REPUBLIC OF KENYA

MINISTRY OF HEALTH

KENYA PUBLIC HEALTH EMERGENCY SUPPLY CHAIN FRAMEWORK

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ACRONYMS

API	application program interface
CDC	Centers for Disease Control and Prevention
CDH	County Director of Health
CDVS	County Director of Veterinary Services
CFR	case fatality rate
COG	Council of Governors
COVID - 19	Coronavirus Disease 2019
CVL	Central Veterinary Laboratory
DG	Director General for Health
DRM	disaster risk management
DSRU	Disease Surveillance and Response Unit
DVS	Director of Veterinary Services
EDRM	Emergency Disaster Risk Management
EH	environmental health
EOC	Emergency Operations Centre
EPRP	Emergency Preparedness and Response Plan
ESC	emergency supply chain
FAO	Food and Agriculture Organization (United Nations)
FELTP	Field Epidemiology and Laboratory Training Program
GHSA	Global Health Security Agenda
HEDRM	Health Emergency Disaster Risk Management
HPT	Health products and technologies
IDSR	Integrated Disease Surveillance and Response
IEC	information, education and communication
IFRC	International Federation of the Red Cross & Red Crescent Societies
IHR	International Health Regulations
IMS	Incident Management System
JEE	Joint External Evaluation (WHO)
KEMSA	Kenya Medical Supplies Authority
KRCS	Kenya Red Cross Society
LMIS	logistics management information system
MCMs	medical countermeasures
MEDS	Mission for Essential Drugs and Supplies
MERS-CoV	Middle East Respiratory Syndrome-Coronavirus
MOALF & I	Ministry of Agriculture, Livestock, Fisheries & and Irrigation
MOE	Ministry of Environment and Forestry
MOH	Ministry of Health
MSF	Médecins Sans Frontières (Doctors Without Borders)
NAPHS	National Action Plan for Health Security

NDMU	National Disaster Management Unit
NDOC	National Disaster Operation Centre
NOHTC	National One Health Technical Committee
NVIP	National Vaccines and Immunization Program
OH	One Health
OHTWG	One Health Technical Working Group
OIE	World Organization for Animal Health
OIE	World Organization for Animal Health
PHE	Public Health Event/ Emergency
PHEIUE	public health event of initially unknown etiology
PHEOC	Public Health Emergency Operations Centre
PHESC	public health emergency supply chain
PPE	personal protective equipment
RVILs	Regional Veterinary Investigation Laboratories
SAGA	semi-autonomous government agency
SARS	Severe Acute Respiratory Syndrome
SOP	standard operating procedure
TOR	terms of reference
TWG	technical working group
UNICEF	United Nations Children's Fund
UN OCHA	United Nations Office for the Coordination of Humanitarian Affairs
USAID	United States Agency for International Development
WHO	World Health Organization
ZDU	Zoonotic Disease Unit

FOREWORD

Countries around the globe, Kenya included, are grappling to contain the COVID-19 pandemic. To succeed, they need an effective, well-coordinated and efficient system for response to this pandemic, and any other public health emergency that may emerge in the future. To reduce the risk of, manage and mitigate these events, the Ministry of Health has set up the Public Health Emergency Operation Centre (PHEOC). In addition, policies to plan for effective response and build resilience for the health sector have been developed and implementation is on-going. These include national policies, such as the Kenya National Disaster Response Plan (2014), the Kenya Health Sector Disaster Risk Management (DRM) Capacity Assessment Report of 2013 and the Kenya Health Sector Referral Strategy and Guidelines. These policies are synergistically aligned to global disaster management guidelines such as the World Health Organization (WHO) led International Health Regulations 2005, the Global Health Security Agenda and the Sendai Framework of Action (2015-2030).

Several assessments identified gaps in deploying medical countermeasures during emergencies and disasters. The Kenya Public Health Emergency Supply Chain Framework is a response to these gaps and is intended to guide the design and establishment of a system which has a unified approach to building capabilities in supply chain preparedness for increased efficiencies in response. The Framework will be implemented by the PHEOC under the leadership of the Director General for Health. The PHEOC will develop an implementation and monitoring plan, utilizing the customized materials, tools and templates that are part of the Framework.

The Ministry of Health (MOH) and Ministry of Agriculture, Livestock, Fisheries and Irrigation (MOALF & I) extend gratitude to all who contributed to this effort of developing the Emergency Supply Chain Framework. The MOH and MOALF & I are committed to working collaboratively, using the One Health approach, to ensure full implementation of the Framework so that medical countermeasures are efficiently sent and received during emergencies.

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PREAMBLE

The Kenya Public Health Emergency Supply Chain Framework introduces a new function in preparedness and response for emergency operations in the country. Its newness is because it offers a structured approach to deployment of medical countermeasures during a public health emergency (PHE) that was not there in previous responses. Implementation of the Framework will put in place a system ahead of a PHE to manage the commodities required to control and contain the outbreak. This may mean procuring or leveraging partner resources, such as national or regional stockpiles of commodities, for a rapid and timely response.

In the Incident Management System that established the PHEOC, the ESC Framework provides clarity on roles and responsibilities of an Emergency Supply Chain (ESC) lead vis-à-vis the Public Health Emergency Operations Centre (PHEOC) manager in routine times, and the incident manager during emergencies. It enables the ESC lead, working with a team of experts, to select the most efficacious commodities, source and procure, safely transport, determine the waste disposal method or requisite reverse logistics and account for the identified products. The sub-leads are clinical and planning, for decisions on commodities required to manage the epidemic; pre-positioning, sourcing and procurement, logistics and warehousing. The Framework will direct both the implementation and maintenance of on-going preparedness activities.

The Ministry of Health and relevant agencies concerned with response to public health events and emergencies will accord the PHEOC the needed high-level support required for implementation of the Framework and maintenance of the ESC for deployment of medical countermeasures (MCM) during public health emergencies.

PREFACE

The Emergency Supply Chain Framework was developed to enable the Public Health Emergency Operations Centre efficiently deploy medical countermeasures (MCMs) during emergencies. Cognizant of the fact that a plan for deployment of MCMs was not available, the Framework was methodically drafted to provide for structures that will facilitate the functions of a supply chain. It will fit into the broader comprehensive emergency planning process that includes other functions like surveillance. Though developed through a One Health approach, with a focus on emergencies caused by infectious human and animal diseases, the ESC Framework can complement response to all hazards that impact public health.

The Framework comprises three key sections, namely, 'people and processes', 'commodity planning' and 'logistics and transport'. The 'people and process' section focuses on governance issues, i.e. sets up the organizational structures that will facilitate coordination of the many actors in the complex situation of an emergency response. The state and non-state players are mapped out, the hazards that threaten the country were identified and prioritized on the bases of likelihood to occur and severity. This section also examines the financial issues, providing an estimated budget for procurement and maintenance and identifying partners and the resources they have to offer. The dictate that investment in preparedness reduces the cost of response and increases the speed of reaching the frontlines by improving access to commodities, is particularly true of the ESC Framework. For accountability, data visibility for planning procurement, prepositioning and maintaining commodities in a viable state, was addressed.

In the sections on 'commodity planning' and 'warehousing and storage,' the commodities needed for the prioritized diseases have been identified, quantified and costed. The procurement procedures and suppliers have been identified and their capability to efficiently provide commodities as needed assessed. Negotiation checklists to inform drawing up of contractual agreements with suppliers are part of the tools of the Framework. Warehouses and storage facilities have been mapped out and their capacities determined. Waste disposal during outbreak of disease is a great concern and options to be employed were explored and the most effective determined and documented.

The development and testing of the Framework took about six months. Implementation of the ESC Framework will address the unique supply chain challenges posed by emergencies while the focused investments will pay off in increased cost-effectiveness and improved speed of response during disasters.

ACKNOWLEDGEMENTS

The Ministry of Health and the Ministry of Agriculture, Livestock, Fisheries & Irrigation are grateful to the Emergency Supply Chain Core Team for its diligence and dedication in spearheading the development of the ESC Framework. The Ministries also recognize, with appreciation, the expert advice and information contributed by individuals in drafting different sections of the Framework, during the Consultative Expert Workshop and in subsequent shorter, but intensive meetings held to fill gaps and refine the work. The technical leadership of clinical and supply chain consultants from USAID Afya Ugavi Activity and McKinsey & Company is noted with gratitude. Appreciation also goes to stakeholders in disaster preparedness and response who gave of their time to inform the Framework development process by sharing knowledge and experience in deployment of medical countermeasures across the different functions of a supply chain. The willingness by County Governments, government agencies (the National Disaster Operation Centre), public health programs (the National Vaccines and Immunization Program, Kenya National Blood Transfusion Service), medical supplies agencies (the Kenya Medical Supplies Authority, Mission for Essential Drugs and Supplies), United Nations agencies (Food and Agriculture Organization, World Health Organization, United Nations Children's Fund), humanitarian organizations (International Federation of Red Cross and Red Crescent Societies, the Kenya Red Cross Society, MSF) and development partner agencies (Centers for Disease Control and Prevention) to engage in this work is appreciated.

The Ministry of Health extends a special appreciation to the United States Agency for International Development (USAID), which through the USAID Global Health Security Agenda (GHSA) and the USAID Afya Ugavi Activity provided technical and financial support for the development and publication of this Framework. The deliberate decision to build and strengthen the capability of the existing emergency systems and routine supply chains for preparedness and response, as captured in the conceptualization and structure of the ESC, is commended. It resonates with the Government of Kenya's desire to in-build sustainability measures in all its initiatives.

EXECUTIVE SUMMARY

The Emergency Supply Chain Framework is a practical guidance document for the establishment of a system that will ensure rapid access to health commodities during a public health emergency. It's primarily directed at preparedness, systematically guiding investments for a rapid and efficient response during disease outbreaks. However, the system can be employed for any type of disaster which impacts public health.

Kenya is prone to and has experienced different types of emergencies over the years ranging from natural disasters, such as disease outbreaks, floods, droughts and famine, to artificially inflicted ones through wars and terrorism. Social unrest and mass casualty incidents threaten the lives, public health and social and economic status of populations. The need to prepare and quickly respond to disasters in order to control and contain spread of disease and negate or minimize their impact on the population cannot be gainsaid. Kenya has shown strong commitment to manage disasters by setting up agencies and developing policies that support disaster preparedness and response. However, reports from several assessments of Kenya's preparedness for disasters indicated that preparedness was not optimal for an efficient, time sensitive response. Some of these assessments include the Joint External Evaluation (JEE 2017), the situation analysis for current practices in emergency supply chain management, that preceded the development of the ESC Framework, and an assessment on preparedness caused by natural hazards. Several factors for this inadequateness were identified common ones being lack of a plan to deploy medical countermeasures in an emergency, weak coordination and involvement of non-state stakeholders, inadequate financing for preparedness and mechanisms which delay release of funds.

The ESC Framework aims at establishing a system that would address some of these limitations key of which is strengthening government leadership. This will be achieved by building up the governance and organizational structures for supply chain management to facilitate coordination by government of stakeholders involved in the complex emergency environment. The structure as presented in the Framework, is within the existing comprehensive emergency response systems, and domiciled in the One Health Public Health Emergency Operation Centre (PHEOC). The ESC Framework provides evidence-based protocols for utilizing existing supply chains in the public health system as well as modalities for leveraging the private not-for-profit supply chains and engaging the private sector, particularly, for animal health products. This involved close engagement of the Kenya Medical Supplies Authority (KEMSA), the Mission for Essential Drugs and Supplies (MEDS), national and international supply chain partners (Kenya Red Cross Society, MSF, and the International Federation of the Red Cross and Red Crescent Societies). It is designed to increase availability of health commodities without which response is severely curtailed. Health hazards have been systematically prioritized and the commodities to manage these identified and quantified so that an estimated budget for procurement was derived. To facilitate geographical access, warehouse and storage space was mapped and waste disposal sites identified.

The Framework has tools and templates to facilitate continuous reviews and update of the protocols and processes. It calls for capacity building of the PHEOC staff and development of standard operating procedures for consistent application. Also included are simulation packages to test it and make it adequately versatile to respond to new diseases and other hazards.

The ESC Framework calls for immediate implementation to achieve the intended value addition to the comprehensive emergency preparedness systems in the country. It marks the beginning of other

initiatives contained in the National Action Plan for Health Security (NAPHS) and the Kenya GHSA 5-year Road map. It will raise the profile the PHEOC in preparedness and place the Government firmly at the forefront in coordinating partners in emergency response. It augurs well for sustainability once the Government commits financial resources as described in the Framework and enables it to make specific and informed requests for support. Accountability will be enhanced through an inventory management system that can track commodities and other resources as this engenders trust among stakeholders. Availability of commodities will motivate the staff in their work.

Emergency Supply Chain Framework concluding workshop participants from Ministry of Health, Ministry of Agriculture, Council of Governors, USAID and other Implementing partners.

1.0 INTRODUCTION

1.1 Background

A public health emergency supply chain (PHESC) is a system established in preparedness for managing all the commodities necessary to respond to an outbreak, ensuring these effectively and efficiently get to the site of the emergency.

Establishment of a PHESC (ESC in this manual) contributes directly to the achievement of the requirements of the World Health Organization's (WHO) International Health Regulation (IHR) 2005 whose goal is to develop identified minimum core capacities in the shared responsibility of securing public health globally. The purpose and scope of the IHR (2005) are "to prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks, and which avoid unnecessary interference with international traffic and trade"1. There are 19 core capacities in the IHR to be strengthened globally and in individual member countries, one of which is deployment of medical countermeasures (MCMs). The ESC Framework will provide the principles and guidelines for building this core capacity of deployment of MCMs during emergencies.

Development and implementation of the ESC Framework will also contribute to the Global Health Security Agenda (GHSA), whose purpose is to bring together nations to expedite achievement of the preparedness and response goals defined in the IHR 2005. Its aim is to ramp up global attention to the shared vulnerabilities posed by outbreaks of infectious diseases, whether naturally occurring or deliberately spread.

Through funding from GHSA, USAID supported the development of a generic, competency-based emergency supply chain framework2 termed a Playbook. That framework, based on best practice in supply chain management and a One Health approach to emergencies, was developed by a consultancy firm McKinsey & Co and applied in Cameroon. The work was led by Chemonics, GHSA's global partner in supply chain management. GHSA has supported Kenya, through its partner Afya Ugavi, to customize the generic document to a national ESC Framework by providing technical support and coordination. The customization was undertaken with leadership from an "Emergency Supply Chain Core Team", jointly appointed by the two Ministries, in August 2018. The process was initiated at a consultative experts' workshop in October 2018.

In May 2018, development of the National Action Plan for Health Security (NAPHS), a detailed proposal for implementation of the IHR 2005 in Kenya, was initiated. A One Health approach was adopted for the development process and a multi sectoral and multidisciplinary team of experts from several ministries, namely, Health, Agriculture and Irrigation, Interior and Coordination of National Government, Tourism, Sanitation and Industry, Trade and Cooperatives pooled together for the purpose. In recognition of the country's devolved governance structure, there was representation from Council of Governors (COG) as well as county governments. Stakeholders in emergency response, including development partners (USAID, US CDC, World Bank, OIE) UN agencies, (WHO FAO), intergovernmental agencies (Africa CDC), participated in the meeting.

To monitor progress of IHR implementation, WHO developed the Joint External Evaluation (JEE) tool to assess a country's capacity to prevent, detect, and rapidly respond to public health threats, The JEE tool assesses the 19 core capacities in the IHR. A joint external evaluation was conducted in Kenya in February and March 2017 and on the core capacity on deployment of MCMs Kenya scored one,

[1]WHO; Joint External Evaluation Tool, IHR 2005, Monitoring and Evaluation Framework
[2]USAID/GHSC; Emergency Supply Chain Playbook

thelowest score out of 53. This led to the prioritization of the development of an ESC for deployment of MCMs out of the 19 capacities in the NAPHS and the IHR 2005.

1.2 Current Practices in Deployment of MCMs[4]

A situation analysis of health commodities in the country was conducted at the outset (June-July 2018) to understand the strengths to leverage on, and the weak points to shore up. The analysis was undertaken through a desk review and key informant interviews with stakeholders in government and private sectors. The analysis report corroborated the JEE report on the inadequacy of the current supply chain system in emergency response. The key gaps documented included limited utilization of existing supply chains, poor coordination of stakeholders and delays in releasing funds for procurement and distribution of required commodities. The strengths to build on were a relatively well functioning public health supply system, Kenya Medical Supplies Authority (KEMSA) network. KEMSA is a state corporation whose mandate is to procure, warehouse and distribute health commodities for the public health facilities and programs. Also, there is the Mission for Essential Drugs and Supplies (MEDS), a not-for-profit ecumenical organization that serves religious and not-for-profit health institutions. The strong presence of international humanitarian organizations based in Nairobi (WHO, UNOCH, MSF, IFRC, FAO), some of which serve the Eastern African region, was noted as a major capacity to leverage on. An added benefit of the assessment was the opportunity to map the key stakeholders in emergency preparedness and response in the country.

1.3 Purpose of the ESC Framework

The purpose of the ESC Framework is to outline the guiding principles for and key structural elements to be established to increase capacity for sending and receiving medical countermeasures during a public health emergency. Emergencies present unique challenges to routine health supply chains due to several factors, such as demand which in an emergency is unpredictable, yet timely delivery of commodities is required if lives are to be saved. Additionally, emergencies put a strain on existing logistics systems, e.g. if vaccines are 'borrowed' from the National Vaccines and Immunization Program (NVIP), routine vaccination could be compromised. Also, the finances required to respond to emergencies are usually higher as unplanned procurement is more costly because best practice procedures in sourcing may be put aside to speed up the purchase processes. Finally, delays in payments may cause the suppliers to inflate prices.

1.4 Components of an ESC

According to the recommendations in the Technical Report on Best Practices in Emergency Supply Chain Management5, there are three main areas of ESC preparedness as graphically presented in Table1 below. The Kenya Public Health ESC Framework is structured in sync with these recommendations.

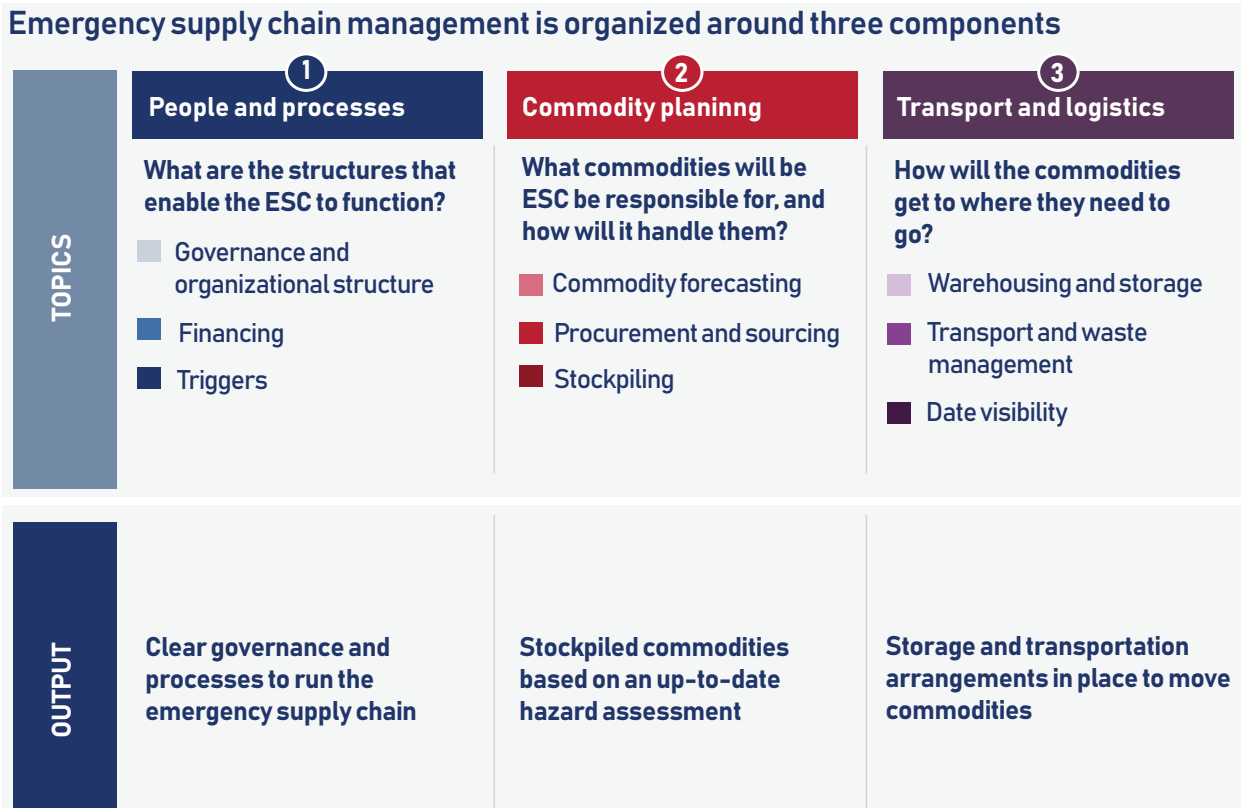
i. Governance: This component includes organization structures, which are not necessarily hierarchical but for purposes of communication; map of the stakeholders, defined coordination mechanisms and means of effective communication. The management functions of staff training, financing, data visibility and description of what constitutes hazards for the country are defined in this section.

[3]World Health Organization, 2017 Geneva. Technical Report: Joint External Evaluation of IHR Core Capacities of the Republic of Kenya.
[4]Afya Ugavi; Report: Situation Analysis of Current Practice for Deployment of Medical Countermeasures During Public Health Emergencies
[5]USAID/Chemonics/McKinsey, Technical Report, Best Practices in Emergency Supply Chain Management

ii. Commodity Planning: Takes into consideration commodity identification and forecasting, costing, stockpiling decisions and procurement processes i.e. plan what to get, how to get it.

iii. Logistics and Transport: In this component, warehousing needs and locations are determined, consideration of customs and transport arrangements and waste disposal requirements are made, i.e. how to store, move and track the commodities.

Table 1: Components of the PHESC



(USAID | Global Health Supply Chain/Chemonics/McKinsey, 2018)

1.5 Target Audience

The ESC Framework was developed for the government ministries that prepare for and respond to public health events, primarily emanating from infectious diseases at the animal, human and ecosystem interface. Also included are various agencies and partners who support these ministries. It is cognizant of the importance of self-reliance for sustainability and lays emphasis on strong country ownership, leadership and coordination of the active players in emergency preparedness and response. It is intended that the Framework will be implemented within the existing broader and comprehensive emergency preparedness and response plans.

1.6 Progressive Improvement of the ESC Framework

Development of the ESC Framework was in response to the WHO/JEE Report on the IHR Core Capacities. Kenya got a low score of 1 in the assessment. Subsequently, development of the National Action Plan for Health Security (NAPHS) was conducted with the intention to progressively build capability across all the 19 core capacities. The figure below indicates the direction of growth which the

ESC should aim for starting at no capacity (Score 1) to sustainable capacity (Score 5).

Table 2: JEE Tool Indicators for Medical Countermeasures

Score	Indicator R.4.1 System is in place for sending and receiving medical countermeasures during a public health emergency
No Capacity -1	No national countermeasures plan has been drafted
Limited Capacity -2	Plans have been drafted that outline system for sending and receiving medical countermeasures during public health emergencies
Developed Capacity – 3	Table-top exercise(s) has been conducted to demonstrate sending or receiving of medical countermeasures during a public health emergency.
Demonstrated Capacity - 4	At least one response OR a formal exercise or simulation within the previous year in which medical countermeasures were sent or received by the country.
Sustainable Capacity -5	Country participates in a regional/international partnership or has formal agreement with another country or international organization that outlines criteria and procedures for sending and receiving medical countermeasures AND has participated in an exercise or response within the past year to practice deployment or receipt of medical countermeasures.

(WHO) Joint Evaluation Tool (International Health Regulations 2005)

2.0 CRITICAL IMPERATIVES FOR IMPLEMENTATION OF THE ESC

This section discusses critical imperatives for the implementation of the ESC Framework. It outlines the guiding principles for the establishment and maintenance of an efficient ESC for deployment of medical countermeasures during the preparedness and response phases of an emergency. The key steps will be periodically reviewed to accommodate changes in the complex multi-sectoral, multidisciplinary operating environment of an emergency. These steps were informed by best practice in managing supply chains and will need to be systematically applied for the desired outcome.

2.1 Landscape Assessment

A landscape assessment is a position review of the interlinked factors that impact the capacity to respond to a public health event from a supply chain perspective. It involves:

Table 3 a): Landscape Assessment

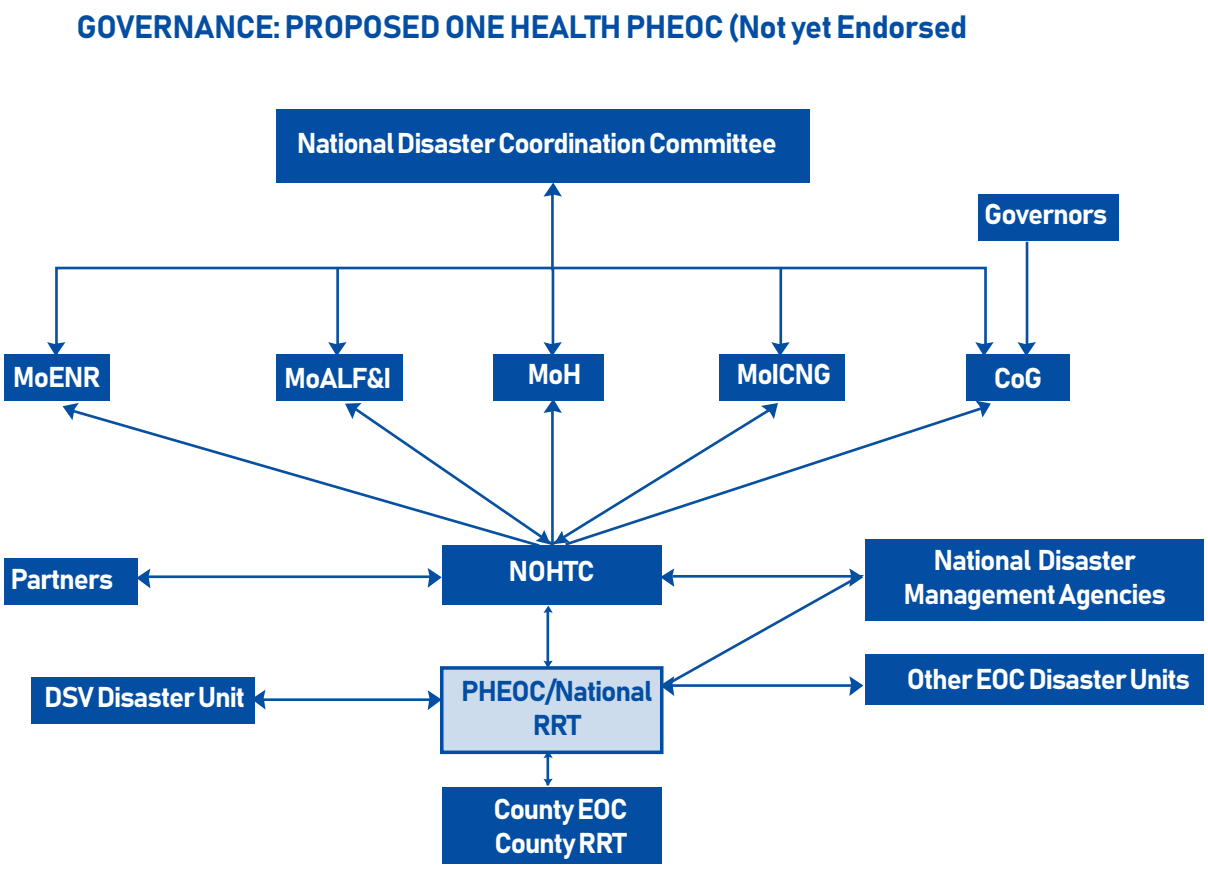
	Step	Activity
	Stakeholder assessment	• Periodically map local (state and non-state) and international actors to understand their roles, responsibilities and capacities in emergency supply chains.
1.	**Hazard assessment**	• Identification of the potential threats facing the country and prioritization based on the potential severity and likelihood to occur. Regular review and modification of disease is necessary since disease evolve overtime as informed by research. The design of the ESC is predicated on the threat profile of a country.
	Assessment of current state of the emergency supply chain.	• Understand baseline capacity and potential weak points that may delay response.

2.2 Governance, Financing and Personnel

Another critical assumption is that there exists an organizational design to facilitate emergency preparedness, i.e. a clear chain of command for mobilization of ESC resources and coordination of relevant partners. The framework developed for response to an outbreak of a public health event of initially unknown etiology (PHEIUE) linked policy and operational levels of preparedness and response (Figure 1).

The PHEOC is the hub for coordination of preparedness and response activities for public health events. An incident management system is employed to provide a unified control and coordination structure to manage an emergency. The PHEOC has five components, namely, management, operations, planning, logistics and administrative. The logistics section focuses on identifying, acquiring, storing, tracking and finally disposing of resources used in a response. The ESC will fall into this section.

Figure 1: One Health PHEOC



Kenya Public Health Event of Initially Unknown Etiology Framework

Table 3b): Governance, Financing and Personnel

	Governance, Financing and Personnel	
	Steps	**Activities**
	Organizational structures and designation of authority	• Identified roles and responsibilities. • Established mechanisms for stakeholder interaction.
2.	**Financing of ESC**	• Mechanisms for financing establishment and maintenance functions of the ESC determined, considering involvement of more than one ministry. • Expedited fund release processes that are key in preparedness and response, defined. • Protocols for financing procurement designed in consideration of the relationship with existing routine supply chains, and the possible sources from national budgets, international organizations and donor funds documented.
	Personnel training and readiness	• Readiness for response assured through scheduled trainings and simulations. • Design of training materials informed by feedback from prior crises, staff, and stakeholders, incorporating information from both pre-emergency training scenarios and post-emergency assessments.

2.3 Emergency Protocols

The national ESC response and the thresholds at which to declare a national emergency over, were determined. General principles that would apply across all diseases were defined. For zoonotic diseases, there was need to define animal as well as human triggers. Activation of the ESC during an animal disease outbreak may prevent progression to humans. The adoption of animal and human triggers was in keeping with the mandate of the PHEOC with a One Health approach as envisioned in the PHEOC Handbook.

The following general principles were agreed on for activation of the ESC:

1. The occurrence of one case or a positive environmental sample of a disease targeted for global elimination, e.g. polio.
2. The occurrence of one case of a highly pathogenic disease of international and national concern, e.g., Ebola, Marburg, COVID – 19 (Coronavirus Disease 2019), MERS-Cov (Middle East Respiratory Syndrome-coronavirus).
3. The occurrence of one case of a highly pathogenic disease in the region.
4. The spread of disease from one county to neighboring counties.
5. An outbreak of disease within internally displaced persons.
6. The national government becomes aware that a county is overwhelmed, i.e. disease is not controlled within a reasonable duration.

***Table* 3c): Emergency Protocols**

	Emergency Protocols	
	Steps	**Activity**
	Trigger definition	• Pre-establish protocols for what types of alerts that trigger the activation of the ESC to facilitate decision making.
3	**Separation of routine and emergency supply chains**	• Develop protocols for how the routine and emergency supply chains will interact.
	ESC Protocol	• Establish protocols to govern the ESC's readiness in between emergencies and manage how the ESC will function in an emergency.

2.4 Emergency Procurement and Supply Chain

Table 3d): Emergency Procurement and Supply Chain

	Emergency Procurement and Supply Chain	
	Steps	**Activity**
4	Commodity Planning	• Determine essential commodities to procure and stockpile based on potential hazards
	Quantity Forecasting	• Quantify the essential commodities required in an emergency.
	Procurement and Sourcing of Emergency commodities	• Identify suppliers and determine their capacity to meet needs in an emergency.
	Warehousing and Storage for Emergency Response.	• Map storage infrastructure to manage inventory of essential commodities during an epidemic.
	Transport	• Determine how commodities will flow from stockpiles and storage points to the service delivery points.
	Waste management	• Develop a plan for disposal of the contaminated materials generated during an epidemic.
	Logistics management information system (LMIS)	• Utilize a logistics management information system (LMIS) or other data system for effective management of ESC.

3.0

THE EMERGENCY SUPPLY CHAIN FRAMEWORK

The PHESC Framework provides a broad overview of the interlinked functions that support a one-health approach to development of a plan for the deployment of medical countermeasures during public health events. It is comprised of three broad areas; namely, people and processes, commodity planning and warehousing, storage and logistics. The three areas have nine key elements to guide the building of capability in the emergency supply chain for preparedness. The Framework has a complementary manual containing user guides and electronic spreadsheets detailing processes and protocols for each of the nine elements.

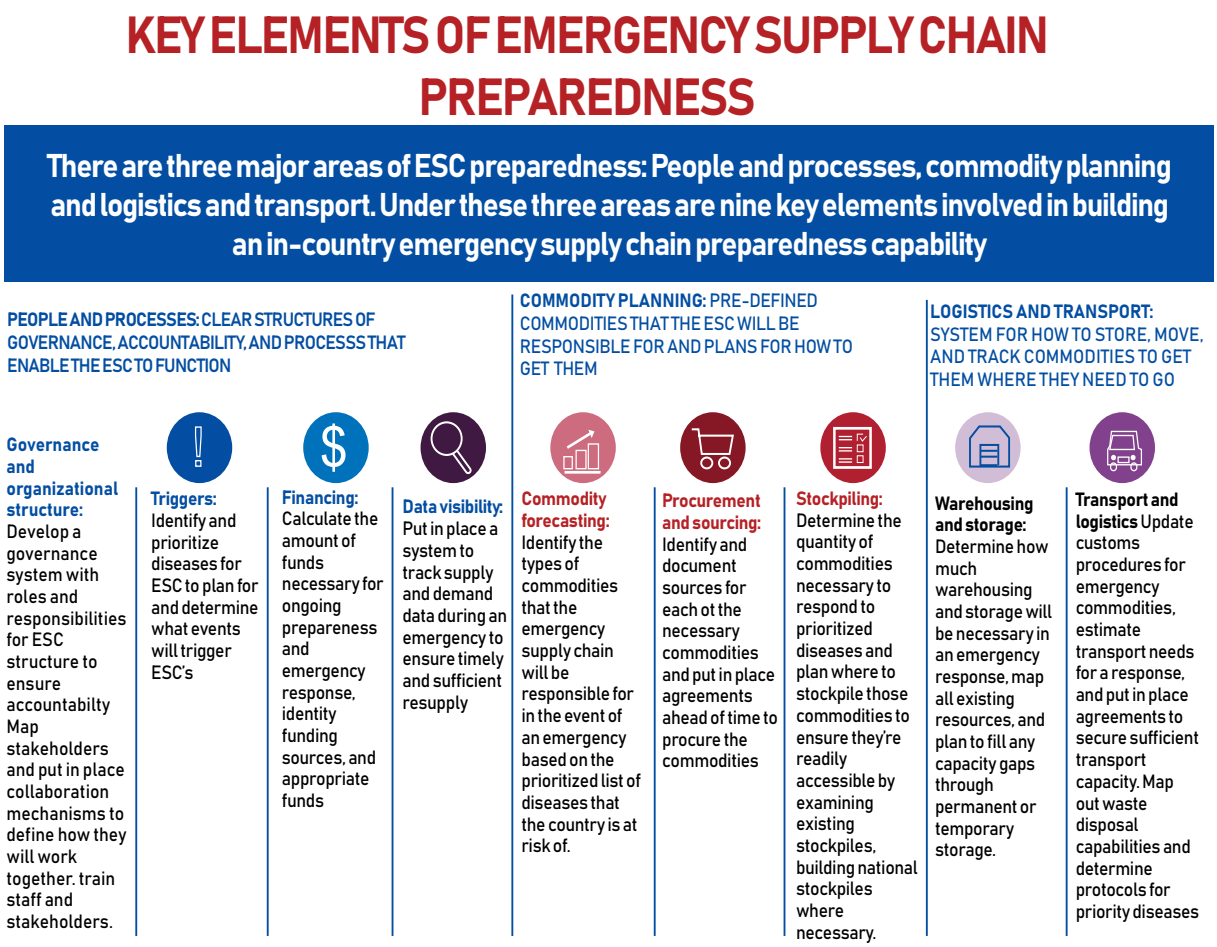


Figure 2: Key Elements of Emergency Supply Chain Preparedness

GHSC-PSM Emergency Supply Chain Playbook

3.1 Area 1: People and Processes

This section describes the clear structures of governance, accountability, and processes that enable the ESC to function.

3.1.1 Governance and Organizational Structure

The ESC will be an integral part of the already functional Public Health Emergency Operation Centre (PHEOC). The EOC has personnel from several MOH programs such as the Health Emergency Disaster Risk Management (HEDRM), Environmental Health (EH), and, the Directorate of Veterinary Services, MOALF & I, through the Zoonotic Diseases Unit. It is modeled on the WHO's EOC whose aim is to capacitate governments to work in a coordinated manner with stakeholders, non-governmental organizations, the private sector, and other non-state actors to prepare for, and respond to, public health events. An incident management system is utilized to structure the functions of the PHEOC.

3.1.2 Organizational Structure

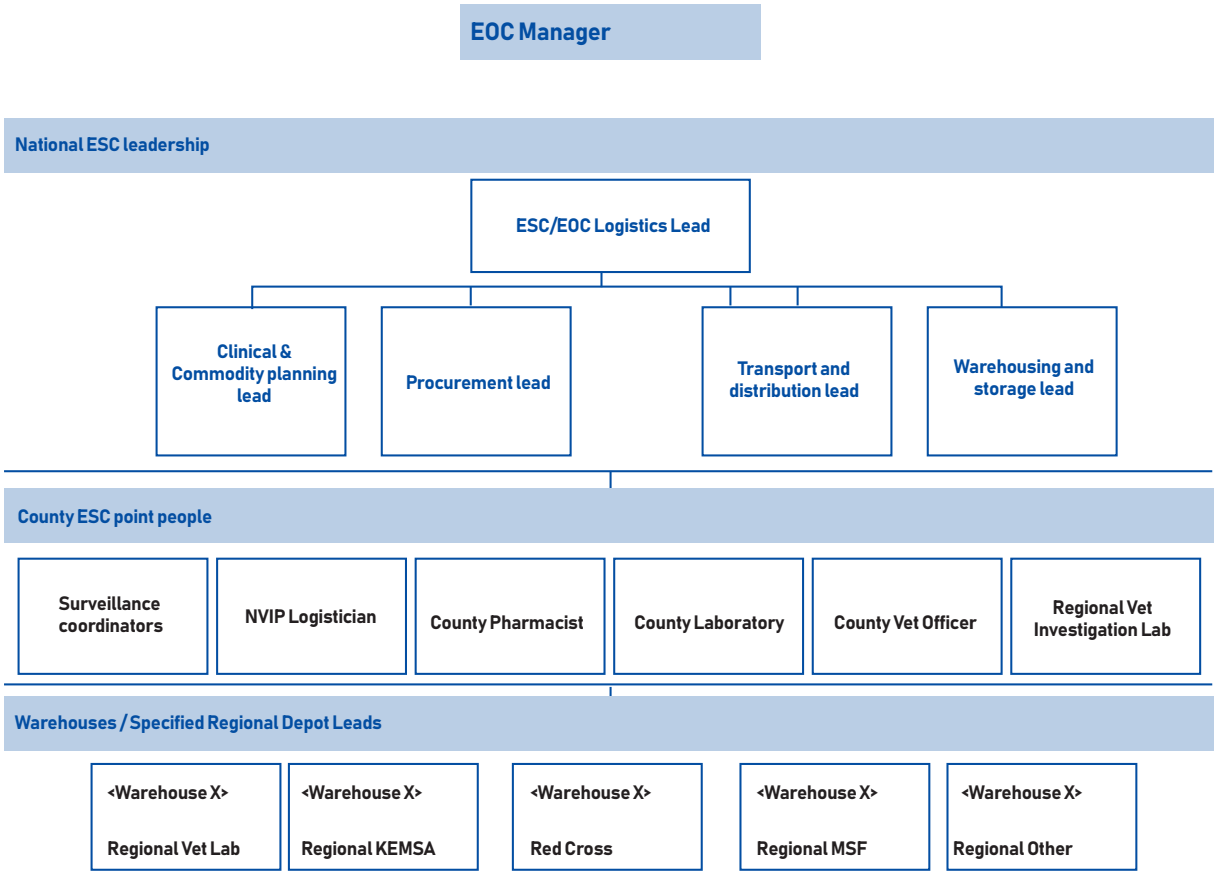
The organizational chart will establish the hierarchal lines of authority and communication for appropriate decision making and accountability in accordance with the incidence management system (IMS). It will describe how supply chain partners will work together to prepare for and respond to emergencies. This is important because emergency response is complex, involving many partners and different streams of resources. Coordination is therefore key to maximizing resource use and increasing efficiency.

The PHEOC has a technical manager who serves as the unit administrator. In the event of an outbreak, an incident manager is appointed by the Director General for Health (DG) and depending on the nature of the threat, may be one other than the PHEOC manager. The PHEOC has five sections; namely, management, operations, planning, administration, finance and logistics. The PHEOC logistics lead, a technical person, conversant with health commodities and not subject to routine government transfers, but with capability will transition into the ESC lead. His/her team will have a clinical/commodity lead whose mandate will be to review the commodities list either following an outbreak or change in disease management guidelines. A veterinary officer will be appointed for the same purpose but will not necessarily sit in the PHEOC. However, he/she should be formally appointed by the Director of Veterinary Services (DVS) with prescribed level of effort into the PHEOC.

The ESC lead will communicate with county point persons for the stock status report on the selected commodities, e.g. county pharmacists for pharmaceuticals and medical supplies, and the National Vaccination and Immunization Program (NVIP) logisticians for human vaccines, and the officer in charge of the Regional Veterinary Investigation Laboratories (RVILs) for veterinary products– RVILs are spread across the country and each one caters for a cluster of counties. The PHEOC manager will facilitate review of the ESC materials and training of PHEOC staff on the same. The chart below depicts this organizational plan.

6WHO, Framework for a Public Health Emergency Operations Centre, November 2015

Figure 3: Proposed ESC Organizational Chart



3.1.3 Stakeholder Mapping

Mapping of the key emergency response stakeholders in the various functions of the supply chain was conducted during the situation analysis of current practices in supply chain management in Kenya. The key stakeholders involved included MOH, MOALF & I, Ministry of Environment, other emergency operations centers (in ministries), representation from the Council of Governors, local and international NGOs such as Kenya Red Cross, multi-national organizations (e.g. FAO, WHO, IFRC), universities and research centers (KEMRI). Partner capabilities, along different dimensions of a supply chain, such as technical expertise, personnel, warehousing, and information on location of stockpiled commodities, funds, transport, cold chain and waste management facilities were documented. These capacities are reflected in the Stakeholders' map, (Annex 1) and in the completed electronic worksheets. The PHEOC's standard operating procedures for on-boarding new stakeholders during an emergency will be observed. The ESC lead will set up scheduled touch base meetings or put in place collaboration mechanisms to define how the partners will work together to maintain a well-informed ESC network. The stakeholders' map will undergo an annual review.

3.1.4 Personnel Training

The ESC will conduct scheduled trainings in sync with the PHEOC's other trainings. PHEOC personnel will be oriented to the ESC's standard operating procedures and protocols. In addition, simulations (tabletop or field) using the response protocols in the package of tools, will be part of up-skilling

of personnel. Trainings will afford an opportunity to update the tools and templates and support its continuous improvement. Standard operating procedures on the ESC functions have been developed in the form of "Response Quick Guides". These will be reviewed and updated routinely or following outbreaks and the staff trained anew. Scheduled simulations will be conducted, and lessons learned incorporated into the Framework or the standard operating procedures as appropriate.

3.1.5 Financing

This section of the Framework describes the costs of maintaining the ESC, provides options for funding, and identifies potential sources of funds for the routine activities and for emergency response. The costs are for warehousing, training and procurement of products that are to be prepositioned or purchased at the point of an outbreak. The situation analysis report indicated one of the major challenges in responding to emergencies was the delay in releasing funds allocated from the annual budgets of the concerned ministries. A ready mechanism to expedite release and disbursement of funds was not available. Yet, research in best practice in supply chain management has shown that money invested in advance of emergencies reduces the amount of response funds by half and allows for a quick response to control, contain and hopefully, stop the disease before it spreads.

The funding proposal below addresses funds-related challenges in rapid deployment of MCMs which previously delayed access to commodities in the early phases of an outbreak. It has two options for funding commodities from the routine supply chains and for direct procurement of those to be prepositioned or which are not readily available and will be procured on a need basis. The proposal is informed by the following factors:

1. That the ESC does not plan to stockpile the bulk of identified commodities, but rather will utilize existing supply chains (KEMSA, MEDS).
2. That the ESC is cognizant of KEMSA's capability to serve as the default supplier given that most of the essential commodities for response are common for use in outbreak of both human and animal diseases.
3. That it will be necessary to stockpile some commodities, though not in large quantities.
4. That there exist other mechanisms that would provide access to commodities in an emergency, e.g. contracts and MOUs with partners and some suppliers.
5. That some products will only be sought and bought at the first warning of an outbreak and therefore there is need for mechanisms that will facilitate rapid release of funds to the ESC.

   The mechanisms proposed are–

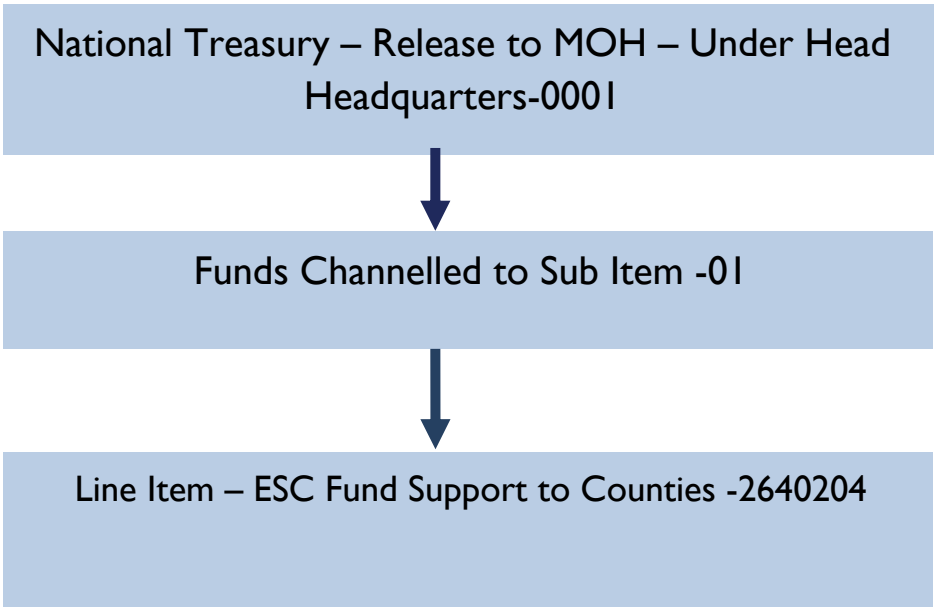
a) Capitation of KEMSA

KEMSA is a semi-autonomous government agency (SAGA) under the Ministry of Health with a mandate to procure, store and distribute essential medicines and medical supplies for public health facilities and programs. In addition, KEMSA maintains national stock reserves of commodities for priority public health programs, commonly referred to as parallel program items. Currently KEMSA has three funding mechanisms for procurement of health products and technologies (HPT): grants, capitalization and MOH allocations.

In the Framework proposal, the National Treasury would be requested, with evidence, to create a *new line* item under the *Headquarters Head 0001-01- Item 2640204 – Emergency Supply Chain support*

to the counties. The ESC fund would be utilized in the supply and logistics aspect of any emergency that may occur. Secondly, a portion of the allocated ESC fund can also be used to capitalize KEMSA, to stockpile specific health commodities for preparedness and response for outbreaks, as support to counties. KEMSA would be obligated to hold specified levels of health commodities and give the ESC real time access to stock status data of these products. These commodities would be available to the ESC whether the outbreak is in animals or humans.

Figure 4: Proposed Funding Mechanism for ESC



b) Contingency Fund

The second proposal calls for a proportion of each line ministry's disaster/emergency management fund to be ring fenced for the ESC. A Contingencies Fund is held at the National Treasury and is comprised of the National Contingency Fund and the County Contingency Fund. The Treasury is responsible for administering the Contingencies Fund. This will be a second line of funding for the ESC, but be ring fenced for procurement of products that are not readily available, e.g. those not yet registered in the country. Creation of an ESC fund is premised on the endorsement and adoption of the Framework' governance structure.

In addition, the PHEOC/ESC will reach out for contracts with suppliers and memorandums of understanding (MOUs) with development, humanitarian and other implementing partners. The Government already has MOUs and through these, advocacy for specific support to the ESC will be sought. Success of this proposal is contingent on sharing estimates with partners so that potential leveraging opportunities and funding sources will be identified, and agreements and fund release mechanisms put in place.

The estimated costs of the ESC functions are presented in Table 3. In addition, probable budget sources for preparedness are presented in (Annex 4).

Table 4: Estimated Costs *for the ESC Functions*

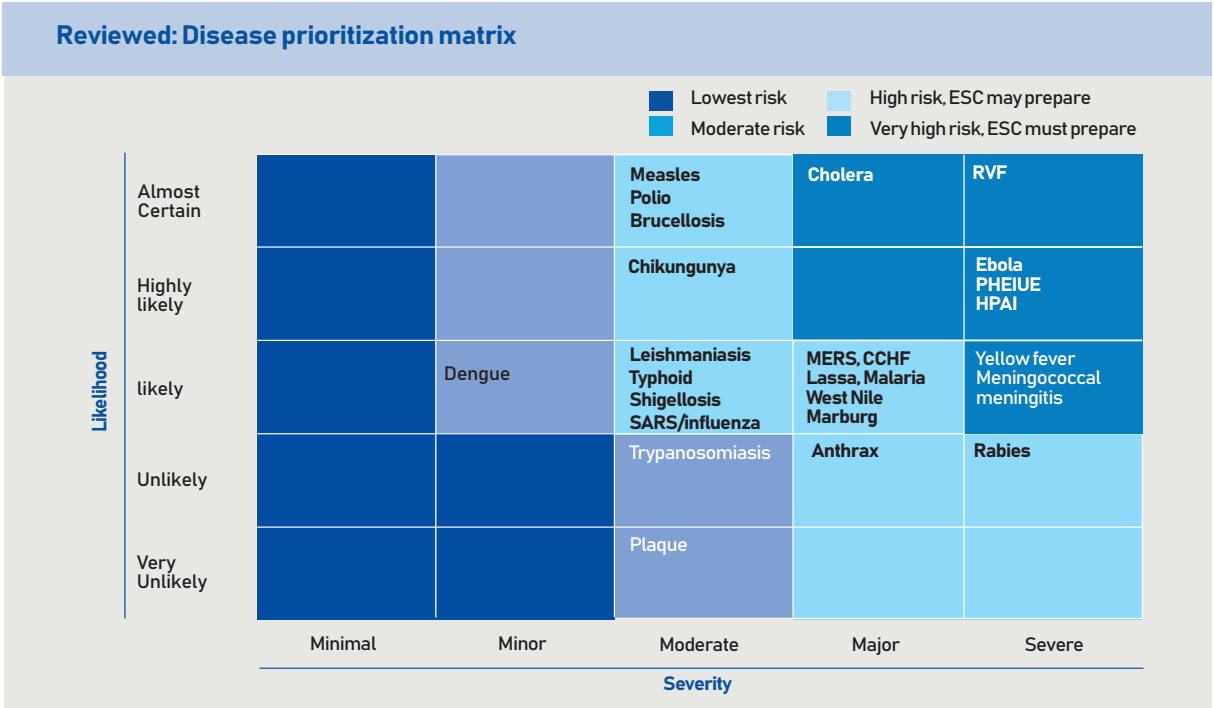
	Expense category	Components	Detailed assumptions on resource use per person/Case	Estimated cost per outbreak
Costs prior to the emergency	**Rental**	**•Stockpile warehousing; •Used garages for transport vehicles; •Waste management facilities**	**•See stockpile database**	**Not anticipated**
	Training	•Conferencing facilities	•KES 5000 per person per day •4 trainings / year •50 people per training * 3 days	KES 750,000.00
	Procurement before hand	**•Procurement of commodities (stockpiling)**	**Per procurement database**	**TBD in consultation with PHEOC.**
Costs in the event of emergency	Transport	•Fuel costs: own and county vehicles; field refrigeration; •Repair and maintenance (in field)	•30 days of an outbreak • Vehicle (relevant to supply chain) in use every day •KES 5000 per day	KES 150,000.00
	Storage (in field)	**•Refrigeration equipment and tents**	**•As needed.**	**Not anticipated**
	Procurement (including capitation of KEMSA)	•Costs of commodities to be stockpiled and stock replenishment	•KES 400,000,000	TBD – Depending on whether the commodity is to be stockpiled or drawn from the KEMSA.
	Administration	**•Communication (airtime, internet/ data) •Office supplies (printing, paper, pens, etc.)**	**•Airtime & data - KES 1000 per day •Printing & office supplies - KES 5,000 per outbreak •30 days outbreak**	**KES 35,000.00**
	Security	•In transit and warehouse security	•KES 5000 per person •2 security staff •30 day- outbreak	KES 300,000.00
	Waste Disposal	**•Incineration services**	**•TBD**	-
Sub-Total				KES 401,235,000.00
Contingency	**Contingency Cost**	**•Percentage of total Cost**	•5%	**KES 20,061,750.00**
TOTAL COST				KES 421,296,750.00

A statement, emanating at the Cabinet level, on an annual rollover of the funds in the absence of an outbreak policy, will be put in place.

3.1.6 Defined Triggers

Disease threats provide the evidence base for the country's selection of the types and quantities of commodities that should be stocked in the emergency supply chain. Further, the process informs decisions on whether and what to stockpile. This is critical for preparedness and response because potential resources to leverage are then identified in advance and careful consideration of the country context, in terms of hazards, existing capacity and geography considered. These factors will influence the design of the emergency supply chain and the amount of funding required. Figure 5 below presents the output from the experts' workshop of prioritized diseases zoned according to how likely they were to occur and their potential severity. These two dimensions served as indicators of the diseases for which the ESC must prepare for; those for which it may prepare for, depending on resource availability; and, those where only a moderate or low risk of occurrence existed. Diseases which may cause severe disability, e.g. polio; those with potential for use in biological warfare, e.g. anthrax; and those that pose a threat to national security and commerce, i.e. highly pathogenic diseases, e.g. Ebola, were also included.

Figure 5: Disease Prioritization Matrix (as at February 2019)



The PHEOC operates at various levels of alertness; namely:

- ***Watch*** mode: (routine observation)
- ***Alert*** mode: Monitor signals which have been picked from surveillance data or reports; Threshold into an outbreak has not yet been reached.
- ***Response*** mode: outbreak has been confirmed.
- ***After-action*** mode: Reviews to evaluate response performance.

Following prioritization of the diseases for which the ESC will prepare, consideration was given to the

events that would prompt intervention by the national ESC. The devolved governance structures left the responsibility of first response to the counties, but without clear guidance on when to seek support from the national government. Therefore, for each disease in the red zone the trigger to escalate from county to national level was set based on six principles to produce Table 5 below.

The following general principles were agreed on for activation of the ESC:

- The occurrence of one case or a positive environmental sample of a disease targeted for global elimination, e.g. polio.
- The occurrence of one case of a highly pathogenic disease of international and national concern, e.g. Ebola, Marburg, MERS-Cov. COVID-19
- The occurrence of one case of a highly pathogenic disease in the region.
- The spread of disease from one county to neighboring counties.
- An outbreak of disease within internally displaced persons.
- The national Government becomes aware that the county is overwhelmed, i.e. disease is not controlled within a reasonable duration.

Table 5: Principles for Determining Triggers to Activate ESC

Principles	Disease	Triggers
IDSR Technical Guideline, prolonged outbreak, request from county	Cholera	One confirmed case with at least >1% case fatality rate, spread in other counties. Outbreak takes more than 2 weeks
IDSR guidelines, prolonged flooding and increased vector densities, increased abortion in animals, reported cases in neighboring countries	Rift Valley Fever	One confirmed case (human)
IDSR guidelines, reported cases in neighboring countries, increased mosquito density	Yellow Fever	One confirmed case
IDSR guidelines, Kenya within meningococcal meningitis, confirmation in neighboring countries,	Meningococcal Meningitis	Ten confirmed cases within a week. Prolonged epidemic, > 10 days.
IDSR Technical Guideline, prolonged outbreak, request from county	Rabies	One dog bite from a suspected rabid animal
IHR 2005 guideline and any other available resource	PHEIUE	A cluster of cases
IHR 2005 guideline	Small pox	One suspected case
IHR 2005 guideline	Human influenza due to new subtype	One suspected case
IHR 2005 guideline	SARS	One suspected case

3.1.7 Data Visibility

The information, communication and technology (ICT) system at the PHEOC was assessed by

KEMSA, the PHEOC ICT team and Afya Ugavi and options for accessing stock status data on the ESC commodities determined. Because KEMSA has an Enterprise Resource Plan, the need to select indicator commodities for tracking was not necessary. The stock status of all the items on the ESC catalogue will be tracked. The protocol for installing an inventory management module will be simple and follow the steps below:

1. The list of commodities to be tracked will be provided to KEMSA.
2. KEMSA will create a tool in its system for grouping the items.
3. KEMSA will develop an application programming interface (API) endpoint for exposing the stock status (real-time) for the items in the tool.
4. KEMSA will provide an API endpoint for exposing historic consumption data on stock status of the ESC commodities for PHEOC data processing and reporting purposes
5. PHEOC ICT will provide a list of users to be granted access to KEMSA's system.
6. KEMSA will grant rights to view stock issues information and available stocks for items tracked in PHEOC tool.

3.2 Area 2: Commodity Planning

Commodity planning in emergency preparedness and response refers to the identification of the types, specifications and quantities of commodities required to respond to an outbreak. The list is developed from the hazard assessment's list of priority diseases and provides the country with the evidence base to design and plan the functions of a supply chain. It enables forecasting of needed quantities, determination of procurement procedures, and identification of suppliers and negotiation of trade agreements. Further, a selected list of commodities informs planning for storage needs, transport and development of protocols on inventory management as well as waste disposal. There are three elements of commodity planning:

3.2.1 Commodity Forecasting

Commodity forecasting is the first step in supply chain management. The consumption ratio used to calculate the quantities in the event of an outbreak was determined from the tools and Excel templates in the accompanying User Guide. The categorization process and terms were the same for human and veterinary commodities. The ESC will be responsible for six categories of commodities, further divided into sub-categories. These are:

1. Pharmaceuticals, vaccines, and disinfectants
2. Medical supplies and consumables (including personal protection equipment)
3. Laboratory supplies
4. Medical devices
5. Medical equipment and infrastructure
6. General, water and sanitation items.

Although these were arrived at from the red zone of the priority diseases matrix, they are of common application to most hazards. The overall consumption was calculated and the protocols for procurement

determined. Various references, such as Kenya Essential Medicines List[6], Kenya Essential Medical Laboratory Commodities List[7], Kenya Essential Medical Supplies List[8], Interagency Emergency Health Kit 2011[9], UNICEF Supply Catalogue, KEMSA LMIS and ordering tool, MEDS Price Guide and other international price guides were used to obtain technical specifications for the commodities. Registration status, regulatory issues and packaging, were taken into consideration to ease the procurement process and facilitate utilization of in-country suppliers and international stockpiled resources such as those from WHO, UNICEF and MSF.

The commodities list has about 550 items, most of which are common for both human and animal needs (personal protective equipment, medical supplies and consumables, and devices) and will be procured from the same suppliers. The list will be kept fully up to date in consultation with discipline experts to determine specifications for new inputs. It will be refreshed following outbreaks, changes in treatment guidelines or routine hazard assessment by the ESC. To maintain the ESC list, specialized departments such as pharmacy, malaria teams, will be co-opted into these review exercises to pressure-test assumptions taken. Although some of the diseases in the red zone of the prioritization matrix can have pre-packed kits, the ESC opted for a piecemeal ordering system to minimize wastage due to expiry. The decision was influenced by lack or limited historical consumption data.

3.2.2 Procurement and Sourcing

Procurement and sourcing are functions of the supply chain that deal with identification of suppliers for the necessary commodities and plans for agreements to procure for emergency response. Guidance for this section was adopted from the tools and templates on identification and quantification of commodities in the customized User Guide. The outputs from this activity were a list of suppliers for emergency supply chain commodities and templates for agreements with them. For human commodities, the ESC will largely depend on the suppliers for existing routine supply chains; these were identified as KEMSA and MEDS as the first and second supplier, respectively. In the implementation phase, the ESC will reach out to supplier contacts to establish payment and delivery conditions for veterinary commodities. These suppliers will be vetted for service reliability, lead times, product quality and financial viability given the reliance on private sector. Protocols for engagement and contracts to document the agreement will be written based on the templates in the User Guide. A checklist, to describe the key elements of the agreement such as details on package size, capacity to supply, timelines (within how many weeks of emergency trigger will item be available), storage (ability of supplier to keep items on site), transport (indication of whether supplier will provide last mile transport), payment structure (showing how funds will be released). These details are captured in the sample agreement checklist, Annex 6

The list of suppliers is contained in the procurement database.

3.2.3 Stockpiling

Stockpiling is planning for rapid access to a critical quantity of commodities necessary to initially respond to prioritized diseases. According to the JEE Report[10], there is a lack of plans and resources for stockpiles and funding is inadequate. Therefore, the ESC will hold an experts' meeting to validate the products to be stockpiled at national level. Decisions on where these will be stored, which regional or virtual stocks to leverage to expedite access in an emergency will be described in the stockpile strategy.

[6]MOH, Kenya Essential Medicines List, 2016
[7]MOH, Kenya Essential Medical Laboratory Commodities List, 2014
[8]MOH, Kenya Essential Medical Supplies List
[9]UNICEF, Interagency Emergency Health Kit 2011
[10]WHO/JEE Report

In line with best practice in supply management, considerations for stockpiling nationally or relying on international depots will be based on:

- ***Demand considerations***: Likelihood of use, substitutability (e.g., can another product or method be used for the same effect?), consumption patterns, existing stock levels in routine supply chain[11]
- ***Ease of availability*** of commodities because of either limited use or exclusion from the routine supply chains.
- ***Commodities which are rare*** by dint of being new and still undergoing trials or limited use e.g. experimental vaccines (Ebola); network with other EOCs to stockpile to facilitate sharing and minimization of loss due to expiries.
- ***Equipment*** that require upfront contracting.
- Commodities with ***short shelf life***.
- Products that are ***used for outbreaks in proven cases*** e.g. yellow fever, Hepatitis vaccines.
- ***Availability and affordability*** of storage.
- ***Ease of import*** (regulatory and registration considerations).

A national stockpile plan will be developed, commodities will be procured and included in the defined storage and inventory management system i.e. identify and up-skill staff for stockpile management, develop a system for rotating supply through routine supply chain while regularly replenishing emergency stocks. Stock monitoring will be conducted on at least a quarterly basis to avoid expiry and misappropriation, and updated quantities recorded in "Stockpile" worksheet.

3.3 Area 3: Logistics and Transport

3.3.1 Warehousing and Storage

Total storage capacity is determined by the quantity and volume of essential commodities forecasted for an outbreak. Applying the User Guide tools and templates the existing warehouse and storage facilities of the two-line Ministries, MOH and MOALF & I, were assessed for current capacity and mapped. In addition, partners were engaged and assisted in identifying additional capacity and space, nationally and regionally.

[11]Technical Report, Best Practices in Supply Chain Management

The permanent warehouse capacity available is provided in Annex 8 and Table 6 below is a summary of that situation.

Table 6: 'Owned' and Partner Permanent Warehouse Capacity Available

Storage	Capacity	
	Standard (m3)	**Cold Chain (m3)**
Storage Required	5,480.00	548.00
Total Owned by MOH (KEMSA) and DVS	28,509.00	1,059.64
Total Partner (MEDS, KRCS and MSF)	10,000.00	330.00
Gap between Total Permanent Storage Required	(33,029.00)	(841.64)

A schedule of visits to these warehouses to determine their viability and verify that both the standard and the cold chain facilities are fully functional will be periodically done. A checklist for good distribution practice will be drafted and consistently used to ensure the identified warehouses are well maintained.

The cost of warehousing differed with KEMSA charging 5% of the value of the goods. There were no indicated charges for the DVS stores and MEDS charges per unit item. Therefore, contracts will be drawn up guided by the template in the User Guide.

3.3.2 Transport, Logistics and Waste Management

A transport plan describes how emergency commodities will get to the front lines and how and where waste would be disposed of. Applying the tools and templates in the User Guide, transport options were discussed with the identified suppliers to establish the types, location, capability and mode they could provide. For the two key suppliers – KEMSA and MEDS – information on the types of vehicles, the terrain which these could handle and whether they did last mile distribution was documented. Consideration of whether they needed to use third-party logistics companies, capacity to meet commodity transport specifications, such as cold chain, were considered. Other transporters, including Kenya Armed Forces, AMREF, UNICEF, MSF, and Kenya Red Cross were mentioned and included in the transporters list for the ESC to follow-up on. With a view on the Management Checklist, the ESC will negotiate and write contracts with transport providers ensuring priority status during emergency and establishing general payment structures.

Waste management is the process of safely handling, storing, collecting and disposing of contaminated commodities during a disease outbreak. It starts with development of a plan describing the minimization of generating such waste, and where it is unavoidable, segregating it into different categories. This is followed by establishment of protocols with specific requirements for each category because each category requires a different set of disposal practices. Categorization is done to prevent cross contamination of waste which would result in a build-up of larger waste quantities and higher costs for treatment and disposal. The ESC conducted a mapping exercise of disposal sites to eliminate the need to transport hazardous waste over long distances and ensure that sites get only the waste they can adequately dispose. Annex 8 presents the map of available waste disposal sites. Protocols for disposal will be developed by the ESC in consultation with the relevant experts.

4.0: ANNEXES

Annex 1: Kenya Public Health ESC List of Participants

	Name	Title
1	Dr. David Soti*	Senior Deputy Director of Medical Services, MOH (*Chair*)
2	Dr. Simon Kibias	Head, Division of Emergency Disaster Risk Management
3	Dr. Kepha Ombacho	Head, Division of Environmental Health, MOH
4	Dr. Thomas Manga	Assistant Director Veterinary Services, MOALF & I
5	Dr. Kadondi Kasera	Manager Public Heath Emergency Operations Centre, MOH
6	Dr. Emmanuel Okunga	Division of Disease Surveillance and Epidemic Response
7	Dr. Anthony Wainaina	DDPH, Division of Environmental Health
8	Mr. Benson Adul	Principal Animal Health Officer, Directorate of Veterinary Services
9	Dr. Daniel Langat	Head, Department of Disease Surveillance and Response
10	Dr. Linda Makayotto	Head, Division of Disease Surveillance and Response
11	Dr. Josphat Mbuva	Senior Deputy Chief Pharmacist, MOH
12	Mr. Charles Rombo	National Blood Transfusion Services, MOH
13	Mr. Henry Oseko	Senior Supply Chain Management Officer, CDC, MOH
14	Mr. Eliud Muriithi	Director, Commercial Services, KEMSA
15	Evans Shiraku	County Disease Surveillance Coordinator, Busia
16	Dr. Mohamed Salat	County Director of Health, Garissa
17	Khatra S Said	Garissa County Health Department
18	Dr. David Ndegwa	County Director of Health, Kiambu
19	Dorcas N Mutisya	County Disease Surveillance Coordinator, Kiambu
20	Dr. Tabitha Gathecha	County Veterinary Officer, Kiambu
21	Dr Kiio S Ndolo	County Director of Health, Makueni
22	Henry Kivuva	County Disease Surveillance Coordinator, Makueni
23	Jimaler Hussein Mohamud	County Disease Surveillance Coordinator, Mandera
24	Fatuma N Issack	County Nursing Officer, Mandera
25	Dr. Adano Kochi	County Director of Health, Marsabit
26	Abduba Liban	County Disease Surveillance Coordinator, Marsabit
27	Dr. Salma Swaleh	Mombasa County Health Department
28	Hussein Bilal	Sub - County Disease Surveillance Coordinator, Mombasa
29	Dr Esther M Kyole	Senior Veterinary Officer, Mombasa
30	Dr. Caren Ndeta	Senior Veterinary Officer, Nairobi
31	Kenneth Mando	Nairobi County Health Department
32	Raphael Muli	County Disease Surveillance Coordinator, Nairobi
33	Dr. Okemwa Job	Rep. County Director of Health, Turkana
34	Dr. Dhahir Somow	County Director of Health, Wajir

35	Mohamed Jelle	County Disease Surveillance Coordinator, Wajir
36	Dr. George Songor	County Veterinary Officer, Wajir
37	Dr. Andrew Thaiyah	Global Health Security (GHS) Advisor, USAID Kenya & East Africa
38	Dr. James Riungu	Supply Chain Director, Afya Ugavi
39	Ms. Rosalind Kirika	Supply Chain Consultant, Afya Ugavi
40	Dr. Jeanette Dawa	Clinical Consultant, Afya Ugavi
41	Victor Okoth	Regional Officer, Afya Ugavi
42	Joseph Warero	LMIS Advisor, Afya Ugavi
43	Meera Shah	Regional Officer, Afya Ugavi

Annex 2: Map of Stakeholders Showing Areas of Capability

	People and processes			Commodity planning			Transport and logistics		
	Governance	Financing	Triggers	Commodity forecasting	Stockpiling	Procurement and sourcing	Warehousing and storage	Transport waste management	Data visibility
Centers for Disease Control and Prevention (CDC)	√	√	√						√
Council of Governors KE	√	√					√	√	
DVS MOALF & I	√	√	√	√	√	√	√	√	√
FAO	√	√	√						
IFRC	√			√	√	√		√	
KEMRI/ USAMRU				√					
KEMSA	√			√	√	√	√	√	√
Kenya National Blood Transfusion Services - KNBTS	√			√		√			
Kenya Red Cross	√			√	√	√	√		
Medecins Sans Frontier - MSF					√	√	√		
Ministry of Environment	√		√						
Ministry of Health - MoH (1/3)	√	√	√	√	√	√	√	√	√
Mission for Essential Drugs and Supplies - MEDS				√	√	√		√	
National Disaster Management Unit (NDMU)	√	√						√	
National Disaster Operations Center - NDOC	√							√	
National Vaccines and Immunization Program -	√		√	√	√	√	√		
One Health Workforce	√								
Pharmacy and Poisons Board	√					√			
PPOA		√							
Predict 2			√						
University of Nairobi			√						√
USAID	√	√	√						√
Veterinary Medicines Directorate				√					
WHO	√	√	√	√	√	√			
World Organization for Animal Health - OIE	√	√	√	√	√	√			√
ZDU/ One Health TWG	√		√						
Aga Khan University Hospital			√	√					

Annex 3: Kenya's IDSR Conditions and Events

Epidemic-prone Diseases	Diseases Targeted for Eradication or Elimination	Other Major Diseases, Events, or Conditions of Public Health Importance
• Anthrax • Brucellosis • Cholera • Diarrhea with blood (Shigella) • Dengue Fever • Measles • Meningococcal meningitis • Plague • Rift Valley Fever • Severe Acute Respiratory Infections1 • Typhoid Fever • Viral Hemorrhagic Fever Syndrome2 • Yellow Fever 1) National programs may want to add Influenza-like illnesses to their priority disease list 2) Ebola, Marburg, Lassa, Crimean Congo, West Nile Fever	• Acute Flaccid Paralysis (poliomyelitis)3 • Guinea Worm Disease (Dracunculiasis) • Leprosy • Leishmaniasis • Neonatal tetanus 3) Disease specified by international health regulations (2005) for immediate notification	• Acute jaundice • Adverse events following immunization • Cancers (breast, cervix, esophagus, and prostate) • Diabetes mellitus • Diarrhea with dehydration in children under 5 years of age • HIV/AIDS (newly diagnosed cases) • Hypertension • Malaria • Malnutrition in children under 5 years of age • Maternal deaths • Neonatal deaths • Rabies (animal bites) • Road traffic Injuries and fatalities • Schistosomiasis • Severe pneumonia in children under 5 years of age • Sexually transmitted infections • Trachoma • Tuberculosis (including MDR, XDR TB)

Diseases or Events of International Concern
• Human influenza from a new subtype*
• Severe Acute Respiratory Syndrome*
• Smallpox*
• Any public health event of international or national concern (infectious, zoonotic, food borne, chemical, radio, nuclear, or from unknown condition)

**Disease specified by International Health Regulations (2005) for immediate notification*

Annex 4: Priority Zoonotic Diseases in Kenya

- Viral hemorrhagic fever (CCHF, Dengue, Rift Valley Fever, Yellow Fever, Ebola, Marburg)
- Avian influenza and other pandemic influenza viruses (e.g. 2009 A/H1N1)
- Brucellosis
- Leishmaniasis
- Leptospirosis
- Anthrax
- Rabies
- West Nile virus
- Bovine tuberculosis
- Plague
- Tularemia
- Protozoans (Cryptosporidiosis, Toxoplasmosis)
- Salmonellosis
- Helminths (Trichinosis, Cysticercosis, Hydatidosis, Sarcopsis, Diphyllobothrium)
- Fungal diseases (Dermatophilosis, Histoplasmosis, Cryptococcosis, Aspergillosis)
- Schistosomiasis
- Trypanosomiasis

* *CCHF – Crimean Congo hemorrhagic fever, RVF-Rift Valley fever, YF-yellow fever.*

***The diseases are not ranked in any order*

Annex 5: Budget Sources for Preparedness

Source	Costs covered	Notes on budget allocation process	Deadline for budget request
Ministry of Health	Relevant materials including shelter, nutrition, procurement of vaccines, water, sanitation, extrication, body bags and transport and communication.	The Government will at the national and county levels, through grants and investment, support all hazard response as part of health services provision in Kenya. The Government will make funding available through annual budgetary allocations and subsidies at both national and county government levels. In addition, the MOH will shall provide guidelines for utilization of donor funds.	June each year
CDC	Data analysis, testing, support in developing situation reports (in conjunction with WHO and MOH)	CDC Kenya and WHO, the MOH activated the PHEOC for the first time and identified an Incident Manager to coordinate the response. FELTP residents were assigned to the PHEOC where they updated line lists, analyzed data, developed situation reports, called contacts and other persons of interest	3 to 6 months.
WHO	Relevant materials	An MOU shall be developed with relevant organizations that are source of relevant materials.	3 months
UNICEF	Relevant materials (as above)	An MOU shall be developed with relevant organizations that are source of relevant materials including shelter, nutrition, vaccines, water and sanitation, extrication, body bags and transport.	3 months
RED CROSS	Transport, air transfers, storage and commodities	An MOU shall be developed with relevant organizations that are source of relevant materials including shelter, nutrition, vaccines, water and sanitation, extrication, body bags and transport.	3 months
UN-OCHA	Relevant materials (as above)	An MOU shall be developed with relevant organizations that are source of relevant materials	3 months
International and local NGOs, CSOs, private sector players.	Relevant materials		
Ministry of Agriculture		The Government will make funding available through annual budgetary allocations and subsidies at both national and county government levels.	June each year.
FAO			
USAID	Relevant materials		
MSF	Relevant materials		

Annex 6: Mapped Warehouses

	Capacity		
	Standard	**Cold Chain**	
Storage Required	5,480.00	548.00	
Total Owned	28,509.00	1,059.64	
Total Partner	10,000.00	330.00	
Gap: Total Permanent Storage Required	(33,029.00)	(841.64)	
Ownership	**Name/Location**	**Supply Chain Level**	**Total standard storage capacity, in meters cubed**
KEMSA	Embakasi Warehouse	National	18806
KEMSA	Commercial Street Warehouse	National	3890
KEMSA	Meru, Nakuru, Kisumu Kakamega, Mombasa, Nyeri Eldoret, Garissa.	Regional	4,163
NVIP	Kitengela National Depot	National	0
NVIP	Nairobi Depot	National	
DVS (Vaccines)	KEVEVAPI, Kabete-Nairobi	National	
DVS (Other supplies)	Kabete-Nairobi	National	1600
NVIP	Meru Depot	Regional	
DVS	Nairobi	National	
DVS	Kericho, Nakuru, Eldoret, Karatina, Garissa, Mariakani, Witu, Ukunda	Regional	
Total Owned			28509
MEDS	MEDS Centre	National	10000
MSF (regional hospitals)			
Kenya Red Cross	KRC Turkana (Lodwar #1)	Regional	324
Kenya Red Cross	KRC Turkana (Lodwar #2)	Regional	324
Total Partner			10000

Annex 7: Sample Negotiation Checklist

24 October 2018

[Address]

Dear [……],

RE: INDICATIVE NEGOTIATION CHECKLIST

This indicative negotiation checklist sets out the terms and conditions of a potential emergency supply agreement between [*GoK*] and [*KEMSA/ MEDS*] ("Supplier").

1. TIMING	
1.1 Term of the supply agreement	Should be matched to existing agreements/ MoU for routine supply chain
1.2 Lead time	In accordance with provisions of attached procurement database (*Annex 1*) for each commodity
2. COMMODITIES	
2.1 Stockpile of available/ registered commodities	Supplier will keep at least 3 months' worth of stock for all commodities available/ registered in Kenya. The attached commodities list (*Annex 2*) provides our definition of 1 months' worth of stock [TBC]
2.2 Unregistered/ unavailable commodities	For commodities that are not yet registered in Kenya • Before an outbreak, the Supplier will facilitate the process of obtaining approval for use in Kenya, whether through registration, waivers or otherwise • Upon completion of the above process, Supplier and [EOC/ ESC Lead will agree on the stockpiling requirements for the specific commodities. If no stockpiling is required, a protocol will be defined for expedited delivery of the commodity in the event of an outbreak. • In the event of an outbreak, if the above process is not yet completed, [DMS/ DVS] will facilitate the fast-tracking of approvals for use of the relevant commodity within Kenya
2.3 Quality control	Supplier will ensure that the commodities supplied are fit for the purpose

2.4 Delivery	Supplier will ensure delivery of the required quantities as follows: • The supplier will deliver 2 weeks' worth of stock to the facility/ site identified by [EOC/ ESC Lead] • The supplier will deliver 1 month's supply of stock to the identified storage site (e.g. county central store) • The supplier will ensure that they retain 3 months' worth of stock at their closest regional warehouse/ depot Each of these storage points should be replenished regularly during the outbreak to ensure that the noted stock levels are maintained.
2.5 Insurance	Supplier will ensure it retains sufficient insurance cover to safeguard their obligations under the supply agreement
3. DISTRIBUTION	
3.1 Storage and transport	• Supplier will provide last mile distribution as instructed by [EOC/ ESC Lead] and in accordance with the set lead times • Supplier will meet both the manufacturers' requirements as well as WHO storage requirements, up to the final delivery point.
3.2 Reverse logistics	As and when instructed to do so by the [EOC/ ESC Lead], Supplier will collect the remaining inventory from the facility or identified storage site for transport to a new point of use, point of disposal or point of storage (including the Supplier's own warehouse)
3.3 Emergency supply vs routine supply	Supplier will prioritize emergency deliveries over routine deliveries
4. PAYMENT STRUCTURE	
1.1 Release of funds	GoK will release funding within 10 days of the delivery of supplies to enable replenishment of stocks
5. DATA VISIBILITY	
5.1 Data visibility throughout the year	• Supplier will provide the [ESC/ EOC] both physical access to their stores, as well as access to their inventory management system, to give visibility over storage conditions and stock status • Supplier will provide the information set out in the attached report (*Annex 3)* in the second week of every quarter

5.2 Data visibility during an outbreak	For every outbreak, Supplier will provide weekly summaries of stock status for relevant commodities using the same tool as mentioned above (*Annex 3*)
5.3 Data visibility after an outbreak	Supplier will provide such support as may be required by the [ESC/ EOC] to undertake an audit of the inventory handling during the outbreak including, but not limited to a full report of items and quantities supplied

ANNEXURES

1. Procurement database relevant to KEMSA/MEDS (as relevant)
2. Commodities list
3. [ESC inventory report]

Annex 8: References

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