



REPUBLIC OF KENYA

ZDU

**ZOONOTIC
DISEASE UNIT**

A collaboration between the Ministry
of Livestock Development and the
Ministry of Public Health and Sanitation

STRATEGIC PLAN FOR THE IMPLEMENTATION OF ONE HEALTH IN KENYA 2012 – 2017

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TABLE OF CONTENTS

List of Abbreviations	2
Foreword.....	3
Introduction.....	4
Acknowledgements.....	5
Executive Summary.....	6
1.0 Background.....	7
1.1 Burden of Zoonoses in Africa.....	8
1.2 Steps Towards the One Health Approach in Kenya.....	8
1.3 Zoonotic Disease Unit (ZDU)	8
<i>Figure 1: ZDU Organizational Chart.....</i>	9
<i>Table 1: List of Priority Zoonotic Diseases for Kenya</i>	10
2.0 One Health Strategic Plan.....	10
2.1 Goals of the Strategic Plan.....	11
<i>Table 2: Goals and Objectives in the OH strategic plan for Kenya</i>	13
3.0 The Strategic Framework.....	15
<i>Table 3: The One Health Strategic Framework.....</i>	15

List of Abbreviations

AU-AIBAR	Africa Union –InterAfrica Bureau for Animal Resources	MoPHS	Ministry of Public Health and Sanitation
CDC	Centers for Disease Control and Prevention	NIT	National Influenza Taskforce
FAO	Food and Agriculture Organization	OH	One Health
FELTP	Field Epidemiology and Laboratory Training Program	OHCEA	One Health Central and Eastern Africa
GIS	Geographic Information Systems	OIE	World Animal Health Organization
IDSR	Integrated Disease Surveillance and Response	RVF	Rift Valley fever
IHR	International Health Regulations	USAID	United States Agency for International Development
ILRI	International Livestock Research Institute	WHO	World Health Organization
KEMRI	Kenya Medical Research Institute	ZDU	Zoonotic Disease Unit
KWS	Kenya Wildlife Services	ZTWG	Zoonosis Technical Working Group
MoLD	Ministry of Livestock Development		

FOREWORD

In the past few years, emerging disease epidemics have increased globally. Most of these emerging episodes have been zoonotic, that is diseases that are transmitted between animals and humans. The increased burden of zoonotic diseases is the result of several factors including the rapid growth in human and livestock populations, rapid urbanization, rapidly changing farming systems, closer integration between livestock and wildlife, forest encroachment and other changes in ecosystems.

Most zoonoses are, however, not prioritized by health systems at the animal and human health sectors and have therefore been ‘neglected.’ These diseases are especially endemic in Kenya. Such neglected zoonoses including brucellosis, rabies, anthrax and Rift Valley fever bare substantial burden on human health and livelihood. Recent epidemics of Rift Valley fever and pandemic influenza have shown the vulnerability of our country to emerging and re-emerging infections. We therefore need to work together to plan and prepare ourselves to deal with epidemics of all potential zoonotic diseases that may affect our country and region.

The development of this strategy therefore reflects our shared commitment to enhanced collaboration between animal and human health to reduce the burden of zoonotic diseases. The strategy aims to create and maintain active collaboration between the sectors for the prevention and control of zoonotic diseases. The strategy also outlines interventions to be undertaken by the government and other partners to enhance existing structures and pool together additional resources to face the challenges posed by zoonoses.

Successful implementation of the strategy will contribute significantly to the overall goal of improving public health, food safety and security, and the livelihoods of many Kenyans. It is in this regard that we call upon other government departments, development partners, institutions of higher learning, civil society, private sector and the Kenyan community at large to join us in this noble One Health Initiative.



Hon. Beth Mugo MP, EGH
Minister for Public Health and Sanitation



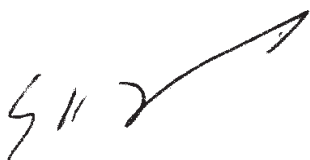
Hon. Dr. Mohammed Kuti MP, EGH
Minister for Livestock Development

INTRODUCTION

In the last three decades, over 30 new human pathogens have been detected. These pathogens, 75 per cent of which are of animal origin, are likely to continue to emerge in the foreseeable future as well. Predicting which zoonotic diseases may emerge in the future is extremely complex due to the limited epidemiologic understanding of the pathogens and host interaction, and the constantly evolving nature of ecological and risk factors involved.

Recognizing the significant threat to public health of zoonotic diseases, the Zoonosis Technical Working Group (ZTWG) was formed by the Ministry of Public Health and Sanitation (MoPHS) and Ministry of Livestock Development (MoLD) to advise the government on the prevention and control of zoonoses. The ZTWG developed a list of 17 priority zoonotic diseases for the country. Since the formation of the ZTWG, much progress has been made and support has increased for the surveillance and control of zoonoses in Kenya. Previously in Kenya, MoPHS reported on 18 priority human diseases through Integrated Disease Surveillance and Response (IDSR), and MoLD reported on 41 livestock diseases. The Kenya IDSR guidelines have been revised, with input from the ZWTG, to include endemic and epidemic-prone zoonotic diseases such as brucellosis, leishmaniasis, anthrax and rabies. Additional updates to the IDSR regulations that have One Health (OH) implications are the inclusion of a veterinary officer and a wildlife expert in both the provincial and district Public Health Emergency Management Committees, and the required coordination of human and animal sectors in response to zoonotic or potentially zoonotic disease epidemics.

The implementation of this strategic plan aims to reduce the threat and minimize the impact of zoonoses, underpinned by enhanced disease surveillance and emergency response systems at the national and sub-national levels. This strategy will build upon and complement existing communicable disease prevention and control programmes and frameworks. This will be achieved by consolidating the efforts of strengthening public and animal health systems and enhancing their collaboration in areas of common interest such as surveillance, early detection, diagnosis, rapid response, education and research.



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Ms. Kaitlin Sandhaus	Global Implementation Solutions
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In addition, the Government of Kenya wishes to thank the United States Government, in particular the US Department of State's Biosecurity Engagement Program (BEP), the Cooperative Biological Engagement Program (CBEP) in the Department of Defense, CRDF Global and the Centers for Disease Control and Prevention (CDC) for providing financial assistance in establishing the Zoonotic Disease Unit (One Health) as well as the construction of an office, hiring support staff, funding initial programs, and studies aimed at demonstrating the One Health approach in the country.

EXECUTIVE SUMMARY

Zoonotic diseases (also referred to as zoonoses) are infections that are naturally transmitted, either directly or indirectly, between vertebrate animals and humans. In recent years, a One Health (OH) approach to managing endemic and emerging/re-emerging epidemic of zoonotic diseases has been pushed by international human and animal health agencies, based upon recognition of the need for human and animal (including wildlife) experts to work collaboratively in order to better prevent and control these diseases. In addition, collaboration with the environmental experts, including entomologists, geologists, climatologists, and geospatial experts is important in understanding the mechanisms and drivers of pathogen transmission across the species. The World Health Organization (WHO) revised the International Health Regulations (IHR) in 2005 to provide a new framework for the coordination of events that may constitute a public health emergency of international concern, and for improving the capacity of countries to assess and manage public health risks. The IHR guidelines require that unusual disease events, including zoonoses be addressed by effective national surveillance and the establishment of human-animal coordinated response mechanisms at all levels. The World Animal Health Organization (OIE) has also issued similar guidelines on the management of zoonotic diseases.

In 2007, in response to the global threat of the H5N1 avian influenza epidemic and a devastating epidemic of Rift Valley fever between 2006 and 2007, Kenya established a OH taskforce that later recommended for formation of a OH office dedicated to zoonotic diseases and effectively linking human and animal health experts. The OH office, referred to as the Zoonotic Disease Unit (ZDU), was formed in 2011 and was charged with the mission of establishing and maintaining active collaboration at the animal, human, and ecosystem interface towards better prevention and control of zoonotic diseases. The ZDU is a small unit that is directly linked and dependent upon the Ministry of Public Health and Sanitation (MoPHS) and Ministry of Livestock Development (MoLD) for leadership and financial support. The ZDU office was constructed on government land located in the Upper Hill area of Nairobi.

In an effort to start systematically developing prevention and control strategies for endemic and epidemic zoonotic diseases, the country developed a list of 17 priority zoonotic diseases shown in Table 1, a list that will be periodically revised. The current disease list ranges from epidemic prone zoonoses such as viral hemorrhagic fever and highly pathogenic avian influenza to diseases endemic in certain regions of the country such as brucellosis and trypanosomiasis.

With a vision of building a country that has reduced burden of zoonotic diseases and being better able to respond to the epidemics of emerging and re-emerging infectious diseases, the country is now releasing this First 5-year Strategic Plan for Implementation of OH. The Strategic Plan is mainly focusing on three goals:

- (i) To strengthen surveillance, prevention, and control of zoonoses in both humans and animals;
- (ii) To establish structures and partnerships to promote OH approaches in the country; and
- (iii) To conduct applied research at the human-animal-ecosystem interface in order to better understand the mechanisms of zoonotic pathogen maintenance and transmission to humans.

At the end of successful implementation of this Strategic Plan, the expected outcomes include:

- Greater compliance with WHO/IHR and OIE guidelines on public health threats
- Risk maps and identification of hotspots for zoonotic diseases
- Development and implementation of disease prevention and control strategies for zoonoses
- Established plan and capacity for early epidemic detection, diagnosis, and rapid response
- Improved understanding of infection and transmission dynamics, ecology, and other drivers of zoonoses and emerging infectious diseases
- Better understanding of socio-economic impacts of zoonotic diseases and their interventions to households and the government

1.0 BACKGROUND

Zoonoses are diseases and infections that are naturally transmitted between vertebrate animals and humans. The diseases can be transmitted directly by contact with an animal (e.g., rabies), via contaminated environment (e.g., anthrax), via food (e.g., campylobacteriosis) or indirectly through bites by arthropod vectors (e.g., Leishmaniasis). The organisms causing zoonoses include viruses, bacteria, fungi, protozoa and other parasites, with both domestic and wild animals acting as reservoirs for these pathogens. The diseases they cause in humans range from mild and self-limiting (e.g., most cases of toxoplasmosis) to fatal (e.g., Ebola hemorrhagic fever).

The importance of zoonotic diseases is well demonstrated by a survey of infectious organisms which showed that of over 1,400 known human pathogens, over 60% are zoonotic, whereas 75% of diseases considered to be emerging or re-emerging are also zoonotic. Over the last 3 decades, new infectious agents and diseases affecting humans have emerged at a rate of more than one per year, sometimes resulting in high morbidity and mortality in humans and animals, and devastating effects on the people, their livelihoods and the national economies.

Several factors contribute to the emergence and spread of zoonotic infectious diseases. Perhaps the most important factor is increasing global human population, projected to reach 8 billion by 2025 with most of the growth occurring in poor nations in Asia, Africa and Latin America. The increasing human population has resulted in growing demand for animal protein with associated unsafe trading of animals, consumption of meat from wild animals and farming of game animals. Population growth has also put pressure on land use with continuing encroachment on natural forests and their rich and diverse fauna and flora. Other factors associated with emergence of diseases include climate change that has been linked with changing ecosystems in many regions and has subsequently been associated with alterations in the distribution of vectors that transmit diseases.

The OH approach to managing endemic and emerging epidemic threats of zoonotic diseases is based upon an appreciation of the need for human, animal (including wildlife), and environmental experts to work in coordination in order to better prevent and control these diseases. In particular, it is crucial to detect and control early, any emerging and re-emerging zoonoses at the animal source to prevent them from infecting human population. The WHO revised the IHR in 2005 to provide a new framework for the coordination of events that may constitute a public health emergency of international concern, and for improving the capacity of countries to assess and manage acute public health risks. The IHR guidelines require that unusual disease events, including zoonoses be addressed by effective national surveillance and the establishment of human-animal coordinated response mechanisms at all levels. The IHR guidelines also require the inclusion of veterinary officers and wildlife experts in the national and sub-national public health emergency management committees. At the 61st World Health Assembly in 2008, WHO adopted 20 key indicators for monitoring IHR core capacity at the national level, including two indicators specific to OH. First, each country is required to establish a mechanism for coordinating all relevant sectors in the implementation of IHR. Second, each country must establish a system for surveillance of zoonoses and potential zoonoses.

For its part, the World Animal Health Organization (OIE) has advocated for improved governance of zoonotic diseases by its member countries and has recognized improved collaboration between the public and animal health sectors as key in this process. To help national governments assess their current level of OH performance, OIE has provided a tool for the evaluation of performance of veterinary services in OH, with special emphasis on collaborative activities with public health and other relevant stakeholders at the animal-human interface. The Kenya Veterinary Services participated in a performance of veterinary services One Health evaluation in 2011 as only the second country to do so. In February of 2006, a tripartite agreement between the Food and Agriculture Organization (FAO), OIE and WHO created the global early warning system for the prediction, prevention, and controlling disease threats, including zoonoses.

1.1 BURDEN OF ZOO NOSES IN AFRICA

The burden of zoonotic diseases in Africa is not well documented, in part, because of weak surveillance and health information systems in the continent, and also because these diseases are not considered of high priority within both the human health and animal health sectors. A recent report from WHO-Africa Region (WHO-AFRO) indicated that 25% of the public health events of international concern reported from the region are zoonotic. Studies on emerging infectious disease have identified the Congo basin in Africa as one of the important hotspots for emerging disease worldwide, with increased reporting of viral hemorrhagic fever epidemics. The other two global hotspots for emerging diseases are the Amazon basin in Southern America and the Gangetic plains in Southeast Asia.

However, in many African countries, epidemics of endemic zoonotic diseases such as anthrax, brucellosis, rabies have considerable impact on the health care systems at the local level and adversely affect livelihoods, but this problem remains poorly defined. As a result, mitigating actions to address the challenges caused by zoonoses are often lacking.

1.2 STEPS TOWARDS THE ONE HEALTH APPROACH IN KENYA

In 2006, Kenya, like many other countries in the world, formed a multi-sectoral National Influenza Taskforce (NIT) in response to the threat of the H5N1 avian influenza that originated from Southeast Asia and was rapidly spreading worldwide. The NIT consisted of experts from the country's human and animal health sectors, WHO, United States Centers for Disease Control and Prevention (CDC), FAO, Kenya Wildlife Services (KWS), Kenya Medical Research Institute (KEMRI), Africa Union–InterAfrica Bureau for Animal Resources (AU-IBAR), International Livestock Research Institute (ILRI), United States Agency for International Development (USAID) and local universities. In addition, the Kenya military, police and National Disaster Management Authority were represented. Kenya was not affected by the H5N1 avian influenza. However, when a severe epidemic of Rift Valley fever (RVF) was reported in Kenya, Somalia and Tanzania in 2006-2007, resulting in over 1100 confirmed cases in the three countries, Kenya used the NIT taskforce to assist in mounting a coordinated response to the epidemic. This more rapid and better coordinated response appeared to result in more effective management of the epidemic that led to less morbidity and mortality in both humans and animals when compared to a similar RVF epidemic in 1997-1998.

After the RVF epidemic, the NIT was renamed the Zoonosis Technical Working Group (ZTWG) and has continued to hold quarterly meetings. The ZTWG held a 3-day workshop in September 22-24, 2010 in Naivasha, where a decision to create a OH unit, nested between the MoPHS and MoLD was reached. On August 2nd, 2011, a memorandum of understanding officially creating the Zoonotic Disease Unit (ZDU) was signed by Dr. Shanaaz Sharif, Director of Public Health and Sanitation and Dr. Peter M. Ithondeka, Director of Veterinary Services. Figure 1 shows the organizational chart of the ZDU with the clear lines of linkage and reporting to the two parent Ministries.

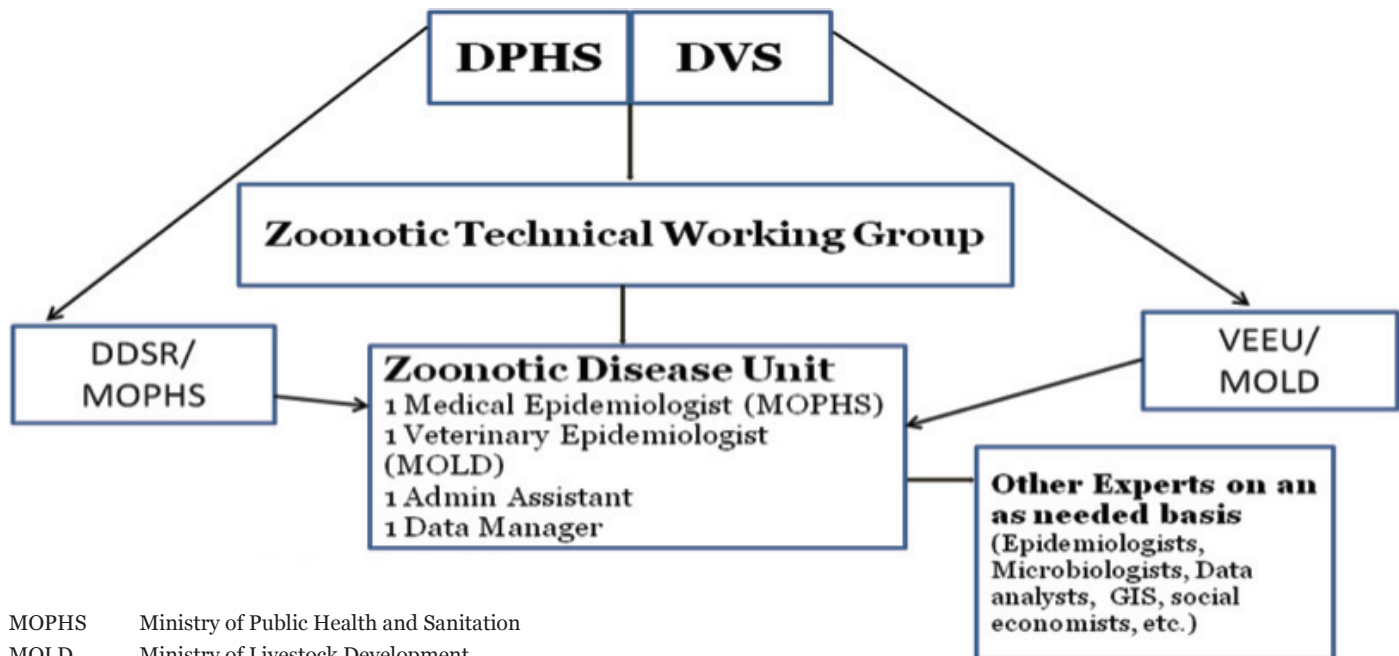
1.3 ZOO NOTIC DISEASE UNIT (ZDU)

Kenya's OH office is called the Zoonotic Disease Unit (ZDU). The over-arching vision in creating the ZDU was a small coordinating unit that was directly linked and dependent upon the MoPHS and MoLD for stewardship and financial support. The ZDU staff includes two senior epidemiologists; one deployed from the Division of Disease Surveillance and Response (DDSR), MoPHS and the other from the Veterinary Epidemiology and Economics Unit (VEEU), MoLD. The epidemiologists maintain direct report lines to their respective division/unit heads in the Ministries. Therefore, the

heads of DDSR and VEEU serve as the joint heads of ZDU, approving all major undertakings including programmatic activities, studies, and response to epidemics. In addition, the ZDU office includes an administrative assistant and data manager to provide support to the two epidemiologists. As far as providing leadership on OH matters in the country, the ZDU works under the direct guidance and leadership of the ZTWG. As shown in Figure 1, other subject matter experts such as environmentalists, microbiologists, entomologists, social economists, and geospatial analysts are engaged on ad hoc basis whenever required in responding to epidemics, formulating prevention and control policies or designing zoonotic disease studies.

With support from the United State Government (Biosecurity Engagement Program of the US Department of State, the Cooperative Biological Engagement Program of the US Department of Defense, and CDC), the ZDU rental office was opened on March 1st, 2012, while construction of a permanent ZDU office on Government of Kenya grounds was initiated. The permanent ZDU office was completed and handed over to the government on August 30th, 2012.

Figure 1: ZDU Organizational chart showing linkage with ministries and ZTWG



MOPHS	Ministry of Public Health and Sanitation
MOLD	Ministry of Livestock Development
DPHS	Director of Public Health and Sanitation
DVS	Director of Veterinary Services
DDSR	Division of Disease Surveillance and Response
VEEU	Veterinary Epidemiology and Economics Unit

To guide policy and prioritization of resources, the ZTWG appointed a team of disease experts in the country to develop a list of priority zoonotic diseases for the country. The criteria used for prioritization included: (i) transmission potential and incidence, (ii) socio-economic implication, (iii) severity of illness or case fatality rate, (iv) bioterrorism potential, (v) epidemic potential, and (vi) difficulty of disease management. Table 1 lists the priority zoonotic diseases for Kenya.

Table 1: List of Priority Zoonotic Diseases for Kenya

<ol style="list-style-type: none"> 1. Viral hemorrhagic fever (CCHF, Dengue, RVF, YF, Ebola, Marburg) 2. Avian influenza and other pandemic influenza viruses (e.g. 2009 A/H1N1) 3. Brucellosis 4. Leishmaniasis 5. Leptospirosis 6. Anthrax 7. Rabies 8. West Nile virus 9. Bovine tuberculosis 10. Plague 11. Tularemia 12. Protozoans (Cryptosporidiosis, Toxoplasmosis) 13. Salmonellosis 14. Helminths (Trichinosis, Cysticercosis, Hydatidosis, Sarcopsis, Diphyllbothrium) 15. Fungal diseases (Dermatophilosis, Histoplasmosis, Cryptococcosis, Aspergillosis) 16. Schistosomiasis 17. Trypanosomiasis
<p><i>*CCHF – Crimean Congo hemorrhagic fever, RVF-Rift Valley fever, YF-yellow fever</i> <i>NB: The diseases are not ranked in any order</i></p>

2.0 ONE HEALTH STRATEGIC PLAN

The aim of the OH approach is to diminish the threat of emerging infectious diseases and to minimize the impact of endemic zoonoses. This OH strategic plan is based upon recognition of the intimate linkages among the human, animal and ecosystem health domains. It proposes an interdisciplinary, cross-sectoral approach to disease surveillance, monitoring, prevention, control and mitigation of endemic and emerging diseases. Pooling resources will lead to economies of scale and enable common problems across systems to be addressed in a targeted manner without duplication.

This OH strategic plan will be achieved by pursuing three broad approaches. First, to enhance capacity for zoonotic disease prevention and control, particularly in the animal sector that has traditionally been under-resourced. Second, to enhance collaboration between the animal health, human health, and environmental sectors in areas of common interest such as disease surveillance, early detection, rapid response, education and research. Finally, to conduct applied research at the human-animal-ecosystem interface, so as to fill gaps in the understanding of mechanisms of transmission of zoonotic diseases in order to better formulate prevention and control strategies for these diseases.

This OH strategy is guided by the following principles:

- Prevention and control of zoonoses benefits public health and requires strong political and financial commitment at national and sub-national levels
- For sustainability, utilization of existing institutions and whenever possible, drawing on lessons learned
- A multidisciplinary approach is required to realize technical, political, and regulatory frameworks required to effectively manage zoonoses

- The strategy should be science-based and continually adjust to new information and technologies
- The strategy should recognize and respect cultural diversity

Vision

A country with reduced burden of zoonotic diseases and better able to respond to epidemics of emerging and re-emerging infectious diseases.

Mission

To establish and maintain active collaboration at the animal, human, and ecosystem interface towards better prevention and control of zoonotic diseases.

2.1 GOALS OF THE STRATEGIC PLAN

The strategic plan is divided into the following three goals:

Goal 1: To Strengthen Surveillance, Prevention, and Control of Zoonoses in Both Humans and Animals

Surveillance is fundamental to disease prevention and control efforts, including assessment of effectiveness of the various interventions. The limited resources and capacities typically available in resource-limited countries necessitate targeted surveillance that places additional resources in the areas at high risk of emergence and spread of disease. To continue reducing the burden of zoonotic diseases, there is need to develop and systematically implement data-driven prevention and control strategies. While medium- to long-term plans for surveillance systems and capacity building are ongoing, there will be need to respond to emergencies arising from epidemics of known zoonoses and unknown emerging infections, most of which are also zoonoses.

This goal will be achieved by pursuing various activities under three objectives as shown in Table 2. First, to operationalize the preparedness and management plan for zoonotic disease epidemics that emphasizes collaboration between relevant sectors. Second, to strengthen zoonotic diseases surveillance in order to develop maps of hotspots for certain diseases. And thirdly, to move forward a systematic program of prevention and control of specific zoonotic infections.

The expected outcomes from the activities under this goal are:

- Improved skills and competencies at national and sub-national levels in disease surveillance
- Strengthened human and animal disease surveillance systems at all levels, including disease information systems and diagnostic capacities
- Disease risk maps and identification of hotspots for priority zoonotic diseases
- Availability of disease prevention and control strategies for zoonoses
- Established plan and capacity for early epidemic detection, diagnosis, and rapid response

Goal 2: Establish Structures and Partnerships to Promote One Health Approaches

For OH approaches to take root in the country, a mechanism promoting collaboration between animal (including wildlife) and human sectors at national and sub-national levels is required. In addition, the curricula at human and animal health training institutions should include OH approaches. Kenya decided to create a ZDU, nested between the MoPHS and MoLD, but with constant linkage and priority communication with the line ministries that provide primary supervision and resources to the Unit. Through the ZDU, linkages between sub-national human and animal (including wildlife) health activities will be enhanced and national policies on OH developed. Communication strategies will also be developed and implemented to support prevention and response capacities.

The human-animal health linkages with other key environmental sectors (entomology, microbiology, meteorology, geology, geography, ecology, etc) are vital for proper understanding and effective management of endemic and emerging disease threats.

This goal will be achieved by pursuing various activities under three objectives as shown in Table 2. The first objective is to operationalize the OH office, here referred to as ZDU. There is much progress on this as described in Section 1.3 above. The completion of this strategic plan and follow-up Work Plans are guiding the functioning of the ZDU. The second objective is to institutionalize OH in the country by implementing strategies to decentralize OH approaches to county and district levels, incorporating OH in existing human and animal health programs, and revising the curricula of animal and public health training colleges to incorporate OH. The third objective is to advocate for resources that will support OH programs.

The expected outcomes from the activities under this goal are:

- An effectively functioning OH (ZDU) office
- OH integration in training curricula of institutions
- OH practices including continuous communication at the local human and animal health service delivery
- Enactment of OH policy in the country and greater compliance with WHO/IHR and OIE guidelines on emerging disease threats
- Development and implementation of OH communication strategy

Goal 3: Conduct applied research at the human-animal-ecosystem interface

For priority zoonotic diseases, much still remains unknown including the sources and drivers of disease emergence and re-emergence, factors enhancing spread, mechanisms of pathogen maintenance and persistence including ecology. Reliable risk maps for priority zoonotic diseases and understanding the socio-economic impact of such diseases on livelihoods and government is important in targeted and effective prevention and control measures. Public dissemination of such findings at national and international levels is important.

This goal will be achieved by pursuing various activities under two objectives as shown in Table 2. The first objective includes building a scientific database on zoonotic diseases and facilitating regional information exchanges. This will be accomplished by holding national and regional scientific workshops targeting universities and research institutions to present on neglected zoonotic diseases, including training and mentorship on OH to veterinary, medical, and public health trainees. In addition, we will promote publication of findings on zoonotic diseases. The second objective will consist of identification and development of research activities related to zoonosis. There will be efforts to identify priority research areas at the human-animal interface, followed by the promotion of applied research collaboration with human health, animal health, and environmental scientists. In addition, we will design and implement special studies, such as transmission mechanism or cross-species sub-typing of etiological agents during epidemics of zoonotic diseases.

The expected outcomes from the activities under this goal are:

- Improved understanding of infection and transmission dynamics, ecology, and other drivers of zoonoses and emerging infectious diseases
- Enhanced understanding of socio-economic impacts of priority zoonotic diseases and interventions
- Regular dissemination of technical reports and scientific research findings on priority zoonotic diseases

Table 2 summarizes the goals and objectives of the strategic plan.

Table 2: Goals and objectives in the OH strategic plan for Kenya

Goal 1: To strengthen surveillance, prevention, and control of zoonoses in both humans and animals	
Objectives	Activities
a. To operationalize the preparedness and management of zoonotic disease epidemics	<ul style="list-style-type: none"> • Develop and implement OH plans for jointly responding to zoonotic disease epidemics • Identify and designate subject matter experts for each priority disease • Conduct joint epidemic response activities of zoonotic diseases • Assess the risk to Kenya of a zoonotic disease epidemic that has emerged elsewhere in the world • Develop four contingency plans for priority zoonotic diseases based upon the risk analysis in the region
b. To strengthen zoonotic diseases surveillance	<ul style="list-style-type: none"> • Revise data collection tools within both ministries to include OH elements • Conduct risk mapping for four (4) priority zoonotic diseases • Collect baseline data on priority zoonotic diseases from other unpublished sources • Carry out routine analysis of data to understand zoonotic disease trends • Review the priority disease list on a regular basis based on changing trends • Evaluate human and animal surveillance/ database systems (HMIS, IDSR, ARIS-2) to identify linkage capability • Establish a zoonotic disease database to capture diseases not covered by human and animal data system • Establish and strengthen sentinel surveillance sites • Strengthen laboratory diagnosis for zoonosis
c. To enhance efforts to prevent and control zoonotic infections	<ul style="list-style-type: none"> • Develop and implement prevention and control strategies for 4 priority zoonotic diseases • Promote testing and licensing of documented vaccines against priority diseases

Table 2 (continued)

Goal 2: Establish structures and partnerships to promote One Health approaches	
Objectives	Activities
a. To operationalize the ZDU	<ul style="list-style-type: none"> Operationalize ZDU Conduct monitoring and evaluation (internal) of the ZDU Develop OH communication strategy Facilitate quarterly ZTWG meetings and follow-up on action items
b. To institutionalize OH in Kenya	<ul style="list-style-type: none"> Develop and implement strategies to decentralize OH to the county and district levels OH incorporated in existing policies Review curricula of the biomedical training colleges to incorporate OH
c. To advocate for resources for OH program	<ul style="list-style-type: none"> Lobby line ministries to allocate budget lines for OH program Advocate for ZDU (OH) support from partners Lobby for line item funding for OH at the county level during the devolution process
Goal 3: Conduct research at the human-animal-ecosystem interface	
Objectives	Activities
a. Facilitate regional information exchange with the scientific community and stakeholders on zoonotic diseases	<ul style="list-style-type: none"> Hold national and regional workshops for universities, research institutions and individual scientists on zoonotic diseases Provide training and mentoring to veterinary, medical and public health trainees, e.g., FELTP Write and submit abstracts/publications for national and international conferences, journals (including writing workshops)
b. Identify and develop research activities related to zoonosis	<ul style="list-style-type: none"> Identify priority research areas at the human/animal interface Promote applied research collaboration among human, animal and ecosystem sectors Design and implement special studies (transmission mechanisms, cross-species sub-typing) during zoonotic epidemics

3.0 THE STRATEGIC FRAMEWORK

Table 3: The One Health Strategic Framework

Objectives	Activities	Outputs	Indicators	Time frame					Cost (KES)	Responsible
				2012-2013	2013-2014	2014-2015	2015-2016	2016-2017		
Goal 1: To strengthen surveillance, prevention, and control of zoonoses in both humans and animals								116,680,000		
a. To operationalize the preparedness and management of zoonotic disease epidemics	Develop and implement OH plans for jointly responding to zoonotic disease epidemics	Coordination SOPs and plans for zoonoses epidemic developed and in use	No. of plans developed and in use						6,000,000	ZDU/CDC/WHO/FAO/USAID
	Identify and designate subject matter experts for each priority disease	Subject matter experts identified and databases available	Number of subject matter experts identified per priority diseases, Proportion of times database used for disease specific activities						40,000	ZDU/ZITWG
	Conduct joint epidemic response activities of zoonotic diseases	Epidemic response activity report	No. of epidemic response activities carried out						20,000,000	ZDU
	Assess the risk to Kenya of a zoonotic disease epidemic that has emerged elsewhere in the world	Risk analysis report of diseases	Copy of disseminated risk analysis report						400,000	ZDU/ZITWG
	Develop 4 contingency plans for priority zoonotic diseases based upon the risk analysis in the region	4 Contingency plans developed	Copies of contingency plans						32,000,000	ZDU/MoLD/MoPHS
b. To strengthen zoonotic diseases surveillance	Revise data collection tools within both ministries to include One Health elements	Data collection tools revised	Copy of report for revision of tools, Proportion of revised tools in use						4,000,000	ZDU
	Conduct risk mapping for 4 priority zoonotic diseases	Risk maps of 4 priority diseases developed	Number of diseases risk maps developed						12,800,000	ZDU/MoLD/MoPHS
	Collect baseline data on priority zoonotic diseases from other unpublished sources	Baseline data on priority zoonoses collated	Number of diseases with baseline data documented						400,000	ZDU/MoLD/MoPHS
	Carry out routine analysis of data to understand zoonotic disease trends	Routine summary information on zoonoses provided	Proportion of routine summary reports produced in a year						0	ZDU/MoLD/MoPHS
	Review the priority disease list on a regular basis based on changing trends	Priority list updated	Report of prioritization meeting, copy of updated priority list						160,000	ZDU/ZITWG
	Evaluate human and animal surveillance/ database systems (HMIS, IDSR, ARIS-2) to identify linkage capability	Surveillance systems evaluated	Report on evaluation of surveillance systems						240,000	ZDU
	Establish a zoonotic disease database to capture diseases not covered by human and animal data system	Zoonotic disease database established	Number of searches on database						240,000	ZDU
	Establish and strengthen sentinel surveillance sites	Sentinel surveillance sites established for some priority diseases	Number of sentinel sites established for specific disease						0	ZDU/MoLD/MoPHS
	Strengthen laboratory diagnosis for zoonoses	Laboratory diagnosis strengthened nationally and regionally	Number of laboratories carrying out zoonosis disease diagnosis						8,000,000	ZDU/CDC/WHO/OIE/USAID

Table 3 (continued)

c. To enhance efforts to prevent and control zoonotic infections	Develop and implement prevention and control strategies for 4 priority zoonotic diseases	Prevention and control strategies developed and implemented	Number of prevention strategies developed, Number of prevention strategies being implemented						32,000,000	ZDU/CDC/WHO/OIE/USAID
	Promote testing and licensing of documented vaccines against priority diseases	Documented/Approved vaccines licensed	Number of approved vaccines licensed						400,000	ZDU/MoLD/MoPHS
Goal 2: Establish structures and partnerships to promote One Health approaches									58,800,000	
a. To operationalize the ZDU	Operationalize ZDU	Functional ZDU	ZDU quarterly reports						36,000,000	ZDU/MoLD/MoPHS
	Conduct monitoring and evaluation (internal) of the ZDU	Monitoring of ZDU carried out	Number and reports of ZDU monitoring/evaluation						1,600,000	ZDU/MoLD/MoPHS
	Develop OH communication strategy	OH communication strategy developed	Copy of OH communication strategy						800,000	ZDU/MoLD/MoPHS/USAID
	Facilitate quarterly ZITWG meetings and follow-up on action items	Quarterly ZITWG meetings held	Number and proportion of meetings held						3,200,000	ZDU
b. To Institutionalize OH in Kenya	Develop and implement strategies to decentralize OH to the county and district levels	Strategies to decentralize OH implemented	Number and Proportion of counties and districts with OH programs						10,400,000	ZDU/MoLD/MoPHS
	OH incorporated in existing policies	OH approaches incorporated in policy documents	Policy approaches with OH approaches						0	ZDU/OHCEA
	Review curricula of the biomedical training colleges to incorporate OH	Curriculum reviewed and in use	Number and proportion of institutions using curriculum						4,000,000	OHCEA/ZDU
c. To advocate for resources for OH program	Lobby line ministries to allocate budget lines for OH program	Budgetary allocation for OH program	Amount of budgetary allocation for OH program						0	ZDU/MoLD/MoPHS
	Advocate for ZDU (OH) support from partners.	Increased partners involved with ZDU	Number of partners involved in OH activities						800,000	ZDU/CDC/WHO/FAO/USAID
	Lobby for line item funding for OH at the county level during the devolution process	OH funding at county level	Number and Proportion of counties with OH funding						2,000,000	ZDU/MoLD/MoPHS
Goal 3: Conduct research at the human-animal-ecosystem interface									106,400,000	
a. Facilitate regional information exchange with the scientific community and stakeholders on zoonotic diseases	Hold national and regional workshops for universities, research institutions and individual scientists on zoonotic diseases	Regional scientific conference held	Conference report and abstract book						24,000,000	ZDU/CDC/WHO/FAO/USAID
	Provide training and mentoring to veterinary, medical and public health trainees, e.g., FELTP	10 Veterinary Residents trained in FELTP Residents mentored in OH	Number of veterinary residents trained in FELTP Number of residents mentored						34,400,000	ZDU/USAID/CDC
	Write and submit abstracts/publications for national and international conferences, journals. (including writing workshops)	Abstracts/publications submitted and/or published	Number of abstracts/manuscripts published						20,000,000	ZDU/CDC
b. Identify and develop research activities related to zoonosis	Identify priority research areas at the human/animal interface	Priority research areas identified	Number of research questions identified; report on priority research areas						6,000,000	ZDU/ZITWG
	Promote applied research collaboration among human, animal and ecosystem sectors	Increased applied research at the animal-human interface	Number and proportion of institutions participating in the collaboration, reports of meetings						16,000,000	ZDU/ZITWG
	Design and implement priority studies(transmission mechanisms, cross-species sub-typing) during zoonotic epidemics	Priority studies implemented during epidemics	Number and proportion of reports/manuscripts completed						6,000,000	ZDU/ZITWG
Grand Total									281,880,000	

REPUBLIC OF KENYA
ZOO NOTIC DISEASE UNIT

MISSION

To establish and maintain active collaboration at the animal, human, and ecosystem interface towards better prevention and control of zoonotic diseases.

VISION

A country with reduced burden of zoonotic diseases and better able to respond to epidemics of emerging and re-emerging infectious diseases.