2.1.3	Mid-level provider or advance practice nurses (e.g., clinical officers or nurse practitioners)		
2.1.4	Medical officers (doctors without specialist training)		
2.1.5	Emergency medicine specialists		
2.1.6	Other specialist doctor		
Number of <u>rotating</u> providers assigned to emergency unit			
2.1.7	Nurses/nurse midwives		
2.1.8	Mid-level provider or advance practice nurses (e.g., clinical officers or nurse practitioners)		
2.1.9	Medical officers (e.g., doctors without specialist training)		
2.1.10	Emergency medicine specialists		
2.1.11	Other specialist doctor		
2.1.12	Comments:		

vi. Consulting Services Available to the Emergency Unit

Rating: 1 - Generally unavailable, 2 - Some availability, 3 – Always available

Consulting Service		Rating (1-3)	Comments
2.2.1	General Surgery		
2.2.2	OB/GYN		
2.2.3	Orthopedics		
2.2.4	Anesthesia		
2.2.5	Paediatrics		
2.2.6	Psychiatry		
2.2.7	Other (Please list):		

vii. Ancillary Services available to the emergency unit

Rating: 1 - Generally unavailable, 2 - Some availability, 3 – Always available

Ancillary Service		Rating (1-3)	Comments
2.3.1	Social work services		
2.3.2	Patient transport services (personnel with wheelchairs and/or gurneys)		
2.3.3	Security personnel assigned to emergency service area		

viii. Clinical Services

Access

3.1.1	What proportion of patients with emergency conditions are brought to the facility by ambulance with formally trained prehospital care providers?	_____ %	Don't know
3.1.2	Are there regulations and/or protocols mandating that acutely ill or injured patients are clinically triaged prior to being required to register?	Yes(1)	No(2)
3.1.3	Does the facility require repayment prior to provision of initial emergency care?	Yes(1)	No(2)
3.1.4	Is there an electronic system for registration?	Yes(1)	No(2)
3.1.5	Comments:		

ix. Triage

		Yes	No
3.2.1	Are vital signs measured in triage area?	1	2
3.2.2	Does this facility use a formal triage system (includes a structured triage tool, such as the WHO-ICRC integrated triage tool, used by trained personnel)? If no triage protocols, tick box and skip to 3.3 []	1	2
3.2.3	Are there time targets for each triage category (e.g., YELLOW—seen by provider within 2 hours)?	1	2
3.2.4	If there are time targets, is compliance tracked regularly?	1	2
3.2.5	Are there specific triage protocols for children <5 years of age?	1	2
3.2.6	Are there specific triage protocols for pregnant women?	1	2
3.2.7	Comments:		

x. Guidelines, protocols and checklists

Are the following written protocols available at this facility? [] No written protocols (if no written protocols in the unit, tick box above and go directly to section 3.4)		Yes	No
3.3.1	Protocol for systematic triage that ensures patients are seen in order of acuity	1	2
3.3.2	Syndromic surveillance guidelines with links to public health officials for case definition and reporting	1	2
3.3.3	Clear protocol for communication with hospital administration during times of overcrowding	1	2
3.3.4	Emergency units specific emergency response protocol, including protocol for mass casualty incidents	1	2
Are the following clinical management protocols available at this facility?			
3.3.5	Protocol for initial approach to ABCDs (airway, breathing, circulation, basic neurologic function)	1	2
3.3.6	Trauma care checklist	1	2
3.3.7	Medical resuscitation checklist	1	2
3.3.8	Protocol for neonatal resuscitation	1	2
3.3.9	Protocol for volume resuscitation of children and adults	1	2
3.3.10	Protocol for adjusting interventions for malnourished patients	1	2

3.3.11	Protocol for post-exposure prevention of STI/HIV, emergency contraception, counseling	1	2
3.3.12	Protocol for management of labor and delivery in low risk women	1	2
Condition-specific management protocols for:			
3.3.13	Asthma exacerbation	1	2
3.3.14	Pneumonia	1	2
3.3.15	Maternal hemorrhage	1	2
3.3.16	Sepsis	1	2
3.3.17	Diabetic ketoacidosis	1	2
3.3.18	Other: _____	1	2
Are the following admission or discharge protocols available at this facility?			
3.3.19	Acuity-based internal transfer protocols to OR or ICU	1	2
3.3.20	Protocol for timely disposition from the emergency unit	1	2
3.3.21	Protocol for conveying information about discharge or disposition to the patient	1	2
3.3.22	Hand-over protocols when transferring patients from one care provider to another	1	2
Are the following outside transfer protocols available at this facility?			
3.3.23	Condition-specific transfer or referral protocols (e.g., criteria for transfer of burn patient to burn centre)	1	2
3.3.24	Communication with receiving facility prior to transfer of patients with emergency conditions	1	2
Are the following safety protocols available at this facility?		Yes	No
3.3.25	Infection prevention and control protocols	1	2
3.3.26	Protocol for post exposure prophylaxis for health care workers	1	2
3.3.27	Security protocols to protect staff, patients, and infrastructure from violence.	1	2
3.3.28	Protocol for managing hazardous exposures (including designated decontamination area)	1	2
3.3.29	Containment and disposal of sharps and biomedical waste	1	2
3.3.30	Plan to ensure emergency unit staff and patient safety if an incident occurs <i>within</i> the emergency unit (including space, transport, communications)	1	2
3.3.31	Comments:		

xi. Quality improvement in the emergency unit

Are the following conducted in the emergency unit?		Yes	No
3.4.1	Systematic process for collecting patient data that links condition, management and outcomes (e.g., trauma registry)	1	2
3.4.2	Regular meetings convened to use clinical data for quality improvement (e.g., morbidity and mortality conferences, preventable death panels)	1	2
3.4.3	Tracking (e.g., clinical audit) to ensure that quality improvement actions (e.g., corrective action) are implemented after review meetings	1	2
3.4.4	Clinical document template (e.g., standardized clinical chart)	1	2
3.4.5	Has there been a visit to this emergency facility by a supervisor from outside the facility within the last 6 months?	1	2
3.4.6	Is there any documentation from the most recent external supervisory visit?	1	2
3.4.7	Does the document provide any feedback or comments on some aspect of emergency services?	1	2
3.4.8	Comments:		

xii. Signal Function Performance

(The key informants for this section should be personnel with direct involvement in clinical care delivery) **Rating:**
 1 - Generally unavailable, 2 - Some availability, 3 - Adequate (For rating < 3, mark all relevant barriers) [For data entry:
 code any marked barriers as 1, unmarked barriers as 2]

VITAL SIGNS, AIRWAY & BREATHING INTERVENTIONS		Rating (1-3)	<i>Infrastructure</i>	<i>Absent Equipment</i>	<i>Broken Equipment</i>	<i>Stock out (Supplies)</i>	<i>Training</i>	<i>Personnel</i>	<i>User fees</i>	<i>Opening hours</i>	<i>Other (specify in comments)</i>
Vital Signs											
4.1.1	Are vital signs measured in the triage area?										
4.1.2	Are vital signs measured in the Emergency Unit?										
Airway Interventions											
4.2.1	Use of manual maneuvers (e.g., jaw thrust, chin lift)										
4.2.2	Use of suction										
4.2.3	Placement of oro- or naso-pharyngeal airway device										
4.2.4	Placement of supraglottic device (e.g., LMA)										
4.2.5	Endotracheal intubation										
4.2.6	Creation of surgical airway										
Breathing Interventions											
4.3.1	Measurement of oxygen saturation at triage										
4.3.2	Measurement of oxygen saturation in emergency unit treatment area										
4.3.3	Administration of bronchodilator for reactive airway disease										
4.3.4	Administration of oxygen										
4.3.5	Bag-valve-mask ventilation										
4.3.6	Non-invasive mechanical ventilation (BiPAP, CPAP)										
4.3.7	Invasive mechanical ventilation										
4.3.8	Needle decompression of tension pneumothorax										
4.3.9	Placement of chest tube										
4.3.10	Comments:										



Rating: 1-Generally unavailable, 2-Some availability, 3-Adequate (For rating <3, mark all relevant barriers) [For data entry: code any marked barriers as 1, unmarked barriers as 2]

CIRCULATION INTERVENTIONS		Rating (1-3)	Infrastructure	Absent Equipment	Broken Equipment	Stock out (Supplies)	Training	Personnel	User fees	Opening hours	Other (specify in
Volume Resuscitation											
4.4.1	Administration of oral rehydration										
4.4.2	Peripheral IV placement										
4.4.3	Intraosseous access										
4.4.4	Venous cutdown										
4.4.5	Central venous line placement										
4.4.6	IV fluid administration										
4.4.7	Adjustment of fluid resuscitation for malnutrition or severe anaemia										
4.4.8	Urinary catheter placement										
Control of Bleeding											
4.5.1	External control of haemorrhage										
4.5.2	Wound packing and/or suture placement to control bleeding										
4.5.3	Tourniquet placement										
4.5.4	Pelvic binding placement										
4.5.5	Safe transfusion (e.g., including screened blood, maintenance of sterility, monitoring)										
4.5.6	Point of care ultrasound (performance and interpretation)										
Cardiac Interventions											
4.6.1	Pericardiocentesis										
4.6.2	External defibrillation and/or cardioversion										
4.6.3	External cardiac pacing										
4.6.4	Adrenaline administration										
4.6.5	ECG with interpretation										
4.6.6	Aspirin administration for ischemia										
4.6.7	Thrombolytic administration for MI										
4.6.8	Comments:										

Rating: 1-Generallyunavailable,2-Someavailability,3–Adequate(Forrating<3,markallrelevantbarriers) [For data entry: code any marked barriers as 1, unmarked barriers as 2]

NEUROLOGIC INTERVENTIONS		Rating (1-3)	Infrastructure	Absent Equipment	Broken Equipment	Stock out (Supplies)	Training	Personnel	User fees	Opening hours	Other (specify in comments)
Unconscious patient											
4.7.1	Point of care glucose testing										
4.7.2	Glucose administration for hypoglycemia										
4.7.3	Lumbar puncture										
Seizure											
4.7.5	Protection from secondary injury										
4.7.6	Benzodiazepine administration										
4.7.7	IV magnesium administration (for eclampsia)										
Other											
4.7.8	Mental status examination										
4.7.9	Extreme temperature management (hyper- or hypothermia)										
4.7.10	Safe physical restraint										
4.7.11	Medication administration for agitation										
4.7.12	Procedural sedation										
4.7.13	Relevant antidote administration for toxic exposure (eg, atropine, naloxone, anti-venin).										
	Comments:										

SEPSIS INTERVENTIONS		Rating (1-3)	Infrastructure	Absent Equipment	Broken Equipment	Stock out	Training		User fees	Opening hours	Other (specify in comments)
4.8.1	IV antibiotic administration										
4.8.2	IV vasopressor administration										
4.8.3	Diagnostic paracentesis										
4.8.4	Bedsideminiorsurgicaltechniquesforinfectious source control (e.g., abscess)										
	Comments:										

Rating: 1-Generallyunavailable,2-Someavailability,3–Adequate(Forrating<3,markallrelevantbarriers) [For data entry: code any marked barriers as 1, unmarked barriers as 2]

TRAUMA INTERVENTIONS		Rating (1-3)	Infrastructure	Absent Equipment	Broken Equipment	Stock out	Training	Personnel	User fees	Opening hours	Other (specify in comments)
4.9.1	Cervical spine immobilization										
4.9.2	Three-way dressing for sucking chest wound										
4.9.3	Fasciotomy or escharotomy for compartment syndrome										
4.9.4	Opiate analgesia administration										
4.9.5	Fracture immobilization										
4.9.6	Closed reduction of fracture or dislocation										
4.9.7	Antibiotic administration for open fracture										
4.9.8	Initial wound care										
4.9.9	Tetanus vaccination or IVIg as appropriate										
4.9.10	Rabies vaccination or IVIg as appropriate										
	Comments:										

OBSTETRIC INTERVENTIONS		Rating (1-3)	Infrastructure	Absent Equipment	Broken Equipment	Stockout (supplies)	Training	Personnel	User fees	Opening hours	Other (specify in comments)
4.10.1	Emergency vaginal delivery										
4.10.2	Uterotonic drug (e.g., oxytocin) administration										
4.10.3	Neonatal resuscitation										
	Comments:										

Appendix 2: EMD minimum equipment and consumables

S/N	Equipment and consumables	Primary Health Center	District Hospital Emergency Unit	Referral Hospital Emergency Unit	Comments
		Minimum Quantity	Minimum Quantity	Minimum Quantity	
1	Adult weighing scale	1	1	1	
2	Anal speculum	0	2	2	
3	Arterial blood gas (ABG) machine	0	0	*	* Optional for those with expertise
4	Arterial tourniquet	1	2	4	
5	Autoclave (electric or non-electric) and supplies	1	1	1	
6	Automated external defibrillator (AED)	1	2	3	
7	Autotransfusion set	0	0	2	
8	Bag–valve–mask	1	2	4	
9	Bed pans	2	4	8	
10	Birth kit	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
11	Blood administration set	0	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
12	Blood pressure (BP) cuff (small - large adult)	2	4	6	
13	Body bag	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
14	Bougie	0	2	2	
15	Burr hole set	0	0	2	
16	Capnometry	0	0	1	
17	Cards for communication number distribution	1	1	1	
18	Cautery pens	0	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
19	Cervical collars (small - large)	2	3	6	
20	Chairs	3	4	8	
21	Cheatle forceps and jar	1	2	3	
22	Chest tube insertion set	0	2	4	
23	Chest tubes (10 - 36F)	0	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
24	Child weighing scale (250g graduation)	1	1	1	
25	Cleaning equipment (e.g. buckets, mops, brooms)	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume

S/N	Equipment and consumables	Primary Health Center	District Hospital Emergency Unit	Referral Hospital Emergency Unit	Comments
		Minimum Quantity	Minimum Quantity	Minimum Quantity	
26	Cleaning protective equipment (e.g. thick gloves, boots)	2	3	4	
27	Clock, timer or watch with second hand	1	1	1	
28	Computer(s)	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
29	Condition-specific clinical protocols (electronic or reference cards, ideally integrated into MRS)	1	2	3	
30	Consumable Cabinet	1	2	4	
31	Continuous or bi-level positive airway pressure machine (CPAP, BiPAP)	0	2	4	
32	Cord clamp	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
33	Cotton wool	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined facility utilization
34	CPAP, BiPAP adult mask	0	2	3	
35	CPAP, BiPAP child mask	0	2	3	
36	CPAP, BiPAP neonatal mask	0	1	2	
37	Crash Trolley (cart)	1	2	4	
38	Crutches	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
39	Culture bottles (aerobic and anaerobic)	0	0	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
40	Death kit	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
41	Defibrillator (with manual controls, synchronizing, and cardioversion capabilities)	0	0	1	
42	Defibrillator pads	1	2	3	
43	Defibrillator with pacing capabilities	0	0	1	

S/N	Equipment and consumables	Primary Health Center	District Hospital Emergency Unit	Referral Hospital Emergency Unit	Comments
		Minimum Quantity	Minimum Quantity	Minimum Quantity	
44	Delivery set	2	3	3	
45	Dental set	0	1	2	
46	Digital thermometer (32 - 43 Celsius)	2	4	6	
47	Doppler	0	0	1	
48	Drainage bag for catheters, drains	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
49	Dressing set	2	3	4	
50	Drip Stand	2	6	8	
51	Dual-tube laryngeal mask airway (LMA) (#2 - 7)	0	2	4	
52	ECG machine	0	1	1	
53	ECG paper, leads and suction cups/stickers	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
54	Elastic bandages	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
55	Electronic cardiac monitor	0	1	2	
56	Electronic cardiac monitoring leads	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
57	Endotracheal tubes (#2.5 - 8.5)	0	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
58	ENT set	0	1	2	
59	Environmental disinfectant	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
60	Equipment Tray	1	4	6	
61	Exam lighting (fixed and headlights)	2	4	6	
62	Extension cables	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
63	Facility-based triage protocol and reference poster/card (at least 3 categories for living patients)	1	2	3	
64	Fans	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume



S/N	Equipment and consumables	Primary Health Center	District Hospital Emergency Unit	Referral Hospital Emergency Unit	Comments
		Minimum Quantity	Minimum Quantity	Minimum Quantity	
65	Finger-stick lancets	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined patient volume
66	Fire extinguishing mechanism (e.g. blankets, extinguishers)	2	4	6	
67	Flow regulator dial (for drip rate titration)	0	0	1	
68	Fluid collection bag	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
69	Fluid collection vessel	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
70	Fluid warmer	1	2	3	
71	Glucometer	1	2	3	
72	Glucometer test strips	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined facility utilization
73	Goggles	0	2	4	
74	Hair covers	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
75	Hand disinfectant	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
76	Heating or cooling units	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
77	Heimlich valve and catch bag	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
78	High-acuity patient care protocol (with designated resuscitation area)	1	2	3	
79	HIV rapid testing	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
80	Impermeable aprons	0	4	8	
81	Important telephone number/radio frequency list	1	1	1	
82	In-unit communication system	0	1	1	

S/N	Equipment and consumables	Primary Health Center	District Hospital Emergency Unit	Referral Hospital Emergency Unit	Comments
		Minimum Quantity	Minimum Quantity	Minimum Quantity	
83	Insulin needles and syringes (safety, single use)	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
84	Integrated information management system (allows integration of information from multiple sources about single patient; medical record number)	0	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
85	Intraosseous needle driver (electric or manual)	0	1	1	
86	Intraosseous needle or equivalent (15, 25 and 45mm)	0	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
87	Intravenous infusion set (lines and cannulas size 14 - 24)	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
88	IPC protocols (handwashing, needle safety, waste disposal)	2	3	6	
89	Isolation protocol	1	2	3	
90	Isolation setup	0	1	1	
91	IV poles or hooks	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
92	Kick bucket	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
93	Kidney basins	2	4	8	
94	Laboratory tubes, safe transfer devices and labels	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
95	Laryngoscope set (range of blades and sizes)	0	1	2	
96	Linens (e.g. sheets, pillow cases, towels, patient gowns)	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
97	Long needles for procedure (e.g. 18G, 7.5 - 12cm)	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
98	Lubricating jelly	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined facility utilization



S/N	Equipment and consumables	Primary Health Center	District Hospital Emergency Unit	Referral Hospital Emergency Unit	Comments
		Minimum Quantity	Minimum Quantity	Minimum Quantity	
99	Lumbar puncture needles	0	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
100	Magill forceps	1	2	3	
101	Magnifying loupes	0	1	1	
102	Malaria rapid diagnostic test	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
103	Mask with face shield	0	2	4	
104	Measuring tape or marked object to measure children (e.g. length, head circumference, MUAC)	1	2	3	
105	Mechanical Ventilation	0	1	2	
106	Medical records platform for documenting care (e.g. registration, substrate of QI, epidemiologic monitoring)	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
107	Metered dose inhaler spacer	0	1	2	
108	Minor surgical set	2	4	6	
109	Mobile storage furniture (e.g. trolley)	1	2	4	
110	Multi-size connectors for tubing	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
111	N-95 respirators	0	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
112	Nasal airways (12 - 36F)	2	4	8	
113	Nasal prongs	2	4	8	
114	Nasal tampons or equivalent	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
115	Nasogastric (NG) tube (5 - 18F)	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
116	Nebulization masks (pediatric and adult sizes)	0	2	4	
117	Nebulizer	0	1	2	
118	Nebulizer tubing	0	2	4	
119	Needles (range of gauges and lengths; safety, single use)	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume

S/N	Equipment and consumables	Primary Health Center	District Hospital Emergency Unit	Referral Hospital Emergency Unit	Comments
		Minimum Quantity	Minimum Quantity	Minimum Quantity	
120	Neonatal resuscitation kit	2	3	4	
121	Neonatal-sized bag-valve-mask	1	2	2	
122	Non-rebreather	2	4	8	
123	Non-sterile dressings	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
124	Non-sterile gloves (small, medium, large)	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
125	Non-sterile gowns (multiple sizes)	0	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
126	Non-sterile procedure drapes	2	4	6	
127	Obstetric and gynaecologic examination bed	1	1	1	
128	Oesophageal detector device (e.g. CO2 colorimeter)	0	0	1	
129	Ophthalmoscope	0	1	1	
130	Oral airways (#00 - 6)	2	4	8	
131	Otoscope	0	2	3	
132	Otoscope tips	0	12	24	
133	Oxygen mask	2	4	8	
134	Oxygen tubing	2	4	8	
135	Paediatric length-based tape (e.g. Broselow tape)	1	2	2	
136	Paediatric size Magill forceps	1	1	2	
137	Paediatric sizes for blood pressure cuffs	1	2	3	
138	Paediatric sizes for cervical collars	1	2	4	
139	Paediatric sizes for laryngoscope	0	1	2	
140	Paediatric sizes for oxygen masks	2	4	8	
141	Paediatric-sized bag-valve-mask	1	2	4	
142	Patient slide for stretcher transfers	2	4	6	
143	Patient tags (eg. bracelets)	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
144	Patient Wheelchairs	2	4	6	
145	Peak-flow meter	0	1	2	



S/N	Equipment and consumables	Primary Health Center	District Hospital Emergency Unit	Referral Hospital Emergency Unit	Comments
		Minimum Quantity	Minimum Quantity	Minimum Quantity	
146	PEEP valve for bag-valve-masks	0	1	3	
147	Penlight or headlamp	1	4	6	
148	Physical Restraints	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
149	Plaster cast remover	1	2	2	
150	Plaster of paris or equivalent	0	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
151	Point of Care Hemoglobin/Hematocrit testing	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
152	Portable Oxygen canister	2	4	8	
153	Post-exposure prophylaxis for HIV (for patients and providers)	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
154	Prehospital, transfer and admission protocols	1	2	3	
155	Pressure bag for IV infusion	0	2	4	
156	Primary and backup power supplies (wired or generator, solar augment)	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
157	Primary and backup water sources (e.g. bladder, tank) and hosing if needed	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
158	Protocol for maintaining and monitoring cold chain	1	2	3	
159	Protocol for monitoring of expiry, stock and orders	1	2	3	
160	Pulse oximetry	2	4	6	
161	Quality controls for glucometer	0	1	1	
162	Quality improvement program toolkit	1	2	3	
163	Rapid infusion catheter set	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
164	Red and yellow plastic bags	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
165	Refrigerator with thermometer	1	1	1	

S/N	Equipment and consumables	Primary Health Center	District Hospital Emergency Unit	Referral Hospital Emergency Unit	Comments
		Minimum Quantity	Minimum Quantity	Minimum Quantity	
166	Registration form with patient contact information	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
167	Rescue blankets	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
168	Resuscitation content and checking protocol	1	2	3	
169	Rubish bags	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
170	Safe biological waste disposal containers	2	3	6	
171	Safe biological waste disposal protocol	1	2	3	
172	Safe final disposal of biological waste	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
173	Safe final disposal of sharps	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
174	Sample transport containers	1	2	2	
175	Sanitary pads	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
176	Screening protocol (mechanism for designating active case definitions, identifying cases, and reporting back to public health system)	1	2	3	
177	Seldinger technique line/tube insertion kit	0	1	2	
178	Sharps disposal (single use cardboard box or locked plastic box; puncture proof; lid closes when 3/4 full)	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
179	Sheet or binder for pelvic fractures	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
180	Shoe covers	2	6	8	
181	Shortwave radio or dedicated telephone line	1	1	1	



S/N	Equipment and consumables	Primary Health Center	District Hospital Emergency Unit	Referral Hospital Emergency Unit	Comments
		Minimum Quantity	Minimum Quantity	Minimum Quantity	
182	Soap	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
183	Specimen bags for safe transport	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
184	Specimen containers	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
185	Splint material	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
186	Standardised clinical chart (e.g. paediatric, medical, trauma, obstetric)	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
187	Sterile dressings	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
188	Sterile gauze drum	1	2	3	
189	Sterile gloves (size 6 - 8)	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
190	Sterile gowns (multiple sizes)	0	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
191	Sterile procedure drapes	2	4	6	
192	Sterile specimen containers	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
193	Sterilisation protocol and posters	1	2	3	
194	Stethoscope	2	4	6	
195	Stretchers and gurneys (wheeled stretchers)	1	2	4	
196	Suction catheters	2	4	8	
197	Suction collection vessel	2	4	8	
198	Suction device: manual (bulb) or foot pump	1	2	4	
199	Suction device: powered (electric or pneumatic)	0	1	2	
200	Suction tubing (#10 - 16)	2	4	8	
201	Supplies and equipment storage and organization system (eg. shelving, drawers)	1	2	3	

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		Minimum Quantity	Minimum Quantity	Minimum Quantity	
202	Surgical cricothyroidotomy set	0	1	2	
203	Surgical mask	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
204	Suture tray	2	4	6	
205	Sutures (absorbable and non-absorbable; sizes 2-0 - 6-0)	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
206	Syringe (2, 5, 10, 20, 50cc)	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
207	Syringe (60cc catheter tip)	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
208	System for recording and executing orders	0	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
209	System to record care and provide transition instructions	0	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
210	Tables or desks	2	4	4	
211	Tape (i.e. plaster)	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
212	Tension or traction splint (e.g. hare splint)	0	2	4	
213	Tongue depressors	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined facility utilization
214	Tourniquets for IV start	2	4	6	
215	Tracheostomy tubes (4 - 10mL inner diameter)	0	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
216	Trauma shears	2	4	6	
217	Tubing for needle procedure drainage	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
218	Ultrasound endocavitary probe (3.5 - 11.5MHz)	0	1	1	
219	Ultrasound gel	0	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume



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		Minimum Quantity	Minimum Quantity	Minimum Quantity	
220	Ultrasound machine	0	1	2	
221	Ultrasound probe covers	0	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
222	Ultrasound probes [e.g. curvilinear probe (2 - 5mHz), linear probe (3.5 - 9.5mHz), phased array probe]	0	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
223	Underwater seal system (or equivalent)	0	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
224	Urinals	3	4	8	
225	Urinary catheter (5 - 22F)	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
226	Urine dipstick	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
227	Urine pregnancy test	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
228	Vaginal speculum	0	4	6	
229	Vaseline or paraffin gauze	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
230	Voltage stabiliser	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
231	Ward screens	2	4	6	
232	Water treatment mechanism (chlorine, tester)	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
233	Wheelchairs	2	4	6	
234	Wheeled procedure tray table	1	3	5	
235	White board	Should be available	Should be available	Should be available	This is a consumable: Minimum quantity shall be determined by patient volume
236	X-ray viewing box or digital system	0	1	2	
237	Yankauer or other stiff suction tip	2	4	8	