United Republic of Tanzania

Ministry of Health

National Strategic Plan on Essential Emergency and Critical Care Services (2023-2026)

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FOREWORD

Globally, critical illness results in millions of deaths every year, although many of these deaths are potentially preventable through early identification of patients' problems and provision of timely care. Care for patients with critical illness requires prioritization, coordination and coverage of essential emergency and critical care services.

Effective treatment of the patients with the highest risk of death has the potential to save many lives. Unmet needs of basic care of critical illness have been reported from health facilities in Africa. Improving access to care for critical illness in resource-poor settings is a challenge. Increasing the availability of advanced critical care is constrained by a broader lack of health system resources and capacity. Scaling up critical illness care needs to acknowledge unmet needs at all levels from essential to advanced critical illness care, capacity constraints such as shortages of human resources and a lack of maintained and functioning equipment. One of the solutions is to ensure that lifesaving, essential treatments for critical illness are available for all critically ill patients, an approach that underpins

the need for Essential Emergency and Critical Care services (EECC).

To improve outcome for critically ill patients, EECC is important by means that are feasible in all health care facilities. EECC is not defined by location but spans the continuum of care from the outpatient and emergency department to other units such as the Operating Room, the Wards, High Dependency Units, and Intensive Care Units. EECC aim at: identifying clients that are critically ill and in need of urgent care; provision of timely life-saving care that supports and stabilizes falling vital organs functions; and provision of care at low cost.

Healthcare providers should note that EECC does not include the definitive care of the underlying diagnosis. Instead, EECC is intended to compliment all other services that should be provided to clients following the treatment guidelines based on the patient's diagnosis.

To improve care provided to critically ill patients, the Ministry of Health has developed this National Strategic Plan on EECC Services that will guide stakeholders in implementation of EECC services. Implementation of this strategy will save lives through

effective provision of the prioritized care, and improved quality of care in health systems; this will enhance reduction of preventable death or further disability among clients.

I urge all stakeholders to make use of this strategic plan designed to support policymakers, healthcare workers, development and implementing partners to strengthen national emergency and critical care systems so as to improve the care given to critically ill patients in health facilities in all settings and substantially reduce preventable mortality and disability to patients.

Prof. Abel N. Makubi

Permanent Secretary, (Health)

ACKNOWLEDGEMENT

The development of the National Strategic Plan on Essential Emergency and Critical Care Services (EECC) 2023 - 2026 was successful due to the contributions and active participation of various stakeholders. The plan draws recommendations from evidence-based implementation, epidemic analyses, and global guidance on EECC Services.

The development of this strategic plan has been made possible through combined efforts of the Ministry of Health and financial support from UNICEF. This reminds us of the commitment of development and implementing partners to work with the Ministry of Health in continuing strengthening EECC services towards achieving the desired quality of health care services provided by facilities in the country.

We acknowledge the great technical expertise from: Ministry of Health officials; officials from President's Office, Regional Administration and Local Government; experts from different health facilities; development and implementing partners whose names are appended with appreciation at the end of this strategic plan.

Finally, this plan could only be completed because of the efforts of all the staff at the Emergency Preparedness and Response Unit, led by the Director, Dr. Elias Kwesi who worked tirelessly to make the National Strategic Plan on EECC Services a reality. For this, I express my deepest gratitude.

It is my hope that this National Strategic Plan on EECC Services 2023 – 2026 will effectively be used as a guide for the provision of quality EECC services in our healthcare facilities.

Prof. Tumaini J. Nagu

Chief Medical Officer

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ABBREVIATIONS

CCHP	Comprehensive Council Health Plan
CHMT	Council Health Management Team
CPD	Continuous Professional Development
DHIS2	District Health Information System
DMO	District Medical Officer
EECC	Essential Emergence and Critical Care
e-LMIS	Electronic Logistic management Information System
EMD	Emergency Medicine Department
HCWs	Health Care Workers
HMIS	Health Management Information System
HSSPV	Health Sector Strategic Plan
ICU	Intensive Care Unit
LGA	Local Government Authorities
MDGs	Millennium Development Goals
MoH	Ministry of Health
NCDs	Non-Communicable diseases
POETIC	Provision of Essential Treatment in Critical Illness

PORALG	President Office, Regional Administration and Local Government
PPM	Planned Preventive Maintenance
RHMT	Regional Health Management Team
RMO	Regional Medical Officer
SARA	Service Availability and Readiness Assessment
SOP	Standard Operating Procedures
UNICEF	United National International Children's Emergence Fund
WHO	World Health Organization

EXECUTIVE SUMMARY

Essential Emergency and Critical Care (EECC) is defined as the care that should be provided to all critically ill patients of all ages in health care facilities, it is characterized by prioritization of critical clients, providing life-saving treatment focusing on available and low-cost interventions.

Increasing non-communicable diseases, injuries especially road traffic injuries, pandemics such as COVID-19 has increased the demand for critical services and exposed gaps in our already burdened healthcare system. Despite vast investment by the GoT on critical and essential care, gaps still exist in the primary health care level and beyond the ICUs and EMDs. An assessment showed while surveyed hospitals have 76% of the required resources to offer EECC, only 53% had passed the readiness assessment. Some key gaps include an infrastructure that is not designed for managing critically ill patients, a lack of routines (SOPs and guides) for the prioritization and management of the critically ill.

This strategic plan serves as a foundation to address the gaps, improving and rolling out EECC services and ensure patients

with critical and emergency conditions receive high quality services in all health facilities. This will be addressed through the following objectives and interventions:

Objective 1: To create an enabling environment for provision of quality and accessible EECC services. Policies and governance structures will be developed to guide the provision of EECC services and rollout to all levels of the health system. Two main strategies will encompass this objective. *Strategy 1.1 Policies Development*. The Ministry of Health in collaboration with partners will develop, review, update and disseminate strategic plans and guidelines on EECC. Based on the guidelines; SOPs and protocols will be developed to guide health care providers on service provision. *Strategy 1.2 Leadership and governance.* To ensure quality services delivery, the Ministry will develop and strengthen governance, planning and coordination of EECC services at all healthcare facility levels. The EECC coordinators from national to district level will be selected and oriented. Both external and internal sources of resources for EECC will be advocated and pursued. To improve accountability and performance monitoring, a robust monitoring system will be developed.

Objective 2. Strengthen the capacity of healthcare systems for EECC services. This objective focuses on improving and strengthening the health system ability to provide quality services through the following strategies; *Strategy 2.1 Improve Human Resources capacity for healthcare services delivery*. The government through its partners and health training institutions should work closely to develop and incorporated EECC curriculum for pre-service training. Mentors will be trained and equipped at all healthcare levels for coaching and developing health care workers' core competences in EECC. *Strategy 2.2 Improve Availability of the emergency drugs, medical equipment, equipment, and supplies for EECC*. The Ministry will improve coordination and accountability of EECC supply chain activities, strengthen capacity at all levels to forecast, track and order/procure emergency supplies and equipment. Also advocate for planned preventive maintenance of critical care equipment. Additional staff will be trained in Biomedical Engineering and technical maintenance of equipment and supplies. *Strategy 2.3 Improve Health Management Information System (HMIS).* The Ministry will develop key indicators and M&E tools for EECC, build capacity

on use of data for robust monitoring using existing manual and electronic systems. *Strategy 2.4 Improve EECC Service Delivery*. Continuous quality improvement, regular supervision and clinical audits will be used to ensure quality service provision coupled with implementation research to learn and document optimal strategies for EECC implementation.

Objective 3. Community involvement on access and utilization of quality EECC services. The rollout of EECC across the healthcare will involve community engagement and sensitization on critical illness and care through the following activities; Orient community leaders and community health workers (CHW) on available EECC services in their facilities, Use of both traditional and social media to sensitize community on available EECC services at health facilities.

To ensure successful coordination of this strategic plan, emergency response and preparedness unit will lead overall coordination supported by the regional and district clinical service coordinators. These strategic plan activities will be implemented using integrated approach leveraging other program's resources. We envision the EECC training module

will be incorporated in the other training program such as ETAT, BEmONC and emergency care trainings. Also, EECC supervisions and mentorships will integrated in the routine supervision visits.

1. INTRODUCTION

Essential Emergency and Critical Care (EECC) is defined as the care that should be provided to all critically ill patients of all ages in health care facilities. It is distinguished by three principles. First, priority to those with the most urgent clinical need, including both early identification and timely care. Second, provision of the life-saving treatments that support and stabilize failing vital organ functions. Third, a focus on effective care of low cost and low complexity.[1]

1.1 EECC Key Concepts and Global Perspectives

Critical illness is any acute, life-threatening illness and can occur in anyone irrespective of age, gender, or social status. Critical illness can begin in the community or in Health facilities and does not respect traditional divisions into medical specialties. Patients with conditions such as sepsis, pneumonia, eclampsia, hemorrhage, trauma, peritonitis, asthma, and stroke can all develop critical illness.[1] Critical illness is common throughout

[1] Schell CO, Khalid K, Wharton-Smith A, et al. Essential Emergency and Critical Care: a consensus among global clinical experts. BMJ Global Health 2021;6: e006585.

the world and has high mortality, an estimated 45 million adults become critically ill each year, resulting in several million deaths.[2]

Approximately 20% of hospital in-patients are critically ill and are cared for in all wards and units - in intensive care units, in emergency units, in high dependency units and in general wards. EECC is not always provided to these patients, due to a variety of reasons, leading to substantial preventable mortality. It has been modeled that one million deaths could be averted each year globally if EECC were provided to all critically ill patients.

The clinical care that comprises EECC include but not limited to the following clinical processes such as oxygen therapy, intravenous fluids, and patient positioning to maintain a free airway. It consists of 40 such clinical processes and to provide this care, 66 requirements have been specified, from oxygen delivery devices to intravenous giving sets and oropharyngeal

[2] Adhikari NK, Fowler RA, Bhagwanjee S, Rubenfeld GD. Critical care and the global burden of critical illness in adults. Lancet. 2010 Oct 16;376(9749):1339-46.

airways.[1] All the clinical processes and all the requirements for EECC are designed to be low-cost and are feasible to provide in all healthcare facilities.

1.2 Essential Emergency and Critical Care in Tanzania

The need for EECC has always existed in health care systems. The emergence of the COVID-19 pandemic exposed the need to strengthen this area more seriously because the health system could not offer responsive care to the increased number of critically ill patients whereby significant number of them required a health system that is prepared to provide low cost basic critical and emergency care. In responding to this situation, the ministry of health conducted several trainings to health care workers, focusing on early identification and treatment of suspects and cases needing critical and emergency care, as well as infection prevention and control. However, the direct impact of these trainings towards improved patients care has been limited due to number of factors related to dissemination strategy, knowledge disparities among providers at different levels of care, lack of resources whereas most facilities lack minimum set of basic equipment

used for providing essential emergency and critical care services. Additionally, most of the health care capacity building investment has been highly siloed focusing on specific areas, such as Care for COVID 19 patients, ETAT, IMCI, EmONC among others. Emergency and critical care services are mainly provided at emergency department unit and ICU despite that the fact that, these services are needed in all departments in the health care facilities.

1.3 Foundations for EECC Strategic Plan

Provision of primary health care services is emphasized and grounded in various national strategic documents. The government aims to provide acceptable and accessible quality services throughout the country. The *Third Development Plan 2021-2025* emphasized the strengthening of health services delivery systems and addressing major causes of illness and death. The key priorities identified include improvement in curative services including emergency and critical care, improving emergency and disaster response, and improving referral system across all levels of the health system. The *2007 National Health Policy* mission is to provide quality and

affordable essential health services to all citizens. The national policy focus in scaling the primary health care and service delivery using essential packages at different levels of the health system, the document has noted the need to strengthen emergency and ambulance services. The Health *Sector Strategic Plan V (HSSPV)* provides strategic guidance for health sector in Tanzania, improve emergency being one of the strategies. Using essential health packages and standards of care at each level of health system, the government aims to provide a wide range of health services including emergency and critical care to meet the needs of the citizens. A guideline for the establishment and provision of an effective and efficient emergency medical service (pre-hospital and ambulance services) in Tanzania Mainland has been established. All these effort call upon development of a National Strategic Plan on EECC to enhance proper management of critical patients at all service provision areas within the healthcare facilities.

EECC intersects and synergizes with other capacity building interventions taking place across the health system in Tanzania. EECC facilitates quality improvement in health facilities by improving care and outcomes of patients following emergency

admission, surgery, infectious diseases, NCDs, maternal and neonatal conditions.

1.4 Development Process of the EECC National Strategic Document

The document was formulated using a participatory approach guided by the Ministry of Health. The team consisting of emergency and critical care experts from Health Care Facilities, academic institutions, MoH officials, developing and implementing partners who met to develop the draft outline, key gaps, and priorities in EECC, proposed interventions/outcomes and implementation. Afterwards, a selected team of writers drawn from the workshop participants and led by the Ministry of Health continued to write and expand the document. When the final draft was completed, a validation workshop was convened to review the document, provide inputs and suggestions. These were incorporated in the final document.

2. SITUATIONAL ANALYSIS

2.1 The Burden of Emergency and Critical Care in Tanzania

Despite tremendous improvement in health care delivery in the region over the past decades, emergency-related deaths due to non-communicable diseases and injuries have increased tremendously, while infections, maternal- and infant-related emergencies still remain an important cause of mortality in the country.

While a decline maternal, communicable and neonatal death have decreased, still they remain the largest contributors of death and disability. Also, a rise in non-communicable diseases was noted.

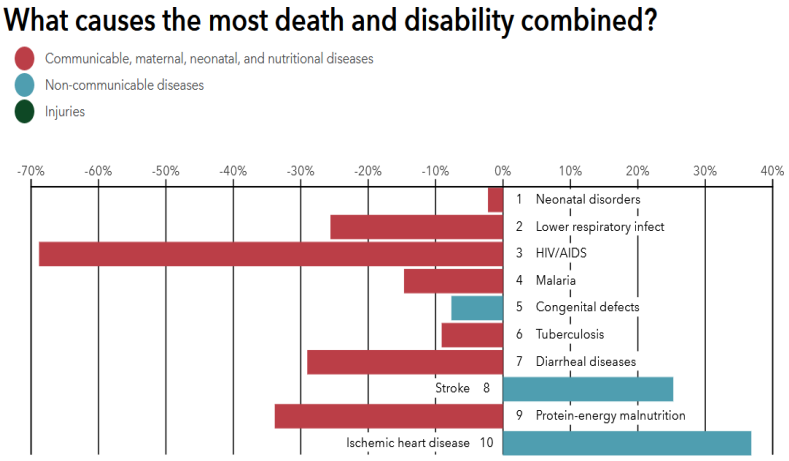

Figure 1. Top 10 causes of death and disability in Tanzania[3]

In addition to the existence of endemic infections that may require emergency services, the COVID-19 underlined the need for robust emergency services at all levels, to meet the demands of such exigencies that erupt and happen at a large scale. Cumulatively, as of 19th September 2022 there were 39,253 reported cases of COVID-19, and 845 deaths.[4] A significant number of the patients would have accessed emergency services, at one time or the other.

[3] https://www.healthdata.org/tanzania
[4] https://covid19.who.int/region/afro/country/tz

Injuries, road injuries, self-harm, falls and other unintentional injuries continue to contribute to morbidity and mortality. Most of these are catered to by trauma and emergency services at various levels of health systems (both pre-hospital and hospital setting). World Health Organization (WHO) reported road traffic injuries (RTI) kill up to 1.3 million people annually and 93% of these deaths are in low- and middle-income countries. Costing these countries up to three percent of their GDP.[5] In Tanzania, the burden of injuries especially road traffic injuries has substantially rose due to an increase of cars and motorcycles. A study in 2012 indicated 9.7% of all hospital visits in all regional district hospitals was due to trauma related complains and RTI contributed to 45% of these injuries.[6] Data from trauma registry in five regional hospitals in Tanzania showed 9.6% of patients seen at emergency department had trauma/injuries and 60% of them was due to RTI. 24 hours mortality was 3.3%, head injuries contributed to 82% of these

[5] https://www.who.int/news-room/fact-sheets/detail/road-traffic-injuries
[6] Sawe, H.R., Mfinanga, J.A., Mbaya, K.R. et al. Trauma burden in Tanzania: a one-day survey of all district and regional public hospitals. BMC Emerg Med 17, 30 (2017).

deaths.[7] With increasing trauma injuries, the need for post-crash care is important to ensure time sensitive interventions are offered and improve survival. This sync with essential emergency and critical care provision at all levels of the healthcare system including pre-hospital.

2.2 Status of Essential Emergency and Critical Care Services in Tanzania

Access to emergency care and people-centered care delivery at all levels of health care, is essential for universal health coverage. The need to design and integrate effective emergency and critical services (ECS) in primary health care (PHC) level should be linked with effective referral systems to other levels. This will enable a rapid response to people's acute care needs, even before a diagnosis is fully established, and ensure the continuity of care and safe transition, when required, from primary to secondary and tertiary levels of health care systems.

[7] Sawe HR, Wallis LA, Weber EJ, Mfinanga JA, Coats TJ, Reynolds TA. The burden of trauma in Tanzania: Analysis of prospective trauma registry data at regional hospitals in Tanzania. Injury. 2020 Dec;51(12):2938-2945

Recognizing this, the government of Tanzania with support from various development partners has continued to improve the ECS across all levels of the health care system. In year 2021, a total of 183 ICU were built or rehabilitated increasing ICU bed capacity from 207 to 988. Also, emergency services were expanded to the district level 101 with new EMD and expanding EMD beds to 795.

Expanding the EECC services will serve to link these efforts with care of patients in the dispensaries, health centers and other parts of the hospital. This is envisioned to save lives of patients with critical conditions before arrival to the specialized care or after a discharge from EMD or ICU units.

2.3 Existing Gaps in Emergency and Critical Care

The WHO health system framework was used to organize the key gaps in emergency and critical care in Tanzania. The Framework has six components or building blocks[8]. Using this approach, key gaps were organized and summarized per each block.

[8] WHO. Monitoring the Building Blocks of the Health System. https://apps.who.int/iris/bitstream/handle/10665/258734/9789241564052-eng.pdf

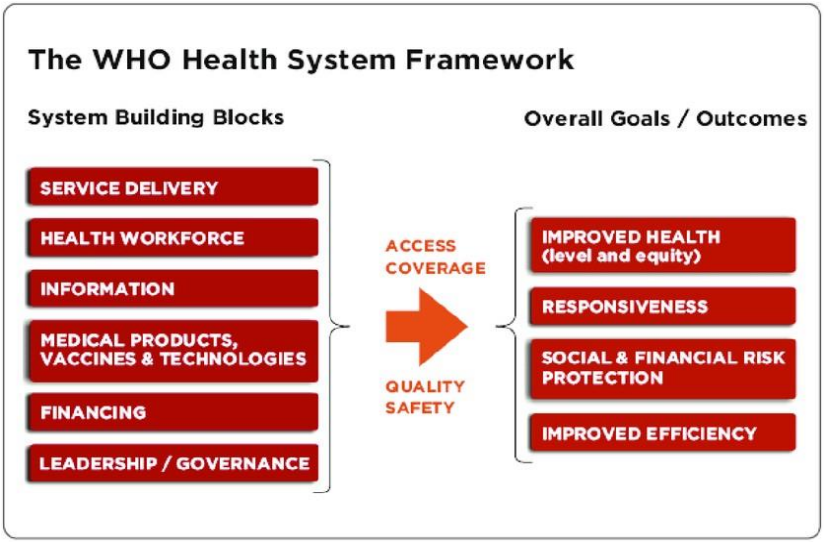

Figure 2. WHO Health System Framework

Service Delivery

Critically ill patients are not always timely identified, and monitoring is not adequately performed. A study done in Tanzania assessing critical care provisions in ten hospitals in four regions showed the weakest parts of EECC to be an infrastructure that is not designed for managing critically ill patients, a lack of routines (SOPs and guides) for the

prioritization and management of the critically ill[9]. Also, some preliminary data showed that resources are available at a facility level in surveyed hospitals (76%) but readiness for timely care of critically ill patients throughout facilities is low (53%)[10]. Interviews with health workers have revealed weaknesses in the provision of EECC in hospitals. Gaps in staffing, availability of equipment and supplies, poor documentation, and inadequate skills in managing critically ill patients resulted in prolonged morbidity and increased mortality.[11] Likewise, a case report conducted in lake zone identified several bottlenecks to appropriate critical care; lack of coordinated acute care referral system that include pre-hospital care and transportation. Inadequately trained health care workers with appropriate skill mix.

[9] Baker, T., Lugazia, E., Eriksen, J. et al. Emergency and critical care services in Tanzania: a survey of ten hospitals. BMC Health Serv Res 13, 140 (2013)
[10] MUHAS, IHI. Provision of Essential Treatment in Critical Illness (POETIC study). 2020-22
[11] Mselle LT, Msengi H (2018) Caring Critically Ill Patients in the General Wards in Tanzania: Experience of Nurses and Physicians. Int J Crit Care Emerg Med 4:047.

Non-functional equipment and inadequate emergency medical drugs and supplies were also observed[12].

Health Workforce

The health workforce can be defined as "all people engaged in actions whose primary intent is to enhance health".[13]

A shortage of health workers can be perceived from the inadequate numbers and skills mix of people being trained or maldistribution of their deployment, as well as losses due to attrition. It has been estimated that countries with fewer than 23 physicians, nurses, and midwives per 10 000 population generally fail to achieve adequate coverage rates for selected primary healthcare interventions, as prioritized by the MDGs.[6]

As a developing country, Tanzania faces shortages in the health workforce and as you move to the lower facilities, shortages are more acute and prevalent. Currently, the country has been able to fill only 48% of the workforce gaps. In addition to the

[12] Renae Stafford, Catherine Morrison, Godwin Godfrey, William Mahalu. Challenges to the Provision of Emergency Services and Critical Care in Resource-Constrained Settings.2014. Global Health, Vol 9, No 3.

[13] The world health report – working together for health. Geneva, World Health Organization, 2006 (http://www.who.int/whr/2006/en/index.html).

shortages, also maldistribution and lack of right skills for EECC further affects the provision of quality emergency and critical care services.[14]

Health Information Management Systems

Tanzania has several health management information systems. Examples of the systems used in Tanzania include GoTHOMIS and AfyaCare although in tertiary hospitals mostly they have independent Health Information Management Systems (HMIS) for similar functions. Similarly private facilities use different vendors for the HMIS. Most of these systems are not customized to collect and report key EECC indicators.

Also, the health information management system (HMIS) or MTUHA registers, reports and electronic modules (DHIS2) lack the data elements for reporting critical conditions or consumption of emergency drugs including medical oxygen. The lack of reporting results in limited capture of the burden of emergency and critical use of drugs and supplies. This affects forecasting and proper planning for critical care readiness.

[14] MoH. Human Resource for Health and Social Welfare Strategic Plan 2014-2019. 2014

Facility assessments do not focus on emergency and critical care, and only collect data for approximately 50% of the resources required for EECC, limiting knowledge about gaps in commodities and supplies.[15]

Medical Products and Technologies

EECC does not require specialized equipment and training that is needed for advanced critical care, instead it requires basic equipment and supplies that can be readily available in all health facilities. A review of critical care in ten hospitals showed the inadequate availability of most drugs and equipment for critical care such as salbutamol, aminophylline and insulin were observed 50-88%, glucometer (50%), oral airway (60%), pulse oximeter (70%) and in 90% of facilities oxygen source was available.[9] At lower health facilities, emergency and critical care services are less available than in district and Regional Referral Hospitals.

[15] Kayambankadzanja RK, Likaka A, Mndolo SK, Chatsika GS, Umar E, Baker T. Emergency and critical care services in Malawi: Findings from a nationwide survey of health facilities. Malawi Medical Journal. 2020;32(1):259-63.

Tanzania Service Provision Assessment Report 2014-2015[16] involving 1188 facilities indicated about 74% of health facilities have basic client service package. Availability of services and equipment varied between urban and rural facilities, and type of facility.

Table 1. Availability of basic amenities and selected equipment, SPA 2014-2015

	Hospital	Dispensary
Basic Amenities		
Regular electricity	91%	65%
Improved water source	87%	65%
Selected equipment		
BP Machine	92%	81%
Sterilization equipment and usage skills	87%	63%
Emergency transport	93%	54%

[16] Tanzania Service Provision Assessment Report 2014-2015

Financing

There is inadequate funding to sustain effective EECC provision, especially at the lower-level health facilities. This funding shortage results in inadequate provision of basic equipment and supplies, repair, HCW capacity building and effective supportive supervision.

According to the study conducted in Tanzania regarding Health Insurance and health system showed that only about 24% of Tanzanians are covered by Community Health Insurance Fund (CHF) and only 8% is covered by National Health Insurance Fund (NHIF)[17], leaving most of the population to depend on cash payments or social welfare/exemption policy to support their emergency and critical care services. This may lead to catastrophic health expenditure for the families or further depletion of the health system finances.

[17] Paul Joseph Amani, Anna-Karin Hurtig, Gasto Frumence, Angwara Denis Kiwara, Isabel Goicolea, Miguel San Sebastiån. (2021) Health insurance and health system (un) responsiveness: a qualitative study with elderly in rural Tanzania. BMC Health Services Research 21:1.

Governance and Leadership

There is knowledge gap at managerial level not only on the importance and multi-disciplinary approach of emergency and critical care services but also importance of prioritizing and providing EECC services in order to ensure quality health care. There is also lack of awareness on the EECC governance leading to insufficient planning and co-ordination of EECC services. There is also a lack of focal personnel who can oversee EECC provision activities.

3. ESSENTIAL EMERGENCY AND CRITICAL CARE FRAMEWORK

3.1 Rationale

EECC is an approach for prioritizing life-saving treatments of low cost and low complexity to those with the most urgent clinical need. There are gaps is the provision of EECC services, and closing these gaps has the potential to save a substantial number of lives.

3.2 Vision

All critical ill patients receive high quality essential emergency and critical care services in all health facilities in Tanzania

3.3 Mission

To provide a high-quality essential emergency and critical care services to patients at risk for or with critical illness in all health facilities across the health system.

3.4 The Goal of the Strategic Plan

The goal of this strategic plan is to provide the vision and national guidance on the EECC and its rollout. The plan will also identify key gaps, priorities, and interventions.

The specific objectives for the strategic plan include;

- To create an enabling environment for provision of quality EECC services.
- To strengthen the capacity of health systems for planning, management and service delivery of EECC services.
- To increase access and utilization of quality EECC services.

3.5 EECC Conceptual Framework

To increase survival of critically ill patients through stabilization of their condition, there needs to be a high effective coverage of EECC. EECC has two streams - identification and treatment. Critically ill patients must be identified and treated in a timely fashion, and this necessitates health facilities readiness (availability of supplies and skilled personnel) plus quality

clinical practice. If healthcare facilities are ready for the provision of EECC, and provide ideal treatment, effective coverage will be high, leading to high survival rates.

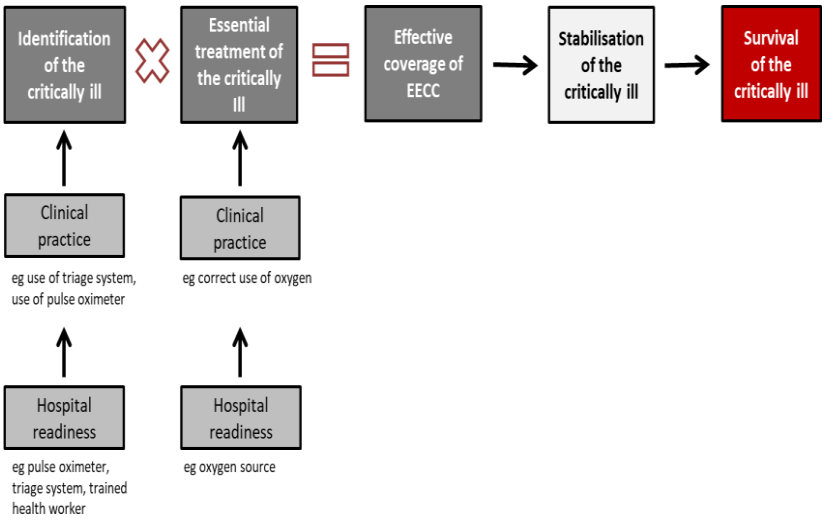

Figure 3. EECC Conceptual Framework

3.6 Guiding Principles

EECC encompasses the most simple, effective treatments and actions that can save lives in critical illness. EECC as a coordinated package may help improve survival rate of critically ill patients.

Provision of EECC is guided by the following principles[18].

Integration. Essential Emergency and Critical Care services will be integrated with the existing health services and will not be implemented in silo or as a vertical program.

Equity and accessibility. These services will be part of the universal health package available in all levels of the health system and to critical care patients using patient centered approach.

Accountability. Accountability entails the procedures and processes by which one party justifies and takes responsibility for its activities. Creating a culture of accountability is necessary for advancing provision of healthcare and EECC.

Effective Interventions. EECC will use established or proven to be safe interventions to reduce mortality (e.g., compression to stop bleeding). A holistic approach will be used, supporting vital organ functions rather than prematurely focusing on the definitive care of a pathology

[18] Schell CO, Wärnberg MG, Hvarfner A, Höög A, Baker U, Castegren M, Baker T. The global need for essential emergency and critical care. Critical Care. 2018 Dec;22(1):284.

Feasible: Low-cost and low complexity. EECC interventions/actions can be provided in a low-staffed, low-resourced setting without the immediate presence of advanced trained nursing and medical teams.

4. STRATEGIES AND KEY INTERVENTIONS/ACTIVITIES

The following chapter describes the strategies, interventions, and activities to achieve the strategic plan mission and objectives.

Objective 1: To create an enabling environment for provision of quality and accessible EECC services.

Policies and governance structures will be developed to guide the provision of EECC services and rollout to all levels of the health system. Two main strategies will encompass this objective.

Strategy 1.1 Policies Development

The Ministry of Health in collaboration with partners will develop, review, update and disseminate strategic plans and guidelines on EECC. Based on the guidelines; SOPs and protocols will be developed to guide health care providers on service provision.

Strategy 1.2 Leadership and governance

To ensure quality services delivery, the Ministry will develop and strengthen governance, planning and coordination of EECC

services at all healthcare facility levels. To improve accountability and performance monitoring, a robust monitoring system will be developed.

Interventions	Activities
Strategy 1.1 Policy Development	
Develop, review, update, and strategic plans and guidelines on EECC by 2026.	Develop National Strategic Plan for EECC.
	Develop National Clinical Guideline for EECC and oxygen therapy.
	Finalize the medical emergency services strategic plan and the guideline.
	Develop guides and SOPs on the management of patients with critical conditions.
Disseminate strategic plan and various guidelines on EECC by 2026	Conduct meetings/workshops at the national and regional level for strategic plan and guidelines dissemination.
Strategy 1.2 Leadership, governance, and accountability	
Develop and strengthen governance, planning and coordination of EECC services at all levels by 2026.	Conduct regular advocacy meetings for critical care at national and regional level.
	Conduct annual mapping of stakeholders involved in emergency and critical care.

	Develop coordinating structure for EECC at national, region and district level.
	Build capacity of the EECC coordinators at all levels through refresher trainings/orientation meetings.
Develop resources for EECC by 2026.	Allocate/redistribute resources for EECC in the country health plan.
	Develop and submit concept notes and proposals for EECC funding (trainings, coordination, equipment purchase).
	Work with CHMT and health facilities to ensure EECC funding/activities are featured in CCHP and facility annual plans.
Improve accountability for emergency and critical service delivery.	Based on the M&E plan, develop a set of the key indicators for performance monitoring at regional and national level.
	Incorporate key EECC indicators in the supportive supervision tool.

	Conduct annual review meeting for performance review.
	Conduct at least biannual review meetings at regional level.

Objective 2. Strengthen the capacity of healthcare systems for EECC services.

Strategy 2.1 Improve Human Resources capacity for healthcare services delivery

Human resource for health is the biggest asset in the service delivery. The government through its partners and health training institutions should work closely to develop and incorporated EECC curriculum for pre-service training. Mentors will be trained and equipped at all healthcare levels for coaching and developing health care workers' core competences in EECC.

Strategy 2.2 Improve Availability of the Emergency Drugs, medical equipment, equipment, and supplies for EECC

The Ministry should improve coordination and accountability of EECC supply chain activities, strengthen capacity at all levels to

forecast, track and order/procure emergency supplies and equipment. Also advocate for planned preventive maintenance of critical care equipment. Additional staff will be trained in Biomedical Engineering and technical maintenance of equipment and supplies.

Strategy 2.3 Improve Health Management Information System (HMIS)

Availability of data on emergency and critical care services provision is of paramount importance to ensure accountability and performance management. The Ministry will develop key indicators and M&E tools for EECC, build capacity on use of data for robust monitoring using existing manual and electronic systems.

Strategy 2.4 Improve EECC Service Delivery

The government should strengthen and scale up EECC services all levels using proven and cost-effective interventions known to reduce morbidity and mortality. Also, essential infrastructure/equipment for EECC will be enhanced. Continuous quality improvement, regular supervision and clinical audits should be used to ensure quality service

provision. Implementation Research should be conducted, to learn more about the optimal strategies for EECC implementation.

Intervention	Activities
Strategy 2.1 Improve Human Resources capacity for Health	
Develop and incorporate EECC training package in health training institutions curriculum by 2026.	Develop EECC training package for teaching institutions.
	Orient tutors in the training institutions on EECC training package/context.
Build the capacity and competence of health service providers in EECC services provision by 2026.	Develop EECC orientation package for health providers.
	Orient TOT for training and post training follow-up.
	Incorporate EECC in the professional bodies/associations' CPD plans and certifications.
	Facilitate comprehensive supportive supervision, coaching and mentorships for quality EECC.
Strategy 2.2 Improve availability of EECC medicine and health commodities	
Constant availability of Emergency Drugs, supplies, functional equipment, and	To strengthen timely submission of Request & Report (R&R).

medical Equipment for EECC by 2026.	Strengthen collaboration with development partners on EECC commodities and equipment.
	Strengthen coordination and accountability for EECC medicine supply chain.
	Strengthen capacity at all levels to forecast, track and order/procure emergency supplies and equipment.
	Conduct planned preventive maintenance (PPM) and repair of critical care equipment.
	Conduct healthcare facilities assessment to identify available resources and requirement.
	Orient health care providers on the basic use and care of EECC equipment.
Strategy 2.3 Health Management Information System (HMIS) for EECC	
Strengthen data management for EECC by 2026.	To develop key performance Indicators (KPIs) for EECC.
	Integrate EECC KPIs existing HMIS system.
	Incorporate scorecard in the dashboard for monitoring EECC targets and activities.

	Orient health care providers on KPIs and dashboard for monitoring.
Strategy 2.4 Improve Quality of EECC	
Strengthen quality assurance system for EECC by 2026.	Support and mentor the facility QI team at health facilities to include and monitor EECC performance indicators.
	Strengthen documentation, reporting and management during provision of EECC service.
	Conduct clinical audit/quality assessment on EECC services provided.
	Conduct implementation research on the optimal strategies for implementing EECC services.

Objective 3. Community involvement on access and utilization of quality EECC services.

The Ministry of Health (MoH), PORALG and their respective partners will work to roll out EECC to all levels of the healthcare system. The rollout will involve community engagement and sensitization on critical illness and care.

3.1 Community involvement

Community sensitization on EECC services availability and utilization by 2026.	Orient community leaders and community health workers (CHW) on available EECC services in their facilities.
	Use of both traditional and social media to sensitize community on available EECC services at health facilities.
	Use of both traditional and social media to address and dispel myths on emergency/critical care and oxygen therapy.

5. GOVERNANCE AND COORDINATION

5.1 Introduction

Governance on EECC ensures not only the delivery of high-quality, safe patient care but also effective use of resources, customer care and patient-centered organizational operations and development. Governance and coordination on EECC will ensure effective rollout of EECC focusing on health care providers' capacity building, resources for EECC are available and all activities are coordinated efficiently.

5.2 Coordinating Structures

The governance component will comprise existing health management systems at all levels. There will be a national coordinator who will coordinate all EECC activities at all levels. Clinical Service coordinator at the regions, councils and facilities will coordinate and ensure EECC activities are implemented at their levels.

MOH

The Ministry of health will prepare policies, guidelines to enable implementation of EECC and develop M&E framework for

monitoring the performance of EECC. EECC strategy will be coordinated under emergency, preparedness, and response unit.

Responsibilities of the Coordinator of emergency and critical care services

- To disseminate policies, regulations, guidelines on EECC at all levels.
- Coordinate capacity building on EECC for all HCW.
- Coordinate the provision of EECC in collaboration with PORALG amongst all health providers.
- Conduct supportive supervision and monitoring of EECC to health facilities

PO-RALG

Responsible for coordinating, facilitating, and managing the implementation of the NSP-EECC at all levels of local government authorities (LGA) and providing primary health care services.

- Facilitate dissemination of policies, regulations, guidelines on EECC to health facility management teams at local government.
- Coordinate capacity building on EECC for all HCW in Primary Healthcare Facilities (PHC facilities).
- Coordinate the provision of EECC amongst all health providers in all PHC facilities.
- Conduct supportive supervision and monitoring of EECC to all LGA and holding RMO and DMO accountable in provision of EECC.

RHMT

A regional clinical service coordinator in RHMT will coordinate EECC activities across the region as detailed below.

Responsibilities of a regional clinical service coordinator

- Facilitate dissemination of policies, regulations, guidelines on EECC to council health management teams.

- Coordinate capacity building on EECC for all HCW at the regional level.
- Coordinate the provision of EECC amongst all health providers in region.
- Conduct supportive supervision and monitoring of EECC to councils and health facilities.
- Aggregate implementation report of EECC and submit to National Level.

CHMT

A council clinical service coordinator in CHMT will coordinate EECC activities across the council as detailed below**.**

Responsibilities of a council clinical service coordinator

- Facilitate dissemination of policies, regulations, guidelines on EECC to health facilities (District Hospital, Health center and Dispensary).
- Coordinate capacity building on EECC for all HCW at the council level.

- Coordinate the provision of EECC amongst all health providers in the council.
- Conduct supportive supervision and monitoring of EECC to health facilities.
- Aggregate implementation reports on EECC and submit to the regional level.

Health Facilities

Every facility should have a clinical service coordinator who will oversee the implementation of EECC. Preferably he/she should be a member of the facility quality improvement team.

Responsibilities of a facility clinical service coordinator

- To support health care providers in implementing EECC
- Perform interval reviews/supervisions, documenting best practices and addressing gaps in the facility's regular meetings

- Collect data and write reports, request repair and replenishment of EECC equipment and supplies as per schedule
- To conduct clinical audit meetings.
- Prepare and submit EECC implementation reports to the CHMT.
- Prepare PPM for EECC equipment.

Partnership framework

Public Private Partnership

MoH will work closely with private health sector to ensure EECC services are available in both private and public health facilities.

International Collaborations

MoH and PO-RALG will collaborate with various countries and international organizations (bilateral and multilateral partners) respectively on EECC based on national priorities.

6. RESEARCH AND LEARNING AGENDA

Research and learning are important to ensure policies and practices in EECC are based on sound and practical evidence adapted in the Tanzanian context. Health Sector Strategic Plan (HSSP) V emphasizes the coordination and use of research and findings from both international and local studies to shape the policies and practices to improve the provision of health services. Also, the draft national health policy 2017 recognizes the role of research in improving the quality of health services and generating new knowledge. It also advocates timely dissemination of the research findings and their use in decision-making and policy formulation/changes.

As we embark on the rollout and implementation of EECC countrywide, there is a need to document the process, add new knowledge and improve the provision of EECC.

We have divided the research agenda into three broad categories which will address key research priorities in EECC.

Baseline/situational analysis of EECC in Tanzania

Building on the POETIC study conducted earlier, there is a need to conduct a larger survey to assess facilities' readiness for EECC, level of skills and knowledge, also the availability of basic equipment for EECC.

The determinants of the current EECC situation e.g., Policy and documents review to understand how policies affect the EECC, qualitative research involving key stakeholders to understand gaps and opportunities to improve EECC.

Process evaluation and implementation research

As we are implementing the EECC, learning is important for documenting what works, the challenges and best practices. This will support the learning agenda and use of data for decision-making/course correction. Some of the proposed research areas in process/implementation include.

Clinical audits focused on EECC to understand gaps in triaging, care, and referral of clients.

Health economic analysis of EECC interventions to understand the cost and cost-effectiveness of EECC (e.g., cost-benefit analysis).

Health workers' experience and perceptions on EECC.

Community and Clients' perceptions and satisfactions on EECC.

Implementation research on optimal strategies for introducing and sustaining EECC in facilities, developing an understanding of what works and why, how to overcome challenges and the best practices for implementing EECC.

Outcome/Impact Research

Assess the impact of EECC implementation on quality of care, morbidity, and mortality on critically ill patients, on all patients and on population health.

7. MONITORING AND EVALUATION

8.1 Introduction

The EECC monitoring and evaluation plan aims to inform progress and performance of the plan for the period from 2023-2026. Tracking of progress will occur annually at programmatic level using routine data, and periodically using information from mid and end-term evaluation. The results should help the government and other stakeholders to assess the progress towards the 2025 goals and review interventions and annual activity plans accordingly. The M&E indicators in the strategic plan includes process, outcome, impact, and coverage as well as other program indicators.

8.2 Data sources

Multiple data sources will be used to feed/furnish indicators proposed in the M&E plan. These will include;

- Routine Health Management Information System, (DHIS2) data base
- Periodic studies conducted by the program
- Program data from the emergency and critical care unit

- Service Availability and Readiness Assessment (SARA) survey

8.3 Performance review process

There will be a midterm review of the plan in 2024 chaired by the government and the results will help to guide adjustment of annual operation plans for the remaining two years to achieve the 2026 goals.

End term- evaluation will be performed in 2026. The final review involves a comprehensive analysis of progress and performance for the whole period of the strategic plan. This final review will build on the annual and mid-term reviews, program review, as well as research that has been conducted during the five years of the plan.

9.4 Monitoring Framework

Indicators for M&E are presented using a results framework. The framework will track each intervention/strategic objective, its indicators, frequency of reporting and responsibilities.

Objective 1: To create an enabling environment for provision of quality and accessible EECC services.								
Strategy	**Activity**	**Indicator**	**Indicator Definition**	**Baseline**	**Target**	**Data Source**	**Frequency of Reporting**	**Responsible Entity**
1.1 Policy Development	Develop National Clinical Guideline for EECC management	# of guidelines/strategic plans developed		0	1	EPRU reports	Annual	MoH
	Finalize the emergency medical services strategic plan	# of guidelines/strategic plans developed		0	1	EPRU reports	Annual	MoH

	Finalize the emergency medical services guideline	# of guidelines/strategic plans developed		0	1	EPRU reports	Annual	MoH
	Develop guides and SOPs on the management of patients with critical conditions	# of guides and SOP developed based on EECC clinical guideline		0	10-15	EPRU reports, worksh op report	Annual	MoH

	Conduct meetings/workshops at the national and regional level for strategic plan and guidelines dissemination	# of meetings conducted at National and zonal disseminations		0	1 national 5 zonal	EPRU reports, workshop report	Annual	MoH
1.2 Leadership, governance, and accountability	Conduct regular advocacy meetings for critical care at national and regional level	# of meetings conducted at National and zonal level		0	1 national 5 zonal	EPRU reports, workshop report	Annual	MoH

	Conduct annual mapping of stakeholders involved in emergency and critical care	# of EECC stakeholders identified		0	ALL	Mapping report	Annual	MoH
	Develop coordinating structure for EECC at national, region and district level	# of clinical service coordinator identified and selected at national and subnational			1 national 26 regions 124 districts	EPRU reports	Annual	MoH

	Build capacity of the EECC coordinators at all levels through refresher trainings/orientation meetings	# of clinical service coordinators trained/oriented at national and subnational		0	1 national 26 regions 124 districts	EPRU reports	Biannual	MoH
	Allocate/redistribute resources for EECC in the country health plan	# of EECC activities included in the country health plans			At least 5 key EECC activities included	EPRU reports, country health report	Annual	MoH

	Develop and submit concept notes and proposals for EECC funding (trainings, coordination, equipment purchase)	# of concept notes for funding submitted			At least 3	EPRU reports, concept notes	Biannual	MoH
	Work with CHMT and health facilities to ensure EECC funding/activities are featured in CCHP and	# of EECC activities included in the CCHP			At least 5 key EECC activities included	EPRU reports, CCHP reports	Annual	MoH

	facility annual plans							
	Develop a set of the key indicators for performance monitoring at regional and national level	# of EECC performance indicators developed		0	A set of 10 indicators	EPRU reports	Annual	M&E unit, MoH
	Incorporate key EECC indicators in the supportive supervision tool	# of EECC performance indicators incorporated		0	A set of 3-5 indicators	SS tool	Annual	M&E unit, MoH

	Conduct annual review meeting for performance review	# of meetings conducted at National level		0	1	EPRU reports, meeting report	Annual	MoH
	Conduct at least biannual review meetings at regional level	# of meetings conducted at National level		0	10 zonal	EPRU reports, meeting report	Biannual	MoH
Strategy 2.1 Improve Human Resources capacity for Health								

Strategy	Activity	Indicator	Indicator Definition	Baseline	Target	Data Source	Frequency of Reporting	Responsible Entity
2.1 Improve Human Resources capacity for healthcare services delivery	Develop EECC training package for teaching institutions	Developed training package		0	1	EPRU reports, workshop report	Annual	MoH
	Orient tutors in the training institutions on EECC training package/context	# of tutors oriented in EECC package			# of tutors trained	EPRU reports, training reports	Annual	MoH

	Develop EECC orientation package for health providers.	Developed training package		0	1	EPRU reports, worksh op report	Annual	MoH
	Orient TOT for training and post training follow-up	# of tutors oriented in EECC package			# of tutors trained	EPRU reports, training reports	Annual	MoH

	Incorporate EECC in the professional bodies/associations' CPD plans and certifications	# of EECC modules/ CPD sessions		0	1 CPD session focused on EECC	Professional associations reports	Annual	Medical and Nursing councils
	Facilitate comprehensive supportive supervision, coaching and mentorships for quality EECC	# of SS, coaching and mentorships			At least 4 per each region and district	SS, coaching and mentorships reports	Quarterly	MoH PORALG
Strategy 2.2 Improve availability of EECC medicine and	To monitor timely submission of Request & Report (R&R)	Reporting timeliness			All facilities	eLMIS	Bimonthly	District and regional

health commodities								pharmacists
	Strengthen collaboration with development partners on EECC commodities and equipment through TWGs	# of meetings conducted			Four in a year	TWG reports / minutes	Quarterly	MoH
	Strengthen accountability for EECC medicine supply chain	# of R&R forms reviewed to ensure inclusion of			All facilities		Bimonthly	District and regional pharmacists

		EECC commodities						
	Strengthen capacity at all levels to forecast, track and order/procure emergency supplies and equipment through mentorships and SS	# of mentorships /SS conducted			# of mentorships/SS conducted	Mentorship/SS reports	Quarterly	MoH
	Conduct planned preventive maintenance (PPM) and repair of	# of PPM and repair conducted			At least annually per each region	PPM and repair reports	Quarterly	MoH, PORALG

	critical care equipment				and district			
	Conduct healthcare facilities assessment to identify available resources and requirement	# of Assessment reports		0	1	26 regional reports 1 collated national report	Once	MoH
	Orient health care providers on the basic use and care	# of HCP and biomedical technicians oriented			# of providers oriented	Training reports	Quarterly	MoH

	of EECC equipment							
2.3 Improve Health Management Information System (HMIS)	To develop key performance Indicators (KPIs) for EECC	# of EECC performance indicators developed		0	A set of 10 indicators	EPRU reports	Annual	M&E unit, MoH
	Integrate EECC KPIs existing HMIS system	# of EECC performance indicators incorporate in HMIS		0	A set of 10 indicators	HMIS registers, DHIS2	Annual	M&E unit, MoH
	Incorporate scorecard in the dashboard for monitoring	EECC score card developed		0	1 scorecard	DHIS2	Annual	

	EECC targets and activities				develo ped			M&E unit, MoH
	Orient health care providers/coo rdinators on KPIs and dashboard for monitoring	# of HCP/coordin ators oriented		0	# of provide rs oriente d	Trainin g reports	Quarte rly	MoH
2.4 Improve EECC Quality	Support and mentor the facility QI team at health facilities to include and monitor EECC	# of facility QI teams mentored		0	# facilitie s mentor ed	Mentor ship reports	Quarte rly	MoH PORALG

	performance indicators							
	Strengthen documentation, reporting and management during provision of EECC service	# of facilities with improved critical care documentation		0		SS reports	Quarterly	MoH PORALG
	Conduct clinical audit/quality assessment on EECC services provided	# of facility audits conducted			# of clinical audit conducted	Mentorship reports	Quarterly	MoH PORALG

	Implementation research on the optimal strategies for implementing EECC services	# of research conducted		0	3	Research reports	Annually	MoH
Objective 3. Community involvement on access and utilization of quality EECC services.								
Community sensitization on EECC services availability and utilization by 2026	Orient community leaders and community health workers (CHW) on available EECC services in their facilities	# of community leaders and CHWs sensitized		0	# of community leaders and CHWs sensitized	Reports	Biannually	MoH

	Use of both traditional and social media to sensitize community on EECC services available at health facilities	# of spots on radio, TV and social media		0	# of spots on radio, TV and social media	Reports	Biannually	MoH
	Use of both traditional and social media to address and dispel myths on emergency/critical care and oxygen therapy	# of spots on radio, TV and social media		0	# of spots on radio, TV and social media	Reports	Biannually	MoH

9. ANNEXES

9.1 List of requirements for EECC services provision

The following items are required for a hospital to be ready for the identification of critically ill patients.[9]

CATEGORY	ITEM
1.1 EQUIPMENT	1.1.1 Clock with second hand 1.1.2 Pulse oximeter & probe 1.1.3 Blood pressure measuring equipment (e.g., sphygmomanometer with a stethoscope) 1.1.4 Blood pressure cuffs of different paediatric and adult sizes 1.1.5 Light source (lamp or flashlight) 1.1.6 Thermometer
1.2 CONSUMABLES	1.2.1 Soap or hand disinfectant 1.2.2 Examination gloves
1.3 DRUGS	None
1.4 HUMAN RESOURCES	1.4.1 Health workers with the ability to identify critical illness 24h/day

1.5 TRAINING	1.5.1 The health workers are trainedin the identification of critical illness
1.6 ROUTINES	1.6.1 Routines for the identification of critical illness
1.7 GUIDELINES	1.7.1 Guidelines for the identification of critical illness
1.8 INFRASTRUCTURE	1.8.1 Designated triage area (area for the identification of critical illness) in the Out-Patient Department or Emergency Unit (area of the hospital where patients arrive) 1.8.2 Running water

The following items are required for a hospital to be ready to provide the care of critically ill patients.[9]

CATEGORY	ITEM
2.1 EQUIPMENT	2.1.1 Suction machine (electric or manual) 2.1.3 Oxygen supply 24h/day (cylinder, concentrator (with electricity supply) or piped oxygen) 2.1.4 Flow meter (if using cylinder or piped oxygen) 2.1.5 Leak-free connectors from oxygen source to tubing 2.1.6 Bag Valve Mask (resuscitator) – neonatal, paediatric and adult sizes 2.1.7 Sharps disposal container 2.1.8 External heat source
2.2 CONSUMABLES	2.2.1 Suction catheters of paediatric and adult sizes 2.2.2 Guedel airways of paediatric and adult sizes 2.2.3 Pillows

	2.2.4 Oxygen tubing 2.2.5 Oxygen nasal prongs 2.2.6 Oxygen face masks of paediatric and adult sizes 2.2.7 Oxygen face masks with reservoir bags of paediatric and adult sizes 2.2.8 Masks for Bag Valve Mask (resuscitator) – neonatal, paediatric and adult sizes 2.2.9 Compression bandages 2.2.10 Plasters or tape 2.2.11 Gauze 2.2.12 Intravenous cannulas of paediatric and adult sizes 2.2.13 Intravenous giving sets 2.2.14 Skin disinfectant for cannulation 2.2.15 Syringes 2.2.16 Nutrition 2.2.17 Nasogastric tubes 2.2.18 Lubricant for nasogastric tube insertion

	2.2.19 Intramuscular needles 2.2.20 Intraosseous cannulas of different sizes 2.2.21 Blankets 2.2.22 Facemasks for Infection Prevention and Control 2.2.23 Aprons or gowns 2.2.24 Charts/notes for documentation 2.2.25 Pens
2.3 DRUGS	2.3.1 Oral rehydration solution 2.3.2 Intravenous crystalloid fluids (e.g., normal saline or Ringer's Lactate) 2.3.3 Intravenous dextrose fluid (e.g., 5%, 10% or 50%) 2.3.4 Oxytocin 2.3.5 Adrenaline 2.3.6 Appropriate antibiotics 2.3.7 Diazepam 2.3.8 Magnesium sulphate 2.3.9 Paracetamol

	2.3.10 Local anaesthetic (e.g., 2% lignocaine) (e.g., for intraosseous cannulation)
2.4 HUMAN RESOURCES	2.4.1 Health workers with the ability to care for critically ill patients 24hrs/day 2.4.2 Senior health worker who can be called to assist with the care of critically ill patients 24hrs/day

9.2 List of experts who participated in the document development

Name of the Expert	Institution/Designation
MoH/PORALG	
Dr. Elias Kwesi	Director, Emergency Preparedness and Response Unit
Dr. Erasto Sylvanus	Emergency Medicine Physician and head case management, MoH
Dr. Alex Sanga	Medical officer, Emergency Preparedness and Response Unit
Charlton Meena	M&E officer, MoH
Dr. Erick Richard	Medical officer, Emergency Preparedness and Response Unit
Dr. Angela Samwel	Medical officer, Emergency Preparedness and Response Unit
Hilda Mushi	Senior Nursing Officer, quality Assurance, MoH
Dr. Mbwana Martin	Medical officer, quality Assurance, MoH
Dr. Mwanahamisi Hassan	Principal Medical Officer, PORALG
UNICEF/WHO	
Dr. Andrew Kigombola	Public health specialist and a consultant

Dr. Tim Baker	Anaesthesiologist and technical advisor
Dr. Isihaka Mwandalima	Health specialist
Dr. Janet Masuma	Case management officer, WHO
Hospitals/Universities	
Dr. Karima Khalid	Anaesthesiologist, MUHAS/Ifakara
Dr. Said Kilindimo	Emergency Medicine Physician and intensivist, MUHAS
Dr. Venance Wilfred	Anaesthesiologist, Aga Khan Hospital
Dr. Ngiana Mtui	Medical Officer, Emergency department Mt. Meru hospital
Dr. Peter Mabula	Emergency Medicine Physician, NSK hospital
Dr. Masuma Gulamhussein	Emergency Medicine Physician, MNH
Sixtus Ruyumbu	Critical care nurse, Mbeya hospital
Dr. Happiness Charles	Anaesthesiologist, KCMC
Dr. John Kweyamba	Anaesthesiologist, KCMC
Dr. Chiku Mwimbo	Emergency Medicine Physician, JKCI
Dr. Venance Misago	Anaesthesiologist, Benjamin Mkapa medical center
Adeline Temba	Registered Nurse, Bugando
Adela Venance	Emergency care nurse, JKCI